THE EDUCATIONAL MISSION OF A PUBLIC RESEARCH UNIVERSITY:
THE MIDDLE STATES SELF-STUDY

THE UNIVERSITY OF MARYLAND AT COLLEGE PARK
1996 - 1997

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This report culminates a year-long process of self-evaluation conducted by the University of Maryland at College Park as part of the ten-year cycle of reaccreditation set by the Middle States Association of Colleges and Schools. This self-evaluation has provided the University with the opportunity to take stock of its current situation and to identify those matters that require attention or improvement. It is the belief of the Executive Committee that this self-study demonstrates that the University can point to many areas of excellence and that it is continuing to make visible progress in a number of important areas.

In preparing the self-study, the Executive Committee, which has overall responsibility for the design and preparation of the self-study report, quickly developed the consensus that enhancing the educational mission of the University should be the primary focus of the study. This specific focus was consistent with Middle States' injunction that the University should not attempt to prepare a comprehensive report but should instead focus on those matters of particular importance at the present time. "Offering superior education" is a fundamental value of the University and an on-going goal that has been at the heart of many of its initiatives, directly or indirectly, since the mid-1980's. After a decade of effort, it is entirely appropriate that the University use the opportunity of this self-study to examine thoroughly the status and the future of its educational mission. The emphasis on the educational mission also enables the University to reaffirm to itself and to the public the diversity of its educational mission and its commitment to excellence in graduate and undergraduate education in an environment of research excellence and service. In articulating this emphasis, therefore, the Executive Committee decided that the self-study should focus on the following basic themes:

- Achieving Excellence in Undergraduate Education
- Achieving Excellence in Graduate Education
- Promoting Interdisciplinary Programs and Research Activities
- Promoting Research for Education and Service in the 21st Century
- Maintaining Faculty and Staff in the 21st Century: Responding to New Opportunities and New Challenges

The themes and the subsequent questions that the Executive Committee formulated were shaped in part in response to current concerns expressed by faculty, staff, administrators, and students. These themes and questions were also consistent with and supportive of the effort then underway on the campus to develop a strategic plan for the University.

In selecting these areas for study, the Executive Committee recognized that other subjects such as facilities, administration, governance, climate, diversity, and quality of life are also important issues in the totality of the University's mission and activities. However, because many, if not most, of these questions have been addressed recently in special studies and reports, the Committee believes that the more focused study would be of greater value to the University.

Separate task forces of six to eight members were established by the Executive Committee to examine each of the basic themes. (The specific charge to each of the task forces is set forth in Appendix C.) In undertaking their work, the task forces were asked to use procedures that have been developed for Continuous Quality
Improvement (CQI) activities and used by the University in other studies over the past few years. In accordance with these procedures, each of the task forces was to develop a charter or contract with the Executive Committee regarding the work that it intended to undertake. In addition, each of the Task Forces created resource groups to provide advice with regard to the topic under consideration. The task forces were asked to complete their work within 120 days; a deadline that proved to be unrealistic.

In addition to the task forces, the Executive Committee also established a Steering Committee of 34 campus leaders, including the task force chairs, which provided general guidance and advice to the Executive Committee. As a consequence of this organizational arrangement, more than 300 faculty and staff have been involved in one way or another in this self-evaluation.

The Executive Committee received the reports from the task forces in the late Spring and Summer of 1996. (These individual reports are contained in Appendices D through H.) The final reports are varied in the degree to which they responded to the original set of questions developed by the Executive Committee. It is clear that some of the initial questions were dealt with and responded to with a specific and direct analysis. It is equally clear that some questions remain unanswered, either because the task force did not have sufficient time to deal with all questions or because the task force believed that other issues or questions were more important. In taking an approach that the Executive Committee had not fully anticipated, the task forces served to identify issues, problems, and possible solutions that were unknown to the members of the Executive Committee and had not been previously articulated. Indeed a self-study that did not reveal unanticipated problems or issues would be of little value to the institution.

Over the past decade the University has undertaken a number of other self-studies in response to particular issues that have confronted it. These have included studies of retention, inter-collegiate athletics, diversity, campus climate, program termination, etc. These reports contain a wealth of useful information about the University's educational mission, and the task forces were encouraged to utilize them to the fullest extent. In addition, in the spring of 1995, when it initiated the self-study process, the University was in the midst of preparing a comprehensive plan that would provide the strategic directions for the University for the next five years. The development of the strategic plan involved extensive study and analysis throughout the University and the preparation of strategic plans by each of the 13 colleges and schools and by the major administrative units, as well as a variety of staff reports.

The effort involved in the preparation of the strategic plan, Charting a Path to Excellence: the Strategic Plan for the University of Maryland at College Park, and its adoption March 27, 1996, have had an impact on the preparation and content of this self-study. Members of the five task forces were aware of the Strategic Plan and were guided in some instances by the directions or goals set forth in the Plan. Indeed the major ideas of the strategic plan were widely known when the task forces initiated their work, and the Plan was adopted before they completed their work. The Strategic Plan, however, is not a list of prescriptions; it is a process and an outline that intentionally leaves issues to be discussed and plans to be developed and implemented. This self-study is therefore a fortuitous opportunity to identify many of the choices that the University should discuss as it prepares to implement the Strategic Plan. The self-study also provides the means to consider issues that may not have been clearly enunciated in the Strategic Plan but that are concerns in the University
community. Consequently this report both complements and supplements the Strategic plan.

In developing this self-study, the Executive Committee has tried to stay as focused as possible on the general theme of the educational mission of a public research university. In order to do so, the Committee has used in a selective manner the text and recommendations provided by the task forces. In some instances it has not included some analyses or recommendations because it believed that they were inadequately developed or needed additional study. In other cases it has used analyses or recommendations that have not come from the task forces but from specially commissioned studies or from existing reports that had been prepared previously on the campus. Originally, the Executive Committee made a large number of requests of the task forces. In retrospect, the Committee probably asked for too many details. Although some of these details were not addressed in their reports, the task forces did address all the major issues.

The various task force reports, Strategic Plan, and other University reports and documents lead to the following three important conclusions regarding the educational mission at College Park; these conclusions provide the organizational framework for this report.

1. The University has achieved significant successes and is clearly moving in the right direction with regard to a number of important educational programs.
2. The University is continuing to give special attention to some issues, programs, and activities in order to be more effective in its educational activities and to achieve higher levels of quality in its educational programs.
3. To continue to move forward in its educational mission, the University must address a number of broad issues, the resolutions of which have the potential to affect significantly the way that the University functions.

Appendix A lists those who served on the several committees whose work provided the foundation and shape of this report. Other members of the faculty and staff also contributed significantly and sometimes urgently to this report. The Executive Committee wishes to acknowledge gratefully the contributions of the members of the committees, as well as of Dale O. Anderson, Jon K. Boone, Roxanne C. Freedman, James D. Greenberg, Robert L. Hampton, Timothy J. Ng, Pauline Janet Robinson, Kathleen Russell, David B. Sicilia, Sylvia S. Stewart, and William C. Spann.

The Executive Committee is pleased to submit this self-study to the Middle States Association of College and Schools, and to the Committee's colleagues throughout the University. It believes that this assessment of the University's successes and the identification of issues yet to be addressed will provide a focus to the educational mission of this public research university and that the report will contribute to the excellence that is universally sought.

Nelson G. Markley, Co-Chair
Don C. Piper, Co-Chair
Marvin A. Breslow, Secretary
Drury G. Bagwell
The Educational Mission of a Research University

Nicholas S. Chant
Bonnie Thornton Dill
Curtis M. Grimm
Phylis B. Moser-Veillon
Jennifer B. Presley
Chapter I

Assessing Accomplishments in the Educational Mission

A. Overall Qualities

During the years since the last self-study in the ten-year cycle of reaccreditation, a number of major events have occurred that have had a significant effect on the University. At the behest of the then Governor, the State legislature passed the Higher Education Act of 1988, which consolidated the higher education institutions throughout the State, created a decentralized system, defined a distinctive "flagship" role for the University of Maryland at College Park, and mandated an elevation of this university to the top echelon of the nation's public universities. To achieve this goal, President William E. Kirwan, who became the new President on February 1, 1989, after serving for six months in an acting capacity, led the University in developing an enhancement plan (Enhancing the College Park Campus: An Action Plan, July 31, 1989, referred to as the Enhancement Plan). The State provided enhancement funding in 1989 and the University began the implementation of the plan.

However, scarcely one year later, the financial situation of the State had changed dramatically. Instead of enhancement funding, the University received substantial "cost-containment measures." This led the University to undergo an extensive analysis of itself and its resources. On March 1, 1991, the Provost issued a report (Preserving Enhancement: A Plan for Strategic Academic Reallocation) containing preliminary recommendations for dealing with the funding rescissions. This was followed on January 28, 1992, by his final recommendations Hard Choices: The Next Step in Preserving Enhancement, which was approved by the Campus Senate on April 17, 1992, and adopted by the Board of Regents on June 5, 1992. As a result, seven academic departments, 18 undergraduate degree programs, six master's programs, five doctoral programs, two certificate programs, and the administrative structure of one college were eliminated.

Following this major readjustment, the University has been faced with a series of tight budgets, but has maintained its insistence on moving forward in the directions defined by the enhancement plan. During the past year, it underwent a major strategic planning effort that culminated with the March 27, 1996 publication of its Strategic Plan (Charting a Path to Excellence: The Strategic Plan for the University of Maryland at College Park), which describes the kind of distinguished academic institution the University believes it can become, identifies a set of strategies that will help make progress toward that goal, and suggests an approach to resource allocation that will enable the University to put its human and financial resources to best use.

By almost any measure the University of Maryland at College Park has accomplished much through all this period of change, reorganization, and large, sometimes unpredictable, budget difficulties. No examination of this university can be sound unless it acknowledges achievement in adversity. Following is a brief summary of the high points of our accomplishments since 1986 in undergraduate and graduate education and in campus governance, and an overview of particular strengths and special situations that offer unusual promise for the University.
The general education component of the undergraduate experience underwent a thorough review in the late 1980s, and a new program, CORE, was introduced in the fall of 1990. Since then, despite financially difficult times, considerable resources have been devoted to ensuring that students are able to get the courses necessary to meet the new requirements. After several years of monitoring CORE, and introducing some modifications, the University is proud of its general education program.

The Honors program was reviewed in 1989 and, as a consequence, considerably revised. New housing and additional resources were found for the University Honors Program, which is now bursting at the seams with 2,000 excellent students and, in ARCO's Guide, Ivy League Programs at State School Prices, was one of only nine out of 55 programs in the nation to receive three-star rating.

The Honors Program is but one of the recruitment attractions for undergraduates that have contributed to the improvement of the quality of the student body (see below, I.B.3.). A number of innovative programs designed to bring better students to the University have been introduced. These include new living and learning programs (I.A.4.), as well as First Year Focus, College Park Scholars, Gemstone, and World Courses (I.B.2).

The University has held that a better student body is also a diverse student body. There have been significant increases in minority enrollments. In particular, African-American enrollments have grown both in numbers and as a percentage of total enrollment (see below, I.B.4.). Even the loss of the Banneker Scholarship program through court decisions should not alter that direction.

The reputation of the undergraduate programs at the University of Maryland at College Park is also growing. The most recent (ninth, revised) edition of The Gourman Report, a rating of undergraduate programs in American universities, ranked 24 of the University's undergraduate majors in the top 25 nationally, with nine of those in the top ten. The fall, 1996 U.S. News and World Report rankings of undergraduate programs lists the College of Business and Management 20th and the College of Engineering 24th in the nation. In its overall rankings of national universities, it ranked the University in the second tier (numbers 50 to 100) of institutions. Peterson's Guide ranks the University of Maryland as one of the top twenty schools, public or private, in which to study science and engineering.

The growing number of our graduate programs with national reputations indicates our increasing strength in graduate education and research. The University of Maryland at College Park is one of 57 universities in the nation that make up the prestigious Association of American Universities. It is the only Carnegie Class I Public Research University in the State and national capital area. A number of its graduate programs are ranked among the best in the country.

Peer review has a long tradition in higher education as the single most important indicator of excellence in research and graduate education. The National Research Council (NRC) of the National Academy of Sciences gave the University good marks in its 1995 report on doctoral programs. The University improved its rankings from the previous ranking in 1982, and its departments include a number of programs rated strong or distinguished.

Maryland's graduate programs ranked in the top third of the nation's research universities in 11 categories: chemistry (tied for 52nd out of 168); computer science (16th of 108); economics (20th of 107); electrical engineering (17th of 126); English
language and literature (tied for 40th of 127); history (tied for 29th of 111); mathematics (18th of 139), mechanical engineering (34th of 110); physics (18th of 147); political science (29th of 98); and psychology (52nd of 185). The NRC ranked the physics program as "distinguished" (the top category) and another 15 programs as "strong."

The University's professional schools have also experienced a significant increase in their standing over the last decade. *U.S. News and World Report*, the most widely cited source of ratings on professional schools, places the University's College of Business and Management 24th out of 292, the College of Education 26th of 191, and the College of Engineering 28th of 219. This high ranking of both business and engineering constitutes a distinction for the University unmatched by any other university in Maryland, Virginia, the District of Columbia, or, indeed, the entire southeast of the nation. Other sources confirm these rankings: *Success* magazine has for the past three years ranked the College of Business and Management as one of the 25 best business schools in the country for entrepreneurs, while a recent article in *Contemporary Educational Psychology* ranked the College of Education 11th in productivity and 10th in prestige.

Departments rated among the top 25 nationally by *U.S. News and World Report* were computer science (12th), economics (23rd), mathematics (19th), and physics (14th). These departments were all among the top ten among public universities, and were the highest rated programs among both public and private universities in the Mid-Atlantic region. The University was ranked among the top five in the nation for its work in specific areas: counseling education (3rd), public relations journalism (1st), computer science databases (4th), nonlinear dynamics (2nd), counseling psychology (1st), and industrial/organizational psychology (2nd). Similarly, *Computerworld* magazine ranked the College of Business and Management's information systems program among the top ten nationwide for corporate recruitment.

The University includes other highly rated programs that are in disciplines not covered by these rankings. The Department of Agricultural and Resource Economics (rated 1st among 30 by *Agricultural and Resource Economics Review*); the Department of Criminology and Criminal Justice (rated 1st of 14 by *Journal of Criminal Justice Education*); and the Department of Kinesiology (rated among the top 10 by *Journal of Physical Education, Recreation and Dance*).

These rankings testify to the growing reputations of a number of the best graduate programs at the University of Maryland at College Park. Other, newer programs with developing reputations can expect to appear highly ranked in subsequent ratings.

Other evidence of the quality of a number of the University's graduate programs comes from its success in attracting research funds. Through the efforts of individual researchers and many renowned interdisciplinary research centers, the University has become a national leader in research in areas of the physical sciences and technology. It presently ranks 20th among all universities in the nation, and 14th among all public universities, in total external funding received for research and development in science and technology fields (excluding medical schools). In fiscal year 1996, faculty were awarded a total of over 146 million dollars in competitively-funded research awards. In the most recent survey, the University ranked 10th among all public universities in the number of fellowships for independent study awarded to faculty.
A special strength at the University has been and continues to be its dependence on shared governance. At College Park shared governance largely means sharing between the faculty and the administration, but in appropriate areas and ways it also includes staff and students. It has a strong tradition at the University. Student and staff membership in the Campus Senate dates back to 1971. Since 1983, the Academic Planning Advisory Committee (APAC), a group consisting predominantly of faculty, but also including administrators, students, and, in recent years, staff, has advised the Provost on all matters with significant resource implications. Additional recommendations for increased shared governance were approved by the Campus Senate in May, 1991. Shared governance is actively supported by the President, who values the range of advice and the foundation for understanding that now are part of the culture at College Park.

The prior existence of APAC and a good working relation between the administration and the Senate were major reasons why the University was able to deal with the budgetary crises of the early 1990s without the disruptions that plagued many other universities facing similar crises. That the University could generate broad campus support for significant reallocation of resources and eliminations of programs in response to the budgetary crisis demonstrated the strengths of shared governance and served to strengthen further that governance. Both those crises and the recent development and adoption of the Strategic Plan have engaged the active participation of campus governance institutions such as APAC and the Campus Senate.

The rising quality of its undergraduate program and student body raises the intellectual atmosphere of the University. The improvements in the University’s national rankings reflect the growing quality of graduate education and research at the University and increase the recognition of those programs beyond the University. The successful management of sometimes difficult changes creates a more self-confident university. All of these are measures of the excellence of a university. Another measure is its capacity to seek and take advantage of new opportunities. A few noteworthy examples of developments that affect education and life at the University and that offer great promise are the following:

Living-Learning Opportunities: While improvements in the undergraduate educational experience are always urged, specific improvements are not easily achieved, particularly in a large University. In recent years, the University has embarked on several "living-learning" programs designed to integrate the students' residence activities with their academic programs. The innovative College Park Scholars program, begun in the fall of 1994, offers an enriched educational experience for the good student who is not in the Honors Program but who is qualified and motivated to undertake more than the required programs (see below, I.B.3.). For the selected students, the eight areas of structured clusters of courses and residence-hall living quickly have proved to be attractive and rewarding in creating small college attention within the setting of a research university.

Following a study of the program ending in February 1989, a revitalized University Honors Program was introduced in 1990. A dormitory, Anne Arundel Hall, was renovated for the program and opened in 1992. The dormitory now houses 100 Honors students, as well as the offices of the University Honors Program, a scholar-in-residence apartment, three classrooms, a faculty office, a conference room, and a small computer laboratory. An adjacent dormitory houses an additional 160 Honors students, while other Honors students live on honors floors in the large residential
halls. Students in the new Gemstone program (see below, I.B.2) also live together in a residence hall. Many activities of the Honors program now occur in Anne Arundel Hall, including classes, a lecture series, advising, and faculty-student conferences.

In the Fall of 1990, the newly renovated St. Mary's Hall was opened as a Language House, a special campus residence for students wishing to immerse themselves in the study of a foreign language and culture, and to develop fluency in that language. Each suite of rooms is devoted to a given language, with the students in that suite speaking only that language. Currently eight languages are represented: Chinese, French, German, Hebrew, Italian, Japanese, Russian, and Spanish.

In 1991, another renovated dormitory was set aside as an "International House." This special residence hall offers an opportunity to approximately 150 selected students to participate in an experiment in living that promotes a consciousness of diversity and understanding among students from different cultures. The house is comprised of 60% American students and 40% international students, chosen on the basis of essays and special applications, and, for brief periods, any visiting international faculty or scholars who are willing to interact with students and participate in the communal activities. In addition to a series of colloquia that focus on various international issues, the "International House" sponsors an annual ambassador series that brings four to six ambassadors to campus for special presentations on the countries they represent and hosts a weekly coffee hour open to the entire campus that is always well-attended. Students living in "International House" have given their residential experience the highest rating in yearly campus surveys.

The University has one of the oldest and largest fraternity and sorority systems in the country and believes these organizations, with average membership of over 60 each, have the potential to become effective living-learning centers. To that end, the University has committed resources to renovating the physical facilities in which the students live, to providing professional staff to assist with advising and facilitating the learning environment, and to using faculty to teach classes in leadership for these students. In return for its active support, the University has set forth enhanced standards for these groups that constitute one of the most innovative and progressive programs in the nation. These expectations include active faculty advisors; community and campus service-learning activities; internal educational programs on issues such as values clarification; academic success; diversity; live-in house directors; and minimum grade point requirements for members to join and for maintaining recognition by the campus.

Maryland Center for the Performing Arts: For some time the University recognized the need for better performing arts facilities, but the State's proposal to create a 106 million dollar performing arts center was unexpected and generous. Planning money (2.4 million dollars) was available in July 1993, and the groundbreaking was held in October 1996. The Center is expected to be operational in the fall of 1999. While it is understandable that much work and public attention has been given to the finances and to the physical location and design, the university also has devoted effort to planning that the performing arts center be integrated into the educational and research missions of the university.

The University of Maryland at College Park as an attraction for other institutions: The proximity to the University of the Goddard Space Center and the
Beltsville Agricultural Center have long proved to be mutually advantageous. The presence of the University was a key attraction that led to the National Archives' decision to open Archives II on the edge of the campus. Since that opening, the relationship between the university and Archives II has grown in important ways. With the December, 1993, opening of the College Park Metro station, new opportunities have arisen. The combination of a research university and a Metro station have already attracted the American Institute of Physics, and a new Center for Food Safety and Applied Nutrition, sponsored jointly by the University and the Food and Drug Administration, will occupy a nearby site. Other, similar institutions may also be attracted and, as with Archives II and Goddard, the university should benefit from relationships with these institutions.

Diversity at the University of Maryland: The University of Maryland at College Park has recognized that diversity is integral to its educational mission and has made a commitment to achieve that diversity. While there have been notable increases in the racial diversity of the students and faculty, diversity at the University is understood to mean more than numbers. Diversity is both part of a changing campus culture and an instrument for change within that culture. It directly affects the curriculum through the CORE human culture diversity requirement, which encourages the students to learn about attitudes and cultures different from their own. Courses designed to meet this requirement are among the most popular CORE courses offered. Diversity also affects the curriculum through the Curriculum Transformation Project, designed to help faculty re-examine their courses in order to integrate into them appropriate gender and cultural diversity (see below, I.B.5.). Diversity becomes part of the education of the larger campus community in the presentation of events such as Gay and Lesbian Awareness Week and Black History Month. It affects the climate of the University to the extent that students comment that they are attracted here because of the diversity of the student body and the spectrum of backgrounds and attitudes to which they will be exposed.

The University's achievements in diversity have attracted national attention. According to a recent National Research Council study, the University is second in the nation among non-historically-black institutions in producing African-American graduates who go on to earn a Ph.D, and is one of the top two among non-historically-black institutions nationally in the production of African-American males receiving degrees in science. In its summer 1996 issue, *The Journal of Blacks in Higher Education* ranked Maryland number one in the nation in the total percentage of black full-time faculty among flagship state universities. This report concluded, "The state universities that appear to have made the most serious effort at faculty diversification when we include comparisons to blacks in the student body and in the state's population include the University of Massachusetts, the University of Maryland and Rutgers University." The College of Engineering's Women in Engineering program was chosen in 1996 as the top women-in-engineering program in the nation by the Women in Engineering Program Advocacy Network.

The Strategic Plan: During the period from the fall of 1994 through March 1996, the University was engaged in a strategic planning exercise. The purpose of the exercise was to develop a plan that would help the University become, as mandated by the Higher Education Act of 1988:
One of the nation's preeminent public research universities, an institution recognized both nationally and internationally for excellence in research and instruction, which makes the results of its research available for the use and benefit of the State of Maryland and its people.

The Strategic Plan, when finally approved, laid out five major initiatives and specific steps to achieve them. The initiatives were:

- Offering high-quality education to outstanding undergraduates;
- Building cornerstone programs of excellence in graduate education and research;
- Increasing the University's contribution to society;
- Encouraging entrepreneurship; and
- Rationalizing resource allocation and administrative operations.

Colleges and schools are currently revising and submitting for APAC (the Academic Planning Advisory Committee, see above) review their individual strategic plans, to make them more supportive of the campus plan and to help define the University actions for the coming year. The President has placed the major emphasis for 1997-1998 on the undergraduate education initiative. As will be seen, the Strategic Plan has played a significant role in the development of this report.

These highlights suggest the overall quality of the campus and illuminate some of the strengths and accomplishments that characterize the development of the University of Maryland at College Park over the past ten years. A more detailed assessment of the progress of the University in undergraduate education, graduate education, and research and creative activities constitutes the remainder of this chapter.

B. Undergraduate Education

1. Assessment of the CORE Program

Any effort to evaluate undergraduate education and the progress of the University in this area over the last 10 years must begin with a consideration of the development of the reforms proposed in 1987 for general education in the major report, *Promises to Keep: The College Park Plan for Undergraduate Education* (the Pease Report). That report proposed a series of reforms, including a new set of general education requirements, subsequently known as CORE: more emphasis on courses designed to encourage active learning; small classes where possible; and in general an increased emphasis on undergraduate education and the improvement of teaching. As approved and adopted by the Campus Senate on March 7, 1988, CORE mandated a program of studies outside the student's major at both the introductory (100-200-level courses) and the advanced (300-400-level) stages of a student's career. It also mandated the establishment of a Senate committee to approve and reassess courses for inclusion on a select list of CORE courses. The Senate-approved program was implemented in the fall of 1990.

The CORE requirements set forth an ambitious and comprehensive program. Already in place were a writing segment (one 100-level course; a second 300-level "professional writing" course) and mathematics requirement (any 100- or 200-level Mathematics or Statistics course except Math 210 or 211) that were retained as
Fundamental Studies Courses. Special freshmen seminars, taught by seasoned faculty, that focused on major texts and concepts through extensive discussion and paper writing were established on an experimental basis. To promote broad conceptualizing in courses across the disciplines, CORE required students to take nine Distributive Studies credits in the arts and humanities, nine in social science, and ten in mathematics, science, and technology, including a laboratory (at the 100-200 level). Students were also to take two courses outside their majors from a list of specially approved courses at the 300-400 level. Each student was also required to take one course from an approved list of human cultural diversity courses. A final curriculum recommendation was that each department develop a "capstone" course for its major field of studies.

The majority of the CORE requirements have been implemented, and most of the goals of the program have been reached. The following review of the evolution of the CORE requirements in the last decade highlights the many successes and the few failures the campus has experienced in its decade-long intensive focus on undergraduate education.

In the English and Mathematics Fundamental Studies courses, a number of improvements have been introduced. The freshman writing course has undergone revisions to strengthen its focus on academic argumentation in general. The range of choices in the upper-level writing requirement has expanded to include courses with emphases in legal, business, and medical writing along with the two original courses in advanced composition/argumentation and technical writing. Emphasis has been effectively placed not only on the importance of these writing courses, but also on the role of the faculty. All teaching assistants for the freshman writing course are required to take a graduate course in language and rhetoric. A series of workshops conducted by the campus-wide Center for Teaching Excellence (see below) serves as one example of initiatives designed to equip faculty of non-English departments with ways to incorporate more writing into their course assignments and to factor quality of writing into evaluation of performance.

New placement procedures developed to help students fulfill the one-course mathematics requirement have been particularly effective. Students are encouraged through a variety of ways to satisfy the requirement early in their studies, so as to take advantage of their recent secondary school mathematics experiences and to obtain as soon as possible the background needed for many upper-level courses. One of the positive changes in the undergraduate mathematics program is the recent addition of Math 113, College Algebra with Applications. This Fundamental Studies course was developed for certain majors in Behavioral and Social Sciences, Business and Management, and Life Sciences that do not require the rigor of Math 115, Pre-Calculus. Math 113 also prepares students in these majors specifically for their subsequent required mathematics course, Math 220, Applications of Calculus. As a result, more students in these majors now successfully complete their CORE mathematics requirement upon their first attempt, while at the same time learning the mathematical tools needed in their disciplines.

A second positive change is a new approach to the teaching of calculus. Active learning and reduced class size not only improved students' performance in this class, but also improved retention rates. A study comparing the "close-contact calculus" with the larger sections found that three years after taking this course, retention rates for the close-contact calculus students was ten percentage points (at 90%) higher than for the other students (80%).
The CORE requirement of nine distributive studies courses, designed to cover the broad areas of knowledge that each student should be familiar with—arts and humanities, social sciences and history, and natural science—has also been successfully implemented. Although the earlier University Studies Program included distributive studies course requirements, the CORE developed a much stricter set of criteria for inclusion, and established a Senate committee not only to approve but also to reassess courses, thus ensuring that the goals of the CORE are met in all approved courses. And it appears that over time the procedures for approval and assessment have been helpful in improving the quality of courses—not simply disapproving "bad" courses, but rather facilitating their revision and ultimate approval. The faculty committee working on course review, in turn, has been thoughtful in taking into account some criticism of its process, particularly in its initial reluctance to approve interdisciplinary courses for CORE.

The Human Cultural Diversity requirement was new under CORE. It has been well received by students, many of whom take more than the one required Diversity course. As of November 1996, there have been 136 courses approved as meeting the Diversity requirement. Additionally, there are usually another dozen or more courses approved for CORE Diversity on a one-time-only or trial basis for each semester. Determining what courses are appropriate to meet this requirement presents the faculty committee with special challenges and opportunities in maintaining and strengthening this important area of CORE.

The two-course requirement in CORE Advanced Studies ran into difficulties, with too few faculty proposing and offering to teach advanced courses appropriate for non-majors. From its inception, the requirement was flexible in permitting students to substitute a CORE-approved senior Capstone course in the student's major; but considering that the fall 1996 schedule of classes lists only twenty-three CORE-approved Capstone courses, with eleven being offered by the College of Computer, Mathematical, and Physical Sciences and the College of Engineering, this has not been a viable option for most students. Students also were permitted to substitute a senior or honors thesis, or an independent studies course outside the major for one of the Advanced Studies courses. In December 1994, the Advanced Studies requirement was relaxed and the restricted list of approved courses dropped. With some important limitations intended to preserve the academic intent of the requirement, students may now select from a much wider choice of courses to fulfill their Advanced Studies requirement.

The introduction of the CORE requirements presented numerous challenges for the University. It was necessary to continue delivering courses under the old University Studies Program, for continuing students still under those requirements, while at the same time building new offerings that satisfied the new requirements, applicable to the incoming students. These problems were compounded by the budget cuts imposed on the University at the same time as a consequence of the State's financial problems. Nevertheless, during the transition, the University used a combination of approaches developed by the Advisory Committee on Course Enrollment Statistics and Strategies (ACCESS) to ensure that students were able to enroll in the courses needed to fulfill CORE requirements. These approaches included the development of a Course Planning Cycle that provides information to colleges and departments concerning projected course demand, the creation of a flexible pool of funds (approximately 1% of the instructional budget) allocated annually by the Office of Academic Affairs to meet short-term course availability problems, and the managed flow of information to advisors about openings in underutilized courses. In the late
1980s and during the original years of CORE, University of Maryland students routinely experienced problems registering for required general education courses at the appropriate times in their academic programs, but more recently, course availability has no longer been a serious problem. The success of the ACCESS process at solving course availability problems has made it a national model studied by other institutions.

2. New Programs to Enhance the Undergraduate Experience

The Pease Report that introduced CORE also called for the creation of required freshmen seminars, small courses taught by senior faculty members. With the logistical and financial realities in mind, the Senate approved only a limited number of seminars for a two-year trial period. For a variety of reasons, including a lack of sufficient numbers of interested faculty and the beginnings of budget constraints, the trial effort was not extended, although the concept still held great appeal. Recently, the University has resumed educational experimentation with a range of courses and programs that attempt to provide enriched educational experiences on a smaller scale within the setting of the large research university.

Although the University Honors Program has grown in popularity, it has maintained its quality by restricting its size according to its ability to offer Honors seminars to its freshmen and sophomores. Currently, in fall, 1996, 50 100-level Honors seminars are offered. Each seminar is limited in size to no more than 20 students so that each student can be encouraged to participate actively.

Two new University Honors programs, Gemstone and Honors Humanities, have been developed and have accepted freshman students for fall 1996. Gemstone, a collaboration between University Honors and the Clark School of Engineering, creates interdisciplinary teams of talented students who will work together for four years to study solutions to a major social-technical issue such as cost efficient transportation or privacy and the Internet. About half the students are Engineering majors; the others originate from colleges such as Behavioral and Social Sciences; Business and Management; Computer, Mathematical, and Physical Sciences; and Life Sciences. Honors Humanities, a collaboration between University Honors and the College of Arts and Humanities, is aimed at academically-talented students in their first two years who would like to build a strong foundation in the humanities, regardless of their majors. The program involves a "gateway" team-taught opening seminar, a choice of three interdisciplinary seminars, four special honors-versions in the humanities, and two additional semesters of foreign languages. In each of these programs, students are urged to live together in a special dormitory.

The University established the College Park Scholars program (see above, I.A.4) in 1994. This program selects 575 incoming freshmen each year who will participate as groups in one of several interdisciplinary, thematically linked programs of studies and an intellectually enriched residential program. Students also have special opportunities to participate in internships, service learning and volunteer opportunities, as well as to study abroad.

First Year Focus and Course Clusters, designed for intellectual coherence and social cohesion, embody a somewhat different strategy but are also intended
to improve the quality of the first two years of an undergraduate's experience at College Park. These are sets of classes that are limited to 20-25 students. Each set of classes is attended by a cohort of students that focuses on a single theme, such as "Body and Mind" or "Justice for All?" In this way, students see the relevance of all disciplines to social issues, and, as in each of the programs described here, they also have close contact with one another and with faculty, giving a "small college" feel to the program.

The new CORE World Courses, launched in the fall of 1996, are also intended to offer a much larger number of students a special course opportunity. The team-taught interdisciplinary World Courses, which also satisfy CORE distributive studies requirements, explore contemporary, broad topics from multiple perspectives, but are taught in classes larger than seminars and use faculty and some teaching assistants to conduct discussion sections.

The Pease Report encouraged departments to establish upper-level seminars and capstone courses for all majors to give seniors special contact with scholars in their fields and to provide a model of intellectual discussion and analysis prior to graduation. Central to these courses would be complex analysis, both in groups and individually, and extensive research and writing. Only a few departments yet offer or require senior seminars or Capstone courses for all majors, but where established, these initiatives have been successful.

Another avenue to individualizing the undergraduate curriculum is experiential learning. Opportunities for learning outside the curriculum abound at the University. Some majors, such as education, journalism, and women's studies—as well as special programs, such as certain tracks in the College Park Scholars—require internships. Participation in all kinds of internships and experiential education has increased in the past decade: The Career Center sponsors up to ten workshops each year to help students find internships and part-time and co-op positions that relate to their programs of study. The Center has a World Wide Web site and publishes a constantly updated list of internship and job opportunities for students. Other campus agencies, such as the Study Abroad Office, help students with learning opportunities that extend beyond classrooms in College Park. Some 250 students each year participate in Study Abroad.

3. Recruitment

Admissions constituted another major concern of the Pease Report, the subsequent Enhancement Plan, and other recent reports, including the Strategic Plan. As stated in President Kirwan's May 10, 1989, letter to the Board of Regents: "[The University of Maryland at College Park] aim[s] to become an institution that attracts outstanding students from Maryland and around the nation. We must make changes in support for undergraduates...that will send a clear signal to prospective students that things have changed at College Park. We will strive to recruit a highly diverse group of men and women who share a seriousness of education purpose."

In the Enhancement Plan, three admissions goals were set. First, to increase the admission, as freshmen, of students whose academic profiles suggest exceptional
ability. Indeed, "flagship status," conferred on College Park by the Higher Education Act of 1988, was directly linked to educating the State's very best students. For example, it was observed that too many of Maryland's Merit Scholars attend college out-of-state, and that the loss of human capital to the State is enormous. Second, the campus committed to retaining an ever-increasing number of students who have excelled in lower division studies, and to attracting especially promising transfer students. And thirdly, the campus affirmed its equally strong commitment to recruiting a large and increasing number of students from groups that have not been served well by higher education in the past.

To meet these goals, the University has increased overall recruitment efforts, and especially efforts aimed at high-achieving students and under-represented groups. It has expanded on-campus visitation programs, including a summer science, mathematics, and engineering program to interest women and minorities in these fields. A new electronic information service to high schools and community colleges throughout Maryland has led to improved communication with potential applicants. The Maryland Alumni Admissions Program, which encourages alumni participation in student recruitment, has also been enhanced.

The University is aware that its many special programs designed to bring depth to the curriculum also have a recruitment function, and these programs have been promoted and highly publicized in the State and nationally. Certainly the strengthening of the Honors Program has attracted more of the State's very best students (see below), and the College Park Scholars program has successfully drawn in an increased number of students at the next level of achievement. Currently, the University offers 36.5 percent of freshmen the special recognition of admission into the Honors or College Park Scholars programs.

The University's recruiting strategies have also included scholarships targeted at special groups. Scholarships awarded on the basis of merit are intended to recruit the highest achieving students. From 1989 until 1995, the University provided up to 50 four-year, full-expense Francis Scott Key scholarships for academically talented freshmen of all races and backgrounds, plus an equal number of similar Banneker scholarships aimed at talented African-American freshmen.

As a result of these efforts, the quality of incoming freshman talent levels has continued to increase as measured by several indices. The recentered SAT scores of incoming freshmen are at an all-time high. The data in the table below show the shift in distribution upwards is consistent with the goals for recruitment.
Chapter I - Assessing Accomplishments in the Educational Mission

### Recentered SAT

<table>
<thead>
<tr>
<th>SAT Score</th>
<th># 1991</th>
<th># 1996</th>
<th>% 1991</th>
<th>% 1996</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500</td>
<td>47</td>
<td>86</td>
<td>1.4</td>
<td>2.4</td>
</tr>
<tr>
<td>1400 - 1490</td>
<td>109</td>
<td>198</td>
<td>3.3</td>
<td>5.4</td>
</tr>
<tr>
<td>1300 - 1390</td>
<td>301</td>
<td>515</td>
<td>9.1</td>
<td>14.2</td>
</tr>
<tr>
<td>1200 - 1290</td>
<td>728</td>
<td>978</td>
<td>22.0</td>
<td>26.9</td>
</tr>
<tr>
<td>1100 - 1190</td>
<td>1124</td>
<td>1073</td>
<td>33.9</td>
<td>29.5</td>
</tr>
<tr>
<td>Below 1100</td>
<td>782</td>
<td>706</td>
<td>23.9</td>
<td>19.4</td>
</tr>
<tr>
<td>No SAT</td>
<td>222</td>
<td>82</td>
<td>6.7</td>
<td>2.3</td>
</tr>
<tr>
<td>Totals</td>
<td>3313</td>
<td>3638</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The admissions process for the fall, 1996, freshman class was more competitive than ever, with over 17,000 students applying for 3,700 places, an increase in the number of applicants of nearly 10% over the previous year. The percentage of applicants being offered admission dropped from 67 to 60 percent. This class will have the highest average SAT score in the University's history. Nearly 15% of the entering class achieved a perfect high school GPA of 4.0; overall, the average GPA of the University's entering students rose from 3.23 in fall, 1995, to 3.45 in fall, 1996.

The quality of students entering special programs--College Park Scholars, University Honors and the new Gemstone/Honors Humanities programs--is outstanding. The entering class in Fall 1996 includes students in College Park Scholars with mean SAT scores of 1235 and high school GPA of 3.68; students in University Honors with mean SAT scores of 1343 and GPA of 3.91 (a high school GPA of at least 3.5 is required); and students in Gemstone/Honors Humanities with mean SAT scores of 1386 and GPA of 3.95.

One goal of the recruiting strategy was to increase the number of good students who stay in Maryland at the University rather than leaving the state for neighboring institutions. An index of the University's success in the area is shown in the next table, which shows the changes in the major competition for admitted students. Simply put, students not electing to come to Maryland are now going to better schools than in the past. Students now perceive Maryland to be a peer institution with schools of a significantly higher academic reputation than they did ten years ago.
COMPETITION FOR ADMITTED STUDENTS

<table>
<thead>
<tr>
<th>Top 1986 Competitors</th>
<th>1996 Competitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMBC</td>
<td>Penn State</td>
</tr>
<tr>
<td>University of Delaware</td>
<td>Virginia Tech</td>
</tr>
<tr>
<td>Rutgers</td>
<td>University of Michigan</td>
</tr>
<tr>
<td>Towson State</td>
<td>University of Virginia</td>
</tr>
<tr>
<td>Salisbury State</td>
<td>University of Delaware</td>
</tr>
</tbody>
</table>

4. Diversity in the Undergraduate Student Population

Beginning in 1979, the University of Maryland at College Park provided special scholarships to recruit African Americans. These Banneker Scholarships, however, were ruled illegal in a number of recent court cases of national significance, up to and including one in the U.S. Supreme Court. The University fought hard to defend the Banneker scholarships, and, having lost, has committed itself to identifying other strategies to maintain a diverse student body. The name "Banneker" has been incorporated into the renamed, combined merit scholarship program (Banneker/Key Scholars) as a signal of that commitment. The number of Banneker/Key freshman awardees rose from 71 in 1995 to 148 in 1996; an attempt will be made to stabilize the number at 105.

Despite the obstacles created by the elimination of the Banneker Scholarships, the University has continued to improve the diversity of the incoming class, especially the proportion of African-American students, as shown in the following table:

DIVERSITY OF FIRST-TIME FRESHMAN CLASS

<table>
<thead>
<tr>
<th></th>
<th>Fall 1986</th>
<th>% Distrib</th>
<th>Fall 1991</th>
<th>% Distrib</th>
<th>Fall 1996</th>
<th>% Distrib</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>508</td>
<td>12.3</td>
<td>443</td>
<td>13.4</td>
<td>570</td>
<td>15.7</td>
</tr>
<tr>
<td>Hispanic</td>
<td>107</td>
<td>2.6</td>
<td>148</td>
<td>4.5</td>
<td>192</td>
<td>5.3</td>
</tr>
<tr>
<td>Asian American</td>
<td>350</td>
<td>8.4</td>
<td>481</td>
<td>14.5</td>
<td>433</td>
<td>11.9</td>
</tr>
<tr>
<td>American Indian</td>
<td>13</td>
<td>0.3</td>
<td>11</td>
<td>0.3</td>
<td>14</td>
<td>0.4</td>
</tr>
<tr>
<td>White American</td>
<td>3078</td>
<td>74.3</td>
<td>2138</td>
<td>64.5</td>
<td>2253</td>
<td>61.9</td>
</tr>
<tr>
<td>Foreign</td>
<td>74</td>
<td>1.8</td>
<td>65</td>
<td>2.0</td>
<td>67</td>
<td>1.8</td>
</tr>
<tr>
<td>Unknown</td>
<td>15</td>
<td>0.4</td>
<td>27</td>
<td>0.8</td>
<td>109</td>
<td>3.0</td>
</tr>
<tr>
<td>Totals</td>
<td>4145</td>
<td>100.0</td>
<td>3313</td>
<td>100.0</td>
<td>3638</td>
<td>100.0</td>
</tr>
</tbody>
</table>

5. Improvements in Teaching
A major concern in the Pease Report was pedagogy and the learning/teaching environment. In addition to curriculum modifications, the report also recommended increased incentives for improved teaching, attention to teaching in the promotion process, and the creation of a center to support undergraduate teaching.

A significant number of incentives for involving regular faculty in undergraduate education have been introduced at the campus level. These include new programs that reward excellence in undergraduate teaching while offering the opportunity (and funding) for the development of new courses and pedagogical innovations: the Lilly-Center for Teaching Excellence Teaching Fellows (ten per year); the Distinguished Scholar Teacher program (five or six per year); the Celebrating Teachers Award (nominated by top graduating seniors); and the Departmental Excellence in Teaching Award (nominated by department chairs). There has also been an increase in departmental teaching awards. The 1996 University of Maryland at College Park brochure, *Faculty Awards and Development Programs*, lists 15 departmental awards recognizing excellence in undergraduate teaching. Additionally, various student and parent organizations provide recognition and awards for good teaching.

There has been an increase in the emphasis on undergraduate teaching in considering appointments, promotions and tenure. A measure of this change in emphasis can be observed by noting that the 1991 promotion/tenure procedures contain only five sentences on evaluation of teaching, while the current guidelines contain a one-page, very thorough prescription for the evaluation of teaching and advising. Additionally, a new Periodic Evaluation of Faculty Performance (post-tenure review) is to include a teaching portfolio so that teaching will be an ongoing component in the evaluation of faculty.

The University has not only mandated incentives for the improvement of undergraduate education, it also has offered assistance to achieve that improvement, including the following:

- The Institute for Instructional Technology (IIT) was formed in 1995, jointly sponsored by Academic Information Technology Services and the Center for Teaching Excellence (see below), to provide training and support services for faculty and teaching assistants wishing to adopt new technologies for their teaching. The IIT conducted a two-week training program in August of 1995 with fourteen attendees; in 1996, the IIT conducted a series of workshops. The IIT also provides materials and support for the AT&T and IBM-TQ teaching theaters, two high-tech, state-of-the-art classrooms equipped with networked computers for the students, and superb audio-visual capabilities.

- The Curriculum Transformation Project (CTP) was set up to assist faculty in including more materials on diversity (gender, race, class, sexuality and ability) in the undergraduate curriculum. Since 1989 a total of 82 faculty have participated in CTP programs. More than three-fourths of the CTP participants have since submitted revised syllabi for courses taught. The Engineering College has this year started a CTP aimed at the engineering curriculum; nine faculty and undergraduate teaching fellows are involved.

- The Center for Teaching Excellence (CTE), established by the Dean for Undergraduate Studies in September, 1990, is perhaps the most ambitious of
these initiatives. Its purpose is to support campus-wide efforts to enhance and to reform undergraduate education, and to offer tangible assistance to individual faculty and teaching assistants, as well as to their departments and colleges. The CTE provides resource packets, videos, and printed materials on topics including Cooperative Learning, Effective Lecturing and Effective Discussions. It annually hosts about a dozen workshops, involving several hundred participants, on current topics in teaching and learning. These workshops are augmented with individual counseling of teachers. In addition to the Lilly-CTE Teaching Fellows Program, the Center also offers training and support to improve instructors' sensitivity to diversity and to enhance inclusion and respect for all students (the Classroom Climate Project). Since the fall of 1994, the CTE has sponsored with the Graduate School the Graduate Teaching Assistants Orientation to complement the more specific training offered within the individual departments (see below, I.C.4). Additionally, the CTE runs a program of training for high-achieving, advanced undergraduates who participate in the Undergraduate Teaching Assistant Program, involving 50 undergraduates assigned to faculty mentors. The CTE awards between $40,000 and $50,000 a year for Instructional Improvement Grants; current awards include support for CORE Human Cultural Diversity Courses and for college/department teaching mini-centers (providing release time, graduate student support, materials, and workshops at the "grass roots" level). Finally, the CTE publishes a quarterly newsletter featuring highlights of Center activities, faculty projects, and innovations related to teaching in a wide variety of disciplines, as well as practical tips on improving instruction.

C. Graduate Education

1. Responses to New Demands

Graduate education at the University of Maryland at College Park must reflect the continuing development of new knowledge both within and across disciplines. The University has responded to new demands on graduate education with the creation of new programs and revised curricula. The University also began a major commitment to fellowship support for graduate students in 1985 to attract and to retain better graduate students.

a. New Programs and Specializations

In response to external demand and opportunity and developing faculty interests and strengths, the University has created 4 new Ph.D. programs, 11 new Master's programs, and 3 new graduate certificate programs since 1986. In the Life Sciences, a Ph.D. program in Molecular and Cellular Biology and an M.S. in Conservation Biology were established. In the Social Sciences, an interdisciplinary professional Master's degree program in Survey Methodology was established through a grant from the National Science Foundation, and a Ph.D. was subsequently approved. An interdisciplinary Ph.D. in Neural and Cognitive Sciences was started. In Engineering, an M.S. and a Ph.D. in Reliability Engineering were created, and new Master's degree programs were started in Fire Protection Engineering, in Systems Engineering, and in Telecommunications; in addition, a Professional Master's degree program was initiated. A joint professional Master's degree in Software Engineering was also started in partnership with a sister campus, the University of Maryland
University College. In the Humanities, new Master's programs were developed in Creative Writing and in Russian Language and Linguistics.

The areas of the majority of these programs are consistent with the Strategic Plan's recognition that "we now possess a number of strong graduate programs in science and technology, public policy, and professional schools." These new programs build on existing strengths, many of them using existing courses, to meet needs and opportunities presented by society. Most of the resources for the new programs were obtained by reallocation.

Not all new activity was focused on Master's or doctoral programs. The School of Public Affairs initiated certificate programs in Environmental Policy, and in Housing Finance and Development, and Women's Studies developed a graduate certificate program. The Sociology Department received a grant from the U.S. Army to create a special training program in military sociology.

Not only have new thrusts in disciplines and faculty strength led to new graduate programs, they have also resulted in a considerable amount of curriculum revision within existing departments and graduate programs. To name a few instances, the Philosophy Department added a cognitive studies Ph.D. specialization, which allows for interdisciplinary research with areas such as computer science, linguistics and psychology; and the Department of Health Education is adding a new family studies specialization to its Ph.D. in collaboration with the Department of Family Studies, to be supervised by faculty from both departments. The interdisciplinary program in Marine-Estuarine-Environmental Sciences (MEES) recently defined six formal areas of specialization from which students may choose for graduate study. Additionally, two colleges, Life Sciences and Agriculture and Natural Resources, are in the process of reorganizing their departments to better represent the current state of research in their disciplines.

b. Graduate Fellowships

Beginning in 1985, the University committed funds to support a major new graduate fellowship program as a key instrument in the active recruitment of talented graduate students. Not only was the number of awards significantly increased, but the stipend also was raised to a respectable level for competition with offers from other universities. The Graduate School has established a fellowship program that is a model in its ability to select the best students to whom to award these fellowships. Fellowships are awarded through a system of campus-wide competitions conducted by the Fellowship Committee of the Graduate Council. In the past five years, full fellowships have been offered to approximately 1,500 applicants, and more than 700 fellowships have been awarded to new students in approximately 60 graduate programs.

Moreover, in keeping with efforts to recruit graduate students who had previously been under-represented in graduate education and to forward State desegregation goals, the University committed a second large amount for recruitment of minority students, with African Americans as the targeted group for the largest number of fellowships.

In 1995, a program of awarding block grants of funds to individual graduate programs to support recruitment of graduate fellows was initiated. This program was designed to permit programs of demonstrated excellence to develop innovative
methods for recruiting the top young scholars by offering them fellowships that are exceptional in their amount, duration, and other characteristics. The block-grand program, now in its second year, is a powerful tool for permitting more latitude to the top departments to tailor their fellowship offers specifically to their programs. In the most recent competition, 12 departments won block-grant awards ranging from $10,000 to $45,000, each for a two-year period.

The Graduate Council Committee on Fellowships developed a very successful system of support that included three types of awards, based on academic accomplishments and potential: fellowships, first-year grant awards, and grant-assistantships for students beyond their first year who participate in the teaching and research responsibilities of their departments. The pool was gradually expanded to accommodate also Hispanic Americans and Native Americans. The increase in numbers of students supported is striking:

<table>
<thead>
<tr>
<th>MINORITY GRADUATE STUDENT SUPPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
</tr>
<tr>
<td>Fellowships</td>
</tr>
<tr>
<td>Grants</td>
</tr>
<tr>
<td>Grant-Assistantships</td>
</tr>
<tr>
<td>Hispanic and Native American</td>
</tr>
<tr>
<td>Fellowships</td>
</tr>
<tr>
<td>Grants</td>
</tr>
</tbody>
</table>

Support of this magnitude led to an increase of students attending full-time in doctoral programs and resulted in impressive graduation rates for minorities. According to a report of the National Research Council in spring 1996, for the five-year period from 1990-1994, the University of Maryland at College Park ranked fifth in the nation in producing the largest number of African-American doctoral degree holders, was first among large, state public research universities, and was third among Level I Research Institutions, coming behind only Howard University and Columbia University. The University’s ranking for Asian-American Ph.D. graduates was equally impressive at 14th.

2. Diversity in the Graduate Student Population

Although some restrictions on support for specific minorities may result from recent court decisions, the University continues its commitment to increasing the diversity of the graduate student body. Departments, colleges and the Graduate School have a wide variety of recruitment activities and funding opportunities, which they use to attract a broad racial, ethnic and gender mix to the university. Several graduate programs have established mentorship programs to improve the retention rate of their minority and female graduate students.
In 1988, the Graduate School set as a goal an increase in the recruitment and retention of minorities and women in disciplines in which they have been underrepresented. To that end, in 1989 the Graduate School established the Office of Graduate Minority Student Education, which has initiated several successful activities, such as a visitation program that brings almost 100 minority students to campus each fall and a campus-wide recruitment effort that sends representatives from various colleges and departments to other universities and regional graduate education fairs. In addition, the Office has received external and internal support for a summer research program during which minority undergraduates pursue research with University of Maryland faculty. The Associate Dean for Minority Student Education is also concerned with retention and graduation rates of under-represented groups, and sponsors special programs throughout the year to help them acclimate to the demands of graduate school. Workshops are offered on fellowship opportunities for graduate students and advanced undergraduates, and workshops on postdoctoral fellowships for graduate students nearing the completion of their degrees.

These efforts are bearing fruit. Doctoral enrollment by subgroup has gone from 30.9 percent white American women to 33.9 percent; from 5.5 to 9.4 percent minority women and from 4.3 to 8.5 percent minority men during the period of fall 1989 to fall 1995. These aggressive recruiting and retention efforts have brought a rich texture of diversity to graduate programs across campus and have led the University to the top in the number of minorities it graduates (see above I.B.1).

3. Graduate Student Government

Although graduate students have long been represented on the campus governing groups, the Campus Senate and the Graduate Council, in 1986 the Graduate School reactivated a graduate student organization, now known as the Graduate Student Government (GSG), as a way for graduate students to foster a sense of camaraderie and to participate officially in the activities of the University. The Graduate School supplies graduate assistantships to support the activities of the president and the research day coordinator of the GSG.

The University learns about the variety of graduate research through Graduate Research Interaction Day (GRID), co-sponsored by the GSG, the Graduate School, and the University of Maryland chapter of Sigma Xi, The Scientific Research Society. In GRID, graduate students have the opportunity to explain their work to the campus and compete for awards. Students submit abstracts in advance, and the entire day is devoted to graduate student presentations of their research, followed by a student-faculty reception at which the awards are announced.

The GSG played an important role in creating the Office of Graduate Student Legal Aid and in having the graduate student fee increased to cover the cost of the Office. The Office handles all graduate non-academic complaints, as well advising graduate students on general legal matters.

4. Graduate Teacher Training

At the University of Maryland, as at most other large research universities, graduate students play a major teaching role as teaching assistants. The University has recognized the enormous importance of preparing these students for the classroom or laboratory. The Center for Teaching Excellence (CTE) formed a collaboration with
the Graduate School to help improve the quality and quantity of TA training. In a campus-wide orientation, 250-400 new TA's receive information about University policies, advice from panels of experienced faculty and graduate students, and the opportunity to participate in workshops that cover topics from classroom demeanor to grading. Additionally, most of the departments and colleges have their own specialized training program to help graduate students learn the skills necessary for successful teaching in the different disciplines.

Teaching assistants for whom English is a second language are required to undergo an additional orientation and screening. The Maryland English Institute (MEI) runs a one week orientation designed to address cultural differences in the American classroom while, at the same time, carefully screening the language ability of the new teaching assistants by means of tests, conversations, and mini-lectures. The University has been a pioneer in addressing the language problem for teaching assistants, and this orientation and screening is one of the most extensive in the nation. Teaching assistants whose mastery of spoken English is deemed inadequate are required to take an MEI-run English-as-a-foreign-language course, designed especially for teaching assistants and paid for by the University, before they may be used in the classroom.

The Institute for Instructional Technology provides extensive workshops for faculty and teaching assistants in technology applications designed to improve teaching and learning (see above, I.B.5).

D. Research and Creative Activities

The University of Maryland at College Park has enjoyed notable successes in the last five years in its research activities. These successes range from basic to applied research, from artistic performance to research as a service and include every major area of the University. Researchers can be found working in groups with the latest technology or working as solitary scholars laboring through a manuscript collection. Research can require millions of dollars in federal funds and the support staff to administer the funds, while other research is supported in a department's supplies of paper or paint. Some research is published electronically before it is outdated, while some monographs may take decades before they are ready for publication. The University takes justifiable pride in recognizing the full range of research and the variety of measures for successful research.

1. Accomplishments in Research and Creative Activities

Research success mainly depends upon a research faculty committed to the advancement of knowledge and to the education of the next generation of researchers. The University, often competing with the best research universities, has recruited and retained world renowned scientists, scholars, and artists. A measure of success is that the University now includes nine members of the National Academy of Science and three members of the National Academy of Engineering. Indeed, of the 60 fellows elected to the National Academy of Science in spring, 1996, two were from the University. In fiscal year 1996, a total of $146,826,747 was received by members of the University faculty for research, training, and other scholarly or artistic activities.

While research success is mainly a product of a research faculty, in many areas it requires facilities for the research and related activities. The University of Maryland at College Park has added significantly to the quantity and quality of
facilities: since 1985-86 over 1,230,000 square feet of classroom, laboratories, offices, and other research facilities have been added and 88,000 square feet of major renovations completed.

The University benefits from its location in the nation's capital, and the proximity to federal research laboratories and facilities that are unmatched anywhere in the world. University faculty and students benefit from ties with major federal agencies, including the USDA, EPA, NIST, and NASA. In the last five years Archives II, a major extension of the National Archives consisting of a large six-story building with an initial records storage capacity of 2 million cubic feet, has located adjacent to the campus, providing the University with extraordinary advantages as a site for scholarship on history and public affairs. Proximity to the Library of Congress, the National Medical Library, the Agricultural Library, the Smithsonian Institution, Dumbarton Oaks, and the Folger Shakespeare Library gives easy access to many scholarly materials. Proximity to federal and international agencies provides advantages in obtaining research grants. It also helps build partnerships between faculty, students, and federal agencies, an opportunity the Graduate School will focus on in the future in building the University's research expertise and extending benefits to more of our students.

Faculty are increasingly crossing boundaries of their specialties as the demands of new technologies and new problems create the need for interdisciplinary approaches to research. The University of Maryland is proud to be in the vanguard of interdisciplinary efforts that, for example, join geology, geography, natural resource management and computer science in environmental studies; that join aerospace, chemical, mechanical and electrical engineering in the development of "smart structures"; that join zoology, linguistics, psychology and computer science in the Cognitive and Neural Sciences Program; and that merge business and engineering in the application of Total Quality Management principles to industry.

This report can only list a few of the numerous examples of research activities at the University of Maryland at College Park that are making important contributions to knowledge and to students' education. Any short listing will be incomplete, but a sampling of some of the activities will help form a better understanding of the University's research enterprise.

The University's programs in the physical sciences and engineering are comparable with those in the best public universities. Computer-based geographic information systems are now being used to analyze geographical, geological, environmental, political, social and other data. The Computer Science Department is a leader in developing this technology. The Grand Challenge Project on Land Cover Dynamics funded by the National Science Foundation provides support for the development of software to process automatically image data that have previously taken very long periods of time to translate into images. Researchers in Biological Resources Engineering are combining geographic information systems with digital satellite imaging to study nutrient runoff from crop fields to Chesapeake Bay tributaries.

In August 1996 NSF awarded 8.28 million dollars for five years to support the establishment of a Materials Research Science and Engineering Center. The Center will have an interdisciplinary focus that is represented by 20 faculty from three colleges and five units. The research effort focusses on basic understanding of how atoms arrange themselves on surfaces of materials and on the development of new
materials that exhibit the phenomenon of giant magnetoresistance. It builds upon areas of established preeminence and promises to have an impact in microelectronics, communications, data storage technology, lubrication, and catalysis. A significant component of the Center's activities will be an effort to integrate education and research. The focus of this effort will be to emphasize the role of science in the modern world to undergraduate and pre-college students.

The high-energy experimental group of the Physics Department played a significant role in the major collaborative experiment that discovered the top quark, one of the significant "missing" particles that had been predicted by the "standard model." That group has received a 7.5 million dollar five-year DOE grant to continue its work. In the same department, a faculty member in the Center for Superconductivity has developed a new scanning magnetic microscope capable of measuring magnetic fields over very small regions. The microscope is being used to study the properties of high-temperature superconductors.

The Department of Meteorology has developed a close relationship with the Maryland Department of the Environment to monitor and predict ozone levels in metropolitan areas. This research was used to examine the impacts of the sweltering heat of July, 1995, to alert scientists and federal and state officials to dangerous air quality conditions.

The Institute for Plasma Research was awarded 7.5 million dollars by the U.S. Department of Defense to establish in collaboration with industry a new ion beam research facility, aimed at extending the use of ion beams in integrated circuit manufacturing.

University research on "smart structures," a material or structure able to sense its internal state, its external environment, and to adapt itself to maximize its performance, has provided important benefits to industry and special opportunities for students. Many of these projects have involved numerous departments and partnerships with federal agencies or private industry. A notable example is the project between the Smart Materials and Structures Research Center and McDonnell Douglas to redesign the rotor blades of helicopters to provide the most effective, cheapest design that meets performance standards.

Similar examples exist in the social and behavioral sciences, in arts and humanities, and in the professional schools. The College of Education supports a project using cutting-edge multiple technologies to enrich teacher and student learning in middle schools. The Economics Department's Center on Institutional Reform and the Formal Sector has received grants exceeding 10 million dollars to study the role of political institutions in economic development, demonstrating the critical role of secure property rights and an environment of legally enforceable contracts in promoting the private investment needed for economic development.

Research is central to the advance of the humanities. Major projects in art, art history and archaeology include the immensely successful Vermeer exhibit at the National Gallery of Art, curated by a member of the University of Maryland faculty; archaeological excavations at rescue sites at Qua, Cross River, Nigeria; projects on the art of Shanghai, funded by the Luce Foundation; and excavations of and publications on the painted tombs of Oaxaco, Mexico. The Center for Nineteenth-Century Music conducts the Repertoire international de la presse musicale one of four international cooperative bibliographic undertakings. The Department of Women's Studies received a $200,000 Ford Foundation grant for Women and Gender
in an Era of Global Change, a project with research, teaching, and conference components. The Department of History is home to the publications of the papers of Maryland founder Charles Carroll, labor leader Samuel Gompers, and African-American spokesmen Booker T. Washington, along with records of Civil War emancipation (the Freedmen and Southern Society Project). Together with the National Archives, the Department of History has a major project for cross-cultural research and training for American and Chinese archivists.

The arts have also taken advantage of modern technology and science to spur on new formulations of universal truths. The College of Arts and Humanities also sponsors several computer-based research and teaching projects. The Electronic Media Center is a focal point for engaging new technologies in teaching, learning, research and artistic production. The Music Department has computer music studios for composition and a Musical Instrument Digital Interface (MIDI) Lab with software for music sequencing, notation, music theory and ear training, and algorithmic accompaniment for jazz improvisation. The Museum Educational Site Licensing Project (sponsored by the Imaging Initiative of the Getty Art History Information Program) is a collaborative project (with the University of Michigan, Columbia University, Cornell University, University of Virginia, and University of Illinois, American University and several museums) which is developing procedures and policies for digitizing and distributing museum-owned images. The Department of Linguistics runs laboratories for experimental psycholinguistics, and research in language development, including a laboratory devoted to an eye movement recording system.

The performing arts departments present an enormous number of performances each year. For example, the School of Music alone organizes over 500 events a year, including master classes and performances of the Chamber Choir, the Symphony Orchestra, the Theater Orchestra, the Maryland Opera Studio, the String Quartet, the Woodwind Quartet, the Brass Quintet, and the Jazz Quintet. Student-Faculty recitals are on-going events open to the University community and the public. The University is also particularly well-known for its sponsorship of the Handel Festival, a national model for the conjunction of scholarship and performance.

These and other activities will be nurtured by the new Maryland Center for the Performing Arts, now under construction. This elaborate new structure will foster excellence and innovation in dance, music, and theater through education, performance, research and community service.

2. Research in Support of Economic Development in Maryland

In many areas in the nation, public research universities--especially those founded as land-grant institutions--have been catalysts for economic development and providers of a wide range of professional services. Historically, the University of Maryland has been instrumental in improving business and agricultural practices throughout the State, helping to preserve the State's priceless natural resources, fostering economic growth by aiding in the development of new technologies and products, enhancing the quality of education in the public schools, and enriching the cultural life of citizens throughout the region. The research activities of the University of Maryland make major contributions to the Maryland State economy and to its citizens.
Direct Economic Benefits. The University of Maryland is a major employer and its activities have second-order effects on the State economy, by creating income and employment opportunities in other industries. Many of these employment effects will be in the geographic area surrounding the University. With over 10,000 permanent employees, of whom 4,000 are not on State funding, the University is one of the largest employers in the State, and a significant fraction of its activities are traceable directly or indirectly to its research mission.

The presence of the University of Maryland is also a factor in attracting and retaining major employers. Past examples include the Goddard Space Flight Center and the National Security Agency. More recent examples include the American Center for Physics, Archives II, and a new 84 million dollars joint University of Maryland and Food and Drug Administration facility housing 900 employees.

Training the State's Work Force. The State of Maryland ranks among the nation's leaders in the proportion of its adult population with college and advanced degrees. The State's work force includes a disproportionately high fraction of persons in scientific and professional occupations. Indeed, the Baltimore-Washington corridor has by far the largest concentration of scientists and engineers of any area in the entire country including the areas around MIT, the North Carolina Research Triangle, Berkeley and Stanford, and southern California. The State's comparative advantage now and in the future will lie in knowledge-intensive sectors, in information processing, high technology manufacturing and services, and related areas, which require a skilled and adaptable work force. Its success is dependent on its ability to train, attract, and retain a highly skilled work force.

The universities in the State and the University of Maryland in particular play a critical role in providing this work force. Census data on mobility demonstrates this link. According to the 1990 Census, 59% of Maryland residents in their mid-twenties with a bachelors degree were living and being educated in the State five years earlier. Among those holding advanced degrees, 50% of those with Masters degrees and 30% of those with Doctorates in their late-twenties were living and being educated in the State five years earlier. The University of Maryland at College Park educates a substantial fraction of these Maryland workers who possess advanced degrees.

Other Economic Benefits to the State: Technology Transfer. A defining characteristic of every major center of high technology in the nation is a successful major research university. The University has put in place several programs to help it play that role in the State, and expects to do more to promote this end in the future. Moreover, well educated students themselves provide a most effective means for technology transfer: students who are educated at the forefront of technology because of their involvement in research, and are subsequently hired by industry, automatically bring these skills to industry in an optimal way.

One of the most effective organizations for transfer of technology from the University to the citizens of Maryland is the Cooperative Extension Service,
established through the Smith Lever Act of 1914. The Maryland Cooperative Extension Service currently employs approximately 250 field agents and specialists whose prime responsibility is to disseminate information developed at the University of Maryland and elsewhere to the citizens of the state. In 1995 alone, the Cooperative Extension Service had more than 1,000,000 contacts with Maryland citizens.

The Maryland Agricultural Experiment Station with a 16 million dollar budget has as its mission the enhancement of agriculture throughout Maryland. To that end its staff is engaged in several hundred projects.

The Engineering Research Center was formed in 1984 to foster collaboration between the University of Maryland and Maryland industry. Four different programs provide specific expertise. The Technology Extension Service provides on-site technical assistance to small and mid-sized companies, with extension agents in five regional offices linking companies with university faculty expertise. Free forums are provided to industry providing problem-solving on waste reduction, software for manufacturing production, and other topics. The National Governor’s Association has recognized the Technology Extension Center as one of five model programs in the nation.

Other programs include the Maryland Industrial Partnerships, which provides matching grants to companies for joint research ventures with faculty and students at the university. The Technology Advancement Program is an incubator for start-up technology-based firms in Maryland. Support comes through providing space, laboratory equipment, computer support, product analysis, and other services, all with access to faculty expertise. Faculty in the engineering program and the Dingman Center of Entrepreneurship in the College of Business and Management are involved. The Technology Initiatives Program provides support in biotechnology, reliability engineering, computer software and other techniques, in partnership with Maryland firms.

Additional important private sector partnerships have been created through the Institute for Systems Research. Its activities include programs with Westinghouse on antenna assembly, with Hughes Network Systems on network management products, and with a Hagerstown, Maryland furniture company on productivity enhancement.

Although perhaps less tangible, the University through its research, service, and performance roles also provides remarkable societal benefits to the State and its citizens. Some examples of these are listed below:

Contributions to K-12 Educational Programs in the State. College of Education faculty share their research with state and local policy makers through participation in numerous commissions, task forces and panels, as well as through studies conducted for agencies in Maryland. These contributions include the identification of ways to enhance school effectiveness, the development of strategies for meeting the needs of exceptional children, improvements in teacher education and professional development, and the reform of mathematics education in schools and universities. In addition,
The Educational Mission of a Research University

Research supported by the federal government and foundations is used extensively by educators and human service providers in Maryland. For example, the National Reading Research Center assists in the development of ways to improve literacy; the Center for Children, Relationships and Culture is examining ways to reduce violence, improve the coordination of services to children, and engage in effective early childhood development programs; the Center for Human Resource Development works to improve rehabilitation services; and the Center for Technology and Learning provides consultation and network development support to foster the effective use of computers and information technology to enrich learning opportunities for all children.

Social Programs. Since its inception, the Center on Aging has had as its mission improving the quality of life of senior citizens of the State of Maryland through its service, educational, and research efforts. The Center fulfills this mission in a variety of ways. First, its all-university, graduate certificate in aging provides the opportunity for graduate students to attain specialized knowledge and skills concerning aging and aging services. Many certificate holders find employment in the field of aging in Maryland upon graduation, thereby putting their new skills directly to work for older Marylanders. Second, the Center has initiated a number of interdisciplinary research and training activities with State of Maryland agencies intended to raise awareness about gerontologic issues and provide guidance related to improved service delivery issues for the elderly.

Nurture of the Spirit: Art, Drama, Dance, and Music. It is not for purely economic purposes that the arts are valued, for they elevate the spirit along with the GNP. The Center of Alliance of Students, Teachers, and Texts (CAST), a part of the Center for Renaissance and Baroque Studies, takes the teaching of drama and literature into communities throughout Maryland and brings area high school teachers to campus for special projects and seminars. The School of Music and departments of Art, Dance, and Theater serve both functions at the University of Maryland, training generations of artists, providing a fertile field for artistic experimentation, and inspiring students, faculty, and staff. With the arrival of the Maryland Center for the Performing Arts in 1999 that inspiration will reach regularly beyond the campus of the University to the neighboring community and to the state at large. The University of Maryland will become a major center for the creation and the production of artistic endeavors for the state and the nation.

3. Non-sponsored Research and Creative Accomplishments

Although there is considerable information about the research that is supported by contracts and grants, information about the large amount of research and other creative activities that are not so supported is much harder to come by. For example, there are data showing the number of books published in a given year, but the data do not reveal the nature of the books (monographs, textbooks, edited collections, etc.) nor how they were funded. The number of "creative activities" is recorded, but it is not clear what they are. The University recognizes that there is a need to better understand, recognize, and acknowledge the range of non-sponsored scholarly activities. It is hoped that the current expansion of the faculty database will make it easier for the University to speak of the quantity and quality of this kind of work.
One new effort that could serve as a way to generate research support even in areas for which sponsored support is not available is a set of awards the University has designed to recognize and reward faculty accomplishments as distinct from funding specific project proposals. These Distinguished Faculty Research Fellow awards are given to faculty for two years with an annual award of $5000 to be used for research purposes. Over time the program also would be used as a fund-raising opportunity to endow permanently these "mini-chairs."

E. Staff as Partners in Success

The University has been highly successful in the quality of its support services which work to enhance and to complement the educational mission of the institution. In addition to the significant accomplishments of the faculty, the classified and associate staff at College Park have achieved national and international recognition for their professional or community service activities. Several have served as presidents of national professional associations; others have received national or state awards for exemplary performance in their professional activities. Several have been appointed to national advisory committees, and some have accepted gubernatorial appointments to special task forces. The recognition of the accomplishments of selected classified and associate staff is also an important part of the annual Faculty-Staff Convocation.

Units such as Judicial Programs, the Health Center, the Counseling Center, Resident Life, Dining Services, and Commuter Affairs and Community Service Learning are recognized as being among the best in the country and are integrally important to providing a vibrant and attractive educational community.

! In 1995, the campus transportation service, Shuttle-UM, won the Neil Goldschmidt Achievement Award for Safety among all transit systems from the American Public Transit Association.

! The Office of Judicial Programs and its Director have been nationally recognized for leadership and innovation in student judicial and legal affairs.

! In 1991 the Dining Services received the award for the outstanding college food service in the country.

! The University Health Center and its Director have received numerous awards. The Health Center was the second free-standing health center in the country to earn accreditation.

The University of Maryland at College Park has much to be proud of. The accomplishments of its faculty and staff over the past ten years have been significant. Despite budgetary problems and uncertainties, the University has continued its progress in advancing its educational mission. Of course, there remain numerous areas where improvement is necessary, and a number of significant issues that will need to be addressed over the coming decade. The remaining chapters of this report discuss those areas and attempt to frame those issues.
Chapter II

Addressing Issues to Enhance the Educational Mission

Chapter I of this self-study assesses the progress the University of Maryland has made in the last decade in its educational mission. In addition to accomplishments in which the University can and does take pride, there are significant areas, identified in the Task Force reports, in which the University has made clear progress but has not yet achieved its goals. Chapter II focuses on some of these areas in which more work needs to be done. The particular items distilled from the reports for consideration are those the Executive Committee feels are most likely to enhance the educational mission of the University and are the areas that should receive highest priority for action.

A. Undergraduate Education

1. The Role of the Research Mission in Undergraduate Education

One great attraction of a research university for undergraduate students is that it provides them the opportunity to be exposed to research, often at the forefront of knowledge. Yet at many research universities a large number of their undergraduates spend four or more years without a clear concept of what research is and what the faculty do as scholars. Because research sometimes is portrayed as the enemy of teaching and this view is conveyed to parents and the community, students often see no value in the research mission to undergraduate education. This misconception needs to be, and can be, corrected. Undergraduates need to be involved in research activities to a much greater extent than they currently are. A student who spends four years at the University of Maryland at College Park and has not gotten involved with a faculty member doing research has not truly tapped the benefits offered at a major public research university.

The opportunities already available for undergraduates to participate in research give evidence of the many benefits to students of these activities. First, students learn about how knowledge is created and what it means to work in a chosen field. Students are challenged to examine existing knowledge critically and to be creative in approaching entrenched assumptions. Students are engaged, with faculty, in applying the principles, theories, and practices of their disciplines to contemporary problems and issues. Second, involvement in research gives the student an opportunity for personal interaction and contact with particular faculty in a way often missing at an institution this size. Faculty who work with students on research projects get to know their abilities and interests, have a better foundation for letters of recommendation, and can more accurately advise them on graduate opportunities. Third, without doubt, the experience gained makes those students more marketable when they graduate, whether they are looking for jobs or graduate schools.

Several programs currently exist at the University that foster undergraduate student participation in research, performance, and other creative activities. Students have the opportunity to take classes that utilize the most advanced scientific equipment and laboratories, to work with faculty on research projects in classes that are often interdisciplinary in nature or involve teams of students taking on complex projects, and to work as research assistants with faculty. Students in the Honors program may take
HONR 200, a seminar designed to explore research and the tools of research, while teams of students in the Gemstone program pursue a four-year research project. Over 30 departmental honors programs require the presentation of a senior thesis project. As support for these programs, the University provides 30 Senior Summer Scholarships of $2,000 each. In another program, the Undergraduate Research Assistants Program, students work about six hours per week during the academic year with their faculty mentor. Other programs are departmentally sponsored, or involve federal government support. For example, the Department of Civil Engineering sponsors teams of students working on an environmental problem, in competition with students at other major universities. Also, 35 undergraduates and 20 graduate students are currently working on space robotics and related projects with NASA support. Additionally, many individual principal investigators provide opportunities for undergraduate students to participate in their sponsored research.

The University needs to develop more research opportunities for interested and prepared undergraduates. The task force on Research recommended a number of initiatives to increase research opportunities for undergraduates, and to use those opportunities as a recruiting tool to attract students who desire and could benefit from a research experience. The task force recommended promoting the great advantage of the University of Maryland at College Park as the largest research university in the Baltimore-Washington region to link trained undergraduates to appropriate internships, employment, and graduate programs. The task force expressed concern about disincentives to directing undergraduate research such as the policy on faculty workload reporting, and recommended that the University address this issue.

Recommandation: Research is an essential and accepted part of graduate education, especially for students in doctoral programs. Because the University is a major research university with extensive research facilities and opportunities, it should also seek to make research an increasingly important part of the undergraduate education experience. It should therefore undertake to enhance and to increase opportunities for undergraduate participation in faculty research and performance activities as well as increase opportunities for individual research and performance activities. In doing so, the University must address any disincentives for both faculty and students, real or perceived, that might impede the achievement of this goal.

2. Improvements in Retention

The University has been aware of the need to improve retention and has initiated studies to define the problems associated with student retention and graduation rates. The Strategic Plan has now made increased retention rates a priority for the campus.

During the summer of 1995, the University administration sponsored a Continuous Quality Improvement Team on Retention (CQITR). The CQI team organized problems in four broad areas: campus management, financing education, campus climate, and mathematics preparation/success. Data analyzed by the team revealed the scope and nature of the retention problem.

A comparison to peer institutions showed that the University of Maryland at College Park is at the top for first-year retention and six-year graduation when
measured against comparable peers such as the University of Texas-Austin, the University of Arizona, and Ohio State University. When compared to aspirational peers such as the University of California-Berkeley, the University of Minnesota, the University of Michigan, UCLA, and the University of North Carolina-Chapel Hill, the University of Maryland is nearer the bottom. The University's six-year graduation rates, as percentages of incoming first-time full-time freshmen, are in the middle sixties, while three of the aspirational peers have six-year graduation rate percentages ranging from the middle seventies to the middle eighties.

The CQITR concluded that many common beliefs about retention are erroneous, especially the belief that most students who leave are in poor academic standing or did not belong here because of academic short-comings, and that, therefore, admitting better quality students will solve our retention problem. In fact, the University loses many high-caliber students who cannot be easily replaced by transfer students.

The issues associated with retention are complex; there is no single, 'magic bullet' solution. The CQI team offered twenty-three recommendations, and a Retention Action Group in the Undergraduate Studies Office initiated actions on these recommendations. By September, 1996, changes in the ACCESS planning cycle and improvements in mathematics placement were achieved. Many of the other recommendations are in states of advanced study, preparatory to implementation.

Recommendation: In accordance with the Strategic Plan, the University is committed to continue its efforts to improve undergraduate retention. The President has challenged the University to "set a five-year graduation rate goal of 70% for the freshman class that enters in the fall of 1997," a daunting challenge for students, faculty, and administrators. This is a worthy goal, made more worthy because of the increasing quality of the freshman class, and the University must marshal its resources effectively and creatively to meet this goal.

3. Student Assessment

The University continually assesses the progress of every student through coursework, exams, papers, and projects. The courses themselves must be approved by an array of committees, and are then assessed by the academic units. The academic programs also require approval and are periodically reviewed and assessed by faculty and outside experts. The faculty who do this assessing are themselves reassessed at promotion and salary times. Lately, however, there has been a call for a broader assessment of the students' experience, beyond their academic progress.

In the summer of 1996, the President established a permanent Continuous Quality Improvement (CQI) working group charged to assess the impact and effectiveness of in-class and out-of-class experiences on student learning, satisfaction, and ultimate success. This group, chaired by the Vice President for Student Affairs, took the name Campus Assessment Working Group (CAWG) and spent the summer becoming familiar with current and historical practices at the University for data collection.

Because a considerable amount of information already exists on students, CAWG's initial focus is on students; it will attempt to create profiles of student
attitudes, perceptions, and concerns, and make them available to a wide campus constituency. For this purpose, six areas have been chosen for attention:

- Studies of Entry into the University, covering the first-year experience for matriculants and transfers;
- Studies of Completion and Exiting the University, including the senior-year experience and graduate and alumni experiences;
- Studies of Retention and Attrition, including factors of student success and conditions that lead to various patterns of transfer, dropout, stopout, and withdrawal;
- Comparison Surveys, which will allow comparison of student experience at the University of Maryland at College Park with that at other similar institutions;
- Student Polling Groups, which will allow longitudinal studies of groups of students; and
- Student Profiles, by which the collected information will be disseminated.

The University is engaged in a process of outcomes assessment at the graduate level, as well. In Fall 1996, each graduate program has been asked to provide graduation and subsequent employment data for program evaluation.

**Recommendation:** It is important that the University continue to explore constructive approaches to student outcomes assessment that help to demonstrate institutional effectiveness while generating useful information for academic and student services. The purpose of such an assessment program should be to enhance the University's efforts to provide quality educational programs in a quality educational environment for all of its students.

4. **Strategic Plan Initiatives**

The achievements in undergraduate education have fulfilled many of the goals the University undertook in accepting the Pease Report. On some points resource limitations imposed compromises, but there also have been enhancements of undergraduate education, such as College Park Scholars, that were not envisioned in the Pease Report. The Strategic Plan lists several important initiatives to help the University continue its goal of achieving excellence in undergraduate education:

a. *Increase funding for the University Honors Program to insure that ample numbers of courses and seminars will be taught by the campus's best faculty; increase funding for the College Park Scholars program and invite proposals from units for several additional living-learning programs.*

b. *Target private giving to increase annual expenditures for merit scholarships; increase need-based aid, and expand the number of opportunities for undergraduates to participate in faculty research activities.*

c. *Provide tangible incentives and rewards for those units and faculty who are prepared to take measures that will significantly enhance the quality of their undergraduate major programs and related activities, for both general and honors students.*
d. Direct the college deans and selected faculty to work with the Director of Undergraduate Admissions to develop measures that will increase the number of academically-talented students enrolling at College Park, with special emphasis on recruiting larger numbers of academically-talented minority students. Among the specific measures to be considered:

Creating a National Leadership Fellows Program for outstanding freshmen interested in studying public policy (which could include internships on Capitol Hill with home-state legislators, along with other federal agency or White House internships; a waiver of out-of-state tuition for students selected for the program; special recognition from home state media; etc.); and

Developing a set of computer applications for students to provide access to academic information such as syllabi, as well as access to each other in electronic class groups and study groups.

Recommendation: The Strategic Plan's section on undergraduate education recognizes that much remains to be done and puts forward proposals to continue the improvements in undergraduate education. The initiatives set forth in the Plan should be implemented.

B. Graduate Education

1. The Role and Purposes of Graduate Education

The absence of a general policy statement about the role of graduate education within the scope of the University's activities and the limited guidance even within the University's mission statement mean that there are some broad policy issues relating to graduate education that need to be addressed at the campus level in order to provide guidance to future actions. What should be the balance between graduate education and undergraduate education? What should be the balance between masters and doctoral graduate programs? Should the primary focus be on doctoral programs and the recruitment of doctoral students, or should there be an increase in the number of masters programs and masters students? In what ways should enrollment management address the revenue and costs of the University's graduate programs? What should be the response to opportunities to offer graduate programs off the campus? Should the campus establish goals regarding the admission and recruitment of graduate students?

There cannot be a single answer to these questions. The responses will vary across departments with the needs and practices of the different disciplines. The responses will also be affected by issues external to the University, such as the availability of research funds, the needs of society in general and local industry in particular, and the pool of available graduate student talent. Nevertheless, led by the Graduate School, the University should use the opportunity provided by the scheduled review of graduate programs to develop some general guidelines and goals concerning future directions in graduate education. It is hoped that the recent structural changes in the Graduate School will facilitate this. The current title of Associate Provost for Research and Dean of the Graduate School redefines and repositions the Office for a stronger role in graduate education.
Chapter II - Addressing Issues to Enhance the Educational Mission

**Recommendation:** It is accepted that graduate education, especially doctoral education, is a fundamental component of a research university; but declaring that to be a fact does not answer important questions about the desirable balance between graduate education and other important university activities, or about the balance to be achieved among the various components of graduate education. A campus policy statement offering general guidance and goals in the matters identified above would be helpful at this time. Indeed, such a policy statement seems to be implied in the effort currently underway to evaluate all doctoral and master's programs on the campus.

2. **Effective Program Review**

The last Middle States Report identified weaknesses in the University's program evaluation process. Some significant improvements have occurred in the interim. First, both the State Legislature and the Board of Regents have become insistent that regular reviews occur, and the Chancellor has responded by establishing a system-wide schedule of program reviews on a seven year cycle. Second, the review process at the University has become more formalized within the past several years. The College Dean is the overseer of the process with advice from the Graduate Dean and others in establishing review committees, and each formal review concludes with a Dean's report to the Provost and meeting among the Dean, Provost, and Department Chair. The Provost's report becomes the qualitative report for the Regents and is also shared with the Department, providing an administrative view of directions the Department ought to take.

These program evaluations examine all aspects of the individual department, including its doctoral programs. The review emphasis, however, is on the overall functioning of the individual department being reviewed. It does not provide an overview of the University's many doctoral programs and their relative merit. The Strategic Plan states the doctoral program issue in this way:

> At last count, College Park had 66 doctoral programs. Most are above average, as categorized by the recent National Research Council study or comparable professional assessments. A few rank among the very best in the nation. However, many do not. And more than a handful fall below the mean. For too long, we have articulated a dream of world-class status while accepting the status quo when the lack of additional State funding thwarted our efforts to convert dreams into reality. It is time to take a different approach.

> The University cannot afford to be--nor do we want to be--a doctoral supermarket. Rather, we want every Ph.D. program we operate to enjoy a level of distinction, even if this means we must eliminate existing programs. Our overriding commitment must be operating only those programs that can measure up to the highest standards of quality.

The Plan then goes on to ask that

> ...the Dean for Graduate Studies and Research, working with the Graduate Council...carry out a comprehensive review, which may include outside experts, of the quality and potential of current master's and doctoral
programs. The criteria will include academic quality relative to the competition, centrality to the vision of excellence and initiatives set out in this plan, and cost-effectiveness.

The first project for the implementation of the Strategic Plan, then, will be to produce a careful evaluation of the graduate programs at College Park.

**Recommendation:** In accordance with the initiatives of the Strategic Plan, the University has embarked upon a program for the systematic review of all doctoral programs. Such a review will provide the University with a comprehensive picture of the strengths and weaknesses of current doctoral programs and provide opportunities for appropriate actions.

3. **Criteria to Assess New, Weak, or Underperforming Doctoral Programs**

The Strategic Plan speaks of the purposes of the review of doctoral programs as including the determination of whether particularly weak programs "should be discontinued," and to "enable the campus to shift resources from lower to higher priorities and from problems to opportunities." The review, then, can have serious consequences both for the individual programs and for overall University morale. For such a process to succeed, it is necessary to ensure that the University community supports it and fully understands the manner in which it is being conducted. The process by which programs are evaluated must be perceived to be openly arrived at and fairly conducted. The criteria against which programs are judged must be clear, transparent, and widely supported.

**Recommendation:** As a complement to the comprehensive review of doctoral programs, the University must develop and articulate clear and transparent criteria for the assessment of new, weak, or underperforming programs so that the University community may have confidence in the fairness and openness of the review process.

4. **The Changing Role of the Master's Degree**

Master's programs serve different purposes in different disciplines and sometimes different purposes within a discipline. For some students a master's degree represents the acquisition of professional skills and competencies that are necessary for employment in the public or private sector; for others it is the interim degree that may lead ultimately to the doctoral degree. In the former case, master's degree programs may generate resources for the University; in the latter situation, master's students may consume resources that could be more appropriately used elsewhere. Master's programs can be terminal, as in the M.F.A.; professional, as in the M.B.A.; or preliminary to the Ph.D. In programs where the Ph.D. is the usual terminal degree, master's degrees have been used as certificates for those who do not advance to the Ph.D, as well as for those who want or need some graduate certification. The University recognizes that the variety of master's programs serve the variety of needs; and while the programs should be evaluated for their quality, such evaluations must acknowledge the different purposes of the several master's programs.
Chapter II - Addressing Issues to Enhance the Educational Mission

There is not a uniform agreement about the terminology. In this report, the term "teaching assistants" is used to refer to State-supported graduate assistants, even though some are used for administrative or research purposes. The term "research assistants" is used for those graduate assistants whose predominant source of income is from contracts or grants.

**Recommendation:** The master's degree serves multiple purposes in a large and comprehensive university. Recognizing the complex problem of the changing nature and purpose of master's degrees, the University needs to conduct a review of the appropriate role and uses of the master's degree. The current graduate program review will attempt to address these issues in the context of the University's overall educational mission.

5. **Graduate Student Recruitment**

As there is competition for students to enter good graduate programs so, too, is there competition for graduate programs to attract good students. If it is to be successful in this competition, the University must improve its recruitment efforts and procedures. In order to find good graduate students, for example, the University could identify the feeder institutions for particular programs and increase the efforts with these schools. Other issues that affect graduate student recruitment include the availability of support through fellowships, research assistantships, and teaching assistantships; the quality and reputations of the graduate programs; the recruitment efforts made by the individual departments; and the nature of new programs added, such as professional master's degrees. Interested students would also benefit from improved communication between the department and the Graduate School during the application process. The University's success in recruiting good graduate students, and retaining them after they get here, determines the size and quality of the graduate student body, so these efforts are particularly important.

**Recommendation:** The recruitment of quality graduate students is an important characteristic of a strong research university. The University must continue and expand its efforts to increase the recruitment of good graduate students. It must also work to improve communication between the Graduate School and the departments. As mandated in the Strategic Plan, the University must continue its efforts directed to the recruitment of under-represented minorities and women.

6. **Graduate Student Research Support**

There is the perception on this campus that funding has deteriorated for graduate students. In fact, the number of teaching assistants has risen slightly campuswide, at the rate of a few percent per year, throughout the 1990s. However, while the number of research assistantships rose at the beginning of the 1990s, possibly in response to concerns about the State budget, it has declined somewhat in the last several years, although it is still greater than at the start of the 1990s. During the same period, expenditures for contracts and grants has steadily grown. Thus, there has been a definite decline in the number of research assistantships per contract and grant dollar since the early 1990s, even when the increased cost of research assistantships is taken into consideration.

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While this campus trend is not followed in every department, it does warrant further investigation. Reasons suggested for the trend include a conscious decision to decrease research assistant support in some fields where the job market has become more difficult, a change in the nature and complexity of the research, increased costs that must be covered out of research funds that have not risen at the inflation rate, the perception that some agencies are less willing to support research assistants, and the feeling that the funds are better used to support postdoctoral researchers. Whatever the reason, what is most striking in the data is the fact that while at the University of Maryland at College Park there is about one research assistant for every three teaching assistants, at other, comparable research universities these numbers tend to be about equal.

**Recommendation:** Because support for graduate student research is valuable for the quality of the students’ education, diminishes the time for them to finish their degrees, and is also a valuable recruiting attraction, the Graduate School should investigate the trends in graduate student research support at this university and at its peers, and suggest appropriate actions.

7. **Strategic Plan Initiatives**

In its discussion of graduate education, the Strategic Plan recommends a number of specific steps, in addition to a comprehensive review of graduate programs. They include the following.

a. *Develop a salary structure and fringe-benefits package that will enable us to compete effectively for outstanding faculty with the leading public research universities.*

b. *Reinvigorate initiatives designed to attract to the campus larger numbers of minority and women faculty.*

c. *Develop recruitment/retention strategies for graduate students with special attention to under-represented minorities and women; establish and monitor goals for retention and graduation rates of all graduate students.*

d. *Establish graduate-fellowship and teaching-assistantship stipends competitive with those at our officially designated peer institutions.*

e. *Using recent agreements with NASA, NIH, Archives II, Army Research Laboratories, and USDA as models, develop innovative partnerships with federal laboratories and agencies to increase research opportunities in our strongest programs.*

**Recommendation:** The Strategic Plan's section on graduate education recognizes the central role of strong graduate programs in a major research university and calls on the University to build cornerstone programs of excellence in graduate education and research. In addition to recommending a comprehensive review of graduate programs, the Strategic Plan contains several specific initiatives to accomplish this goal that should be pursued.
C. Research

1. Federal Funding Issues

During the last half century, federal funding has become a critical ingredient necessary for the educational mission of research universities. Hence, a crucial external issue confronting University researchers is the relatively bleak outlook nationally for federal sponsored research activity. Federal support for research is predicted to remain steady or to decline for most disciplines, and in those disciplines where research has been aided by NEA and NEH, the decline could be severe. University researchers will be hard pressed to maintain current funding levels, and significant increases may be all but impossible.

Additionally, where there is federal research funding, new difficulties have appeared. Probably the most immediate external issue affecting University research programs are the recent changes in federal regulatory guidelines (the OMB Circular A-21 guidelines) governing what costs University researchers can charge to federally sponsored research projects. Although a final interpretation of these guidelines has yet to be issued, preliminary guidelines already being followed by federal funding agencies are increasing University cost. Effectively, these guidelines disallow the charging to federal contracts and grants of the costs associated with administrative and clerical support and telecommunications services. The total costs anticipated if the University were to cover from internal resources the costs of those services previously charged to federal contracts and grants are estimated to be approximately two million dollars.

Recommendation: Recent actions in the U.S. Congress and in federal government agencies suggest that the federal government is likely to reduce the amount of funds available to support research, a problem that will affect all research universities. The University must continue to develop plans that will enable it to determine the extent to which such reductions would affect research activities at Maryland. The University must continue its efforts to remain competitive for federal funds as well as to seek sufficient funds from other sources in order to maintain its research activities.

2. Research Opportunities and Initiatives for the University of Maryland at College Park

The uncertainties in federal funding for research continue to create difficulties for researchers at the University of Maryland at College Park and all research universities, but for the University there have been initiatives that provide for the enhancement of research and there are opportunities to develop additional research relationships especially with federal agencies.

a. Effective Use of Internal Research Resources

Beginning in 1986 the State of Maryland gave the University of Maryland at College Park an annual budget appropriation to establish the Designated Research Initiative Fund (DRIF) in support of research and scholarship. This State appropriation is indexed at 50% of the overhead from sponsored programs for the year
two years previous to the current one. The campus determined that DRIF was to support research, scholarship, and creative activities; it was not intended to support activities in the instruction program or administration except as these related to research and scholarly activities. Currently DRIF’s uses include start-up funds for new faculty, faculty development, matching funds for grant proposals that require institutional matches, seminars and conferences, interdisciplinary research collaborations, and equipment and facilities to assist research and scholarly activities.

A review should determine whether the use of DRIF by campus units adheres to its original purposes of promoting innovative research and scholarship and contributing to the overall goal of the University to be recognized among the premier comprehensive public research universities.

**Recommendation:** In addition to securing external funds to support its research activities, the University must also ensure the maximum utilization of its internal research resources. The Designated Research Initiative Fund (DRIF) monies constitute a major portion of the internal research resources. The formula for allocation of DRIF funds is clearly established; the University must ensure that there is a clear understanding of the purposes of DRIF and that all expenditures of such funds are consistent with the basic purpose in establishing DRIF.

**b. Maryland Center for Performing Arts**

Now under construction, the new Maryland Center for the Performing Arts is scheduled to open in 1999, and will provide over 300,000 gross square feet of space at a cost of 106 million dollars. It will nurture research and performance activities with a variety of performance spaces, a library, and special facilities for community programming. Built around the concept of a village, the Center will house the School of Music, the Department of Theatre, and the Department of Dance, and its performance spaces will be a part of, and play an essential role in, the academic environment of teaching and research. Funding for the operation and maintenance of such a facility will be a major ongoing challenge for the University.

**Recommendation:** The Maryland Center for the Performing Arts will be in use by the end of this decade. The facility will be a major teaching and research facility providing unique opportunities for students and faculty in the performing arts, as well as entertainment opportunities for the general public. The University must undertake that this new facility also will be supported and utilized in a manner that ensures the fullest teaching and research benefits. The University must be attentive to achieving the appropriate balance among the various roles of the Center.

**c. Partnerships and Entrepreneurial Activities**

Federal laboratories have been mandated to form joint programs with nearby research universities, and the University of Maryland is well situated with respect to several such laboratories including NASA, NIST, NRL, and NIH. In addition to agreements with federal laboratories with long-standing connections to the University,
new relationships have been developed with the FDA, the National Archives, and the Smithsonian Institution.

The University's Strategic Plan has an initiative encouraging entrepreneurship. New programs to accomplish this goal might include executive education and other non-degree programs, technical-assistance centers, and the like. In some instances, such activities may have the capacity to generate additional funds to support research at the department, college, or campus level. For example, the College of Business and Management has generated a modest amount of funding to support summer research grants from activities of its Centers.

**Recommendation:** The University's location in an area of significant research activity conducted by agencies in both the public and private sector offers faculty and students unique advantages and opportunities to participate in externally-supported research and educational activities. The University must aggressively and creatively pursue partnerships and entrepreneurial activities with external agencies and organizations that will enhance the University's mission.

d. **Libraries**

One measure of the quality of a research university is the quality of its libraries. The Strategic Plan calls for the University to address long-standing deficiencies in its libraries, the result of inadequate funding for collection development and staff support. These deficiencies must be addressed with an understanding of changes that technology is bringing to the acquisition and use of information. However, while increasing amounts of scholarly information will be available through electronic means, much information will continue to be required or available only in print form.

The primary role of the University libraries is to support the teaching, learning, and research in which students and faculty are involved. The principle focus of that role is the provision of access to scholarly information, which is currently undergoing a period of dramatic transition, both in form and in content. The notion of "digital" or "electronic" libraries will soon be a reality that will make the range of available information more complex for students and faculty alike. In consequence, the roles of libraries and of librarians, as information mediators, will increasingly involve close collaboration with faculty to design effective strategies for incorporating information into a changing curriculum. At the same time, a renewed teaching effort will be required to teach students about the structure of networked information and to assist them in their classroom and laboratory research. Finally, as the library of the flagship institution, the University's library carries the additional responsibility of serving as the State's research library.

The Strategic Plan recognizes the special needs of the libraries in this research university:

*Develop and implement a set of strategies that will enable the library System to begin to correct some long-standing deficiencies in monograph holdings, serials, and staffing. This will inevitably require increases in funding for the library. It will also be necessary to capitalize on existing*
information-technology expertise in order to gain increased access to research materials located at other sites. In addition, library operations and policies will need to be closely coordinated with current academic priorities in all parts of the campus. Although correcting current deficiencies in the Library System exceeds our current financial capacities, the provision of a set of library resources capable of meeting the needs of students and faculty in all units must remain one of the institution's most important goals.

The University has recently appointed a new Dean of Libraries. It will be the duty of this dean to assess the current deficiencies, and define the future directions of the libraries at the University of Maryland. The Dean will be encouraged to make full use of technological advances, interacting where appropriate with Academic Information Technology Services, and to help the University develop a library system appropriate to the status of "flagship campus."

**Recommendation:** Following the development by the new Dean of Libraries of a plan to address long-standing deficiencies in the libraries, the University should implement the Strategic Plan recommendation, including appropriate increases in library funding.

D. **Faculty and Staff in the Educational Environment**

1. **Staff**
   
   a. **Role in the Educational Environment**

   There are almost 4,000 professional and support staff on the University of Maryland campus, most of whom interact with students on a daily basis. Many have advanced or terminal degrees and hold positions such as counselors, physicians, and advisors; they include as well, clerical, administrative and facility management staff. The University has a strong tradition of shared governance that includes staff as well as faculty. Staff contribute to the Campus Senate and its committees; they serve on the Personnel Advisory Council and the recently instituted Council of University System Staff; and a staff ombud officer has been created to assist in resolving work-place issues. Professional and support staff are a source of great contributions to the educational mission of the institution and to the growth and development of its students. Addressing the needs and contributions of this group is important to the University.

   The University should develop ways to create an environment which supports and encourages staff contributions to student learning, drawing upon all categories of employees and out-of-classroom programs and experiences. To facilitate this learning opportunity and maximize the use of its human resources, the institution should provide training and support to help employees promote student learning. In particular, those who routinely interact with students should be well-informed about the academic and human development resources available on the campus.

   **Recommendation:** Staff at the University of Maryland have an active involvement in the educational mission of the University, especially as it relates to undergraduates. These opportunities occur both within the formal setting of a classroom and in the informal
informational-giving and support roles that occur outside of the classroom. The staff teaching and support activities are part of the total learning environment. This learning environment can be enhanced if the University will develop additional opportunities for staff participation and see that those staff and faculty who interact with students are fully knowledgeable about the various resources on campus.

b. Issues of Concern

The campus has developed and implemented a comprehensive Performance Review and Development (PRD) program that should improve communications between supervisors and employees, and link pay to performance. In conjunction with the PRD, the recently implemented pay program creates opportunity for greater salary growth for many staff. But there remains significant concern among these employees regarding the funding available for such increases, and there is considerable anxiety and skepticism as to how the PRD process will equitably link salary increases to performance. Another integral piece of the PRD will require that the institution place a greater focus and investment in training and development activities.

Although much has been done, the University should develop ways to increase the involvement of non-instructional employees, including retired faculty and staff, in student learning, providing rewards and incentives for their good efforts and addressing issues of morale that will provide the staff a contributing role in the development of a total "campus community."

In addition to addressing the broader issues raised below (III.E.), the University should support the concept of early retirement that is being discussed at the state level; should continue to address the work environment for all staff, including topics such as day care, elder care and parking; should continue to provide support for the Employee Assistance Program, which for many years has been a source of help when needed; should expand and enhance training and development opportunities available on campus; should seek to maintain a stable staff work force and not resort to excessive use of contingent staff employees; and should carefully consider ways to improve staff morale.

Recommendation: A number of staff concerns have been identified. The University must be as aggressive and conscientious in addressing these concerns as it is in addressing faculty concerns.

2. Faculty

a. Evaluation and Accountability

The evaluation of individual faculty performance with regard to research, teaching, and service, or creative performance traditionally occurs at the time of promotion or the determination of merit salary increases. In the last decade the University has made significant changes in the appointment, promotion, and tenure policies and procedures, adopting a new set of procedures and guidelines for both initial appointment and subsequent promotion. The new policy sets forth detailed requirements regarding the review process and the appropriate criteria for promotion and also includes procedural safeguards for promotion candidates, including a right
of appeal in the event of procedural deficiencies. The new procedures have been in operation for several years now and appear to be working in a manner that protects the interests of the University and of the individual faculty member. The University should insist that the reviewing committees and administrators maintain the highest standards for both appointment and promotion. Official University policy sets forth that teaching, research, service, including advising, and creative performance are the relevant factors to be considered in making promotion decisions. It is incumbent upon senior administrators, as well as faculty review committees, to ensure that appropriate attention is given to these elements when making promotion decisions.

This traditional review process is no longer the only formal review process to assess faculty performance. In 1995 the University adopted for the first time a general policy establishing a periodic post-tenure review process for all tenured faculty. This new review process is intended to "...enhance the professional abilities of the faculty as teachers and scholars and members of the academic community." It will enable department chairs to review with each faculty member the teaching, research, and service activities and explore the faculty member's past accomplishments as well as plans for future activities. It will also allow both to explore ways in which the faculty member's activities can be facilitated by the department, college, or University. The details of the review process are now being developed by the colleges and departments. Care must be taken in the development of the operating details that the positive and beneficial purpose of the policy remains uppermost.

Materials submitted for both promotion and post-tenure review should document not only the expected departmental activities but should also document any interdisciplinary activities as well.

**Recommendation:** Both the promotion and post-tenure review policies represent new reporting requirements for faculty. In order for the policies to have a positive benefit for both the University and the individual faculty member, the implementation of the policies should be monitored closely and reviewed periodically to ensure that they fulfill the purpose for which they were intended and are not overly burdensome for either party. In addition the University must ensure that promotion decisions or post-tenure reviews take into account the full range of the faculty member's activities with regard to departmental and interdisciplinary teaching, research, service, and creative performance.

b. **Assessment of Teaching**

A goal for the coming period should be to improve further the campus cultural valuation of undergraduate education. Documentation, evaluation, and presentation of teaching performance can increase the attention on undergraduate education. Discipline-specific criteria that the faculty support should be used (the simple amassing of data is not the goal). Departments' merit-pay guidelines and practices should include a component for assessing and rewarding undergraduate education.

The goal should be to have an assessment plan at College Park that will be a mechanism for the improvement of undergraduate education. A decade ago, the difficulty of finding meaningful assessment tools presented an obstacle to teaching
assessment. Now there are actually a variety of working models to follow. The American Association of Higher Education has published a listing of approaches issued by professional-disciplinary associations. Also, various teaching assessment programs are in place at other universities and colleges.

Faculty must be educated on the need to invest the same thought and energy into presenting the fruits of their teaching labors as they do in presenting their research. Preparing a teaching portfolio is not unlike writing up one's research for publication. If faculty do not take the time to tell others what they are doing in the classroom, no one can know of their work.

**Recommendation:** As the University gives greater attention to the documentation of teaching performance, it must continue to give attention to public recognition of teaching excellence. Increases in salary are an important form of recognition, but they are not the only method that can be employed to indicate that the University values teaching excellence. Contrary to campus perception, there are currently a number of campus, college, and departmental teaching awards that recognize excellence in teaching. The University should be creative in developing additional recognition and reward arrangements.

c. **Issues of Concern**

The ability of this university to perform its educational mission successfully ultimately depends on the quality of its faculty. That, in turn, depends on the success the University has in recruiting outstanding faculty members and in subsequently retaining them. The University's success in these activities is critically affected by the satisfaction that faculty feel in working here. Survey information shows that 67.3% of faculty at the University of Maryland at College Park are satisfied or very satisfied with their jobs compared to 83.6% of all faculty at Carnegie Public Research I Universities and 64.6% at all public four-year institutions. Generally satisfied, the faculty devote considerable effort in support of the educational program. However, one significant concern of faculty was the area of compensation. If salaries are not comparable with those at peer universities, it will affect the University's ability to recruit and to retain quality faculty. Recruitment and retention have been successfully funded, and the President has made a commitment to raise average faculty salaries to the 85th percentile of Carnegie Public Research I Universities.

Another concern expressed pertained to the physical facilities in which faculty work. Although the past decade has witnessed new or improved facilities that have increased space by a third (see above, I.D.1), too many faculty and staff still work in less than desirable conditions, and physical facilities vary from unit to unit.

**Recommendation:** Although the level of faculty satisfaction with developments on the campus appears to be relatively high and although considerable amounts of new space have been added to the campus, the faculty continue to express concern about the salary level as well as the quality of the physical facilities in which the faculty teach, meet their students, and conduct their research. The President's commitment to improve faculty salaries is seen as a positive step. Other steps need
d. Adjunct and Contingent Faculty

As resources become scarce, Maryland, like other universities, will need to review the use of adjunct and contingent faculty. On the one hand, the campus values the use of local experts and the intellectual talent pool from this remarkably rich region. These faculty can bring eminence to both teaching and research. They seldom, however, can be full participants in the service and governance aspects of an academic community. Further, not all adjunct and contingent faculty are engaged because of their eminence; some are hired to teach classes as cheaply as possible. Good teachers can become demoralized in a position where there is no hope for advancement. Whether the University employs contingent and adjunct faculty to add distinction or to provide a class, it must constantly reevaluate its use of such faculty.

Recommendation: In the past, the University has preferred to employ regular, full-time faculty members and has resisted the temptation to rely heavily upon contingent or adjunct faculty. In some specific situations, there are positive reasons to employ particular contingent or adjunct faculty members because of the unique expertise they are able to bring to the research or instructional program on the campus. There are, however, numerous pressures upon institutions of higher education to rely increasingly upon such faculty, especially in periods of fiscal constraints or requirements for off-campus instruction. The University must address this issue and establish clear policy guidelines regarding the use of such faculty.

E. Allocation of Resources

From time to time since 1978 the University has engaged in the reversion and reallocation of resources as a way to address downturns in funding, usually from State appropriations. While these efforts have been largely successful, they necessarily have had a spasmodic quality that does not seem desirable for long-term planning. As it has come to recognize the limits of traditional funding--federal research, State appropriations, student tuition and fees--the University has sought to develop better ways to manage its resources. The Strategic Plan proposes specific steps for implementation:

! The President and Provost will develop an annual budget process in which each college and administrative division will be given an opportunity to request additional resources and explain how the planned expenditures for the coming year will advance the goals set out in this plan;

! Based on these submissions, the President and Provost working in conjunction with the college deans will remove resources from units judged to be less central to the University's strategic objectives, or less effective, or less efficient, and assign these resources to units better positioned to achieve excellence. It should be anticipated that not all colleges will fare equally well in adjustments to the permanent budget or in short-term allocations of DRIF and other available soft monies. However, all colleges will be expected to develop at least some first-rank programs;
At the collegiate level, the deans, working in concert with their faculties, will identify those units, or programs within units, that are--or could soon become--"signature programs" or "cornerstones of quality," programs with a solid and documentable claim to national eminence. All college deans will be expected to develop plans for achieving excellence in targeted areas, funded largely through internal reallocation and self-generated revenues. It must also be anticipated that not all units in the college will fare equally well in this process; and

At the individual unit level, chairs will ensure that units adhere to exacting standards in faculty appointments and promotions, merit increment allocations, and in assessing the quality of research and instruction. They must also seek to organize the unit's activities under the terms of a plan which links activities in the unit with the campus's broader strategic objectives. Resources must be concentrated in order to support the work of the most outstanding individuals and sub-groups within the unit.

In short, in the future all significant resource-allocation decisions shall be informed and guided by the goals and priorities set out in the present plan.

**Recommendation:** The University should support the implementation of the Strategic Plan in its efforts to rationalize resource allocation and administrative operations.
Chapter III

Framing the Discourse for the Future

The issues and proposals presented in the individual task force reports fall into two categories: 1) important areas in which the proposed activities fit into on-going efforts that are integrated into campus concerns and 2) areas of concern that are on the minds of many people but are far from being integrated into campus life. Indeed, these latter issues will require considerable discussion as they do become integrated. Chapter Two focused on the first category of concerns. Chapter Three singles out for discussion five of the larger issues with which the University will have to deal in the coming decade. These issues are Technology in Instruction, Interdisciplinary Programs and Research Activities, Entrepreneurial Activities, Continuing Education, and Human Resource Development.

In keeping with the aim to offer guidance to the shape of the discourse, this chapter addresses the five topics listed above, which the Executive Committee considers of major importance for the future of the University.

A. Technology in Instruction

Problems

The availability of technology in the classroom offers a wide range of educational possibilities. Lecture halls are being converted into facilities for collaborative learning. New educational relationships between student and teacher and among students become possible. New pedagogies can be explored, offering new ways to learn. A world of information in a variety of forms can be brought into the classroom, the laboratory, the dormitory, and other sites both on- and off-campus to enrich the educational enterprise. The virtual classroom, indeed the virtual university, has entered the realm of the possible. Digital libraries, on-line public-access library catalogs, Internet resources, and many other electronically-available information resources are accessible to the connected student or faculty member.

Yet to take advantage of these opportunities raises many serious concerns. Technology is expensive, requires continuous maintenance and upgrading, and becomes obsolete at a rapid pace. There are considerable costs in student, faculty, and staff training, which involves developing the abilities to manipulate the software and to evaluate the information obtained. The possible expenses are literally boundless, and are not just financial; they also involve extensive time and effort for all concerned. Some technological innovations later prove to be incompatible with other, equally valuable innovations. Some approaches have been found not to meet their original promises or have proven less useful than anticipated.

This university, like all others, is faced with the issue of how much of its scarce resources to invest in technological advances as compared to other critical improvements needed for its educational mission. It must decide which of the countless technological possibilities and opportunities are likely to be most effective, immediately and in the long run, toward that mission. It must determine the appropriate balance of the time faculty, students, and staff spend on mastering the
technology of information as compared to the time they spend on the teaching and
learning of the information itself. It must make these decisions in a rapidly changing
environment over which it has little control and which involves not only developments
external to the University, but also innovations produced in individual units of the
University to meet their own needs and on which they subsequently become dependent.
In short, it must organize itself to make appropriate choices, to make rational provision
for the necessary resources, and to manage a complex, distributed system.

Current Directions

The University of Maryland at College Park has been an innovator and a leader
in the use of technology in undergraduate education, both in creating and maintaining
a state-of-the-art infrastructure and in active outreach to and support of the faculty and
student body. This condition and the University's early successes have created a
fertile environment that has attracted many significant grants and other support. These
grants, in turn, have stimulated further on-going University support of technology in
pedagogy, curriculum, course content, delivery, administration, and interpersonal
communication. The early successes have also created a climate of long-term
investment and innovation in the use of technology in the support of undergraduate
education.

The University's technological infrastructure includes wallplates served by
fiber and/or twisted pairs, with T-3 Internet access, to virtually every room on
campus, a network that is currently being extended to every dormitory room, making
a total of about 21,000 wallplates. It also includes 30 public computer labs with over
880 computers, as well as closed labs with discipline-specific support that are
restricted to specific departmental majors. It also offers 784 dial-in modems, with
service ranging from public access to dedicated, authenticated lines, from both
College Park and Baltimore local calling areas. There are 33,000 active student
accounts, and another 15,000 more for statewide K-12 teachers. The University will
soon have 45 classrooms with full high-resolution audio-visual, computer, and
network support. It offers two-way RF video distribution to every academic building,
with drops in over 600 classrooms and other locations. In addition there are two
"teaching theaters," venues designed to make learning more "student centered" and
interactive, with a third starting as this report is being prepared. Each of the two
teaching theaters has networked workstations for students, as well as an array of
instructor-controlled apparatus (big screens, projection equipment, control panels, and
the like). Specialized software supports collaborative activities and remote-site
access. The workstations can be used individually, collectively, or in any
combination (that is, some independent, some instructor-controlled, or certain ones
linked with others). The University provides intensive, personalized support of
faculty using these theaters and other high-tech rooms. For those classrooms that do
not have installed equipment, portable equipment pools provide basic presentation
capabilities. In addition, there are specialized facilities, such as the new Landscape
Architecture computing complex that will support state-of-art networked CAD
workstations with access to architectural databases.

Additionally, the University provides universal electronic mail and supports
70,000 pages on the central Web server, offering catalogs and schedules of classes,
ready access to policies and important proposals, software downloads, and a wealth
of other material. It provides site licenses for instructional software, encouragement
for class listserves, and access to powerful servers for students in technical fields.
Assistance for faculty development is offered, as are short courses in various aspects of technology for students, faculty, and staff. Other services include a liaison person between each college and Academic Information Technology Services, extended-hour "first-aid" help for students, and consulting for faculty and staff. The educational program is assisted technologically by, among other services, dial-in and on-line course registration and wait-listing.

In addition to maintaining a leading-edge in all aspects of the infrastructure, future University plans include expanding the faculty development program; increasing the use of the Worldwide Web for faculty and student communication, for instructional applications, for information, and for student projects; and further extending outreach to K-12 schools, industry, State agencies, and citizens.

Issues for the Future

The use of these technologies in teaching can engage students by encouraging them to communicate more with their peers and teachers, and to take a larger role in the content and direction of their learning experiences. It can allow them access to a large array of sources and types of information not otherwise available or easily accessible. But it does so at a considerable expense of financial and human resources that are critically needed for the broad spectrum of other aspects of education. Nevertheless, the University has no choice but to move forward in providing technological support for its educational mission. In doing so, there are many issues to consider by this university, and by most other universities as well:

Issue: A leading issue will always be how to obtain and best utilize the resources involved: departmental, college, and University; financial, human, and physical. Each significant technological advance carries with it the need for an equally significant investment that might rather be spent on library books, laboratory equipment, technical support, or other critical educational needs. Further, each such advance raises the questions of maintenance, compatibility, and obsolescence. These issues must be weighed if the University is to make the most of its resources as it inexorably moves forward technologically. For this, the University must have a widely accepted plan to guide it, and an appropriate organization to make the decisions.

Issue: A second issue is that of management of the University's widely distributed instructional information technology system. Systems set up for dealing with a few high-tech lecture halls are insufficient for the operation and maintenance of increasing numbers of such classrooms, teaching theaters, and distance education rooms. Coordination and follow-through are needed not only to create new facilities and features, but to operate them, to ensure that successes are built on throughout the campus and that failures are not repeated, and to plan for not only the installation but the continued operation of new facilities and innovations.

Issue: Another major issue is that of faculty interest and resources. An enormous amount of preparation time is demanded by these new teaching methods. Immense amounts of preparation time (organization of material, preparation of graphics, mastery of software, etc.) are necessary to develop one hour of high-tech classroom instruction. While other uses of technology,
such as the use of listserves in courses, are less demanding, each such innovation does require faculty interest and commitment. This requires basic training in the essential software, discipline-dependent pedagogy training, and an award structure that will encourage people to take the necessary time. An even greater investment of faculty effort will be demanded by the possibility of technology fundamentally reconceptualizing the ways of teaching. Already the Departments of Mathematics, Government and Politics, Physics, and Art History and Archaeology, among others, have made fundamental changes in the pedagogy of a number of their courses. How should the University encourage faculty interest and pedagogical advances such as these while ensuring that all such efforts are educationally effective? How can the University provide what will be a dramatically increased need for support as faculty interest and usage expand?

**Issue:** Student preparation is yet another big challenge, and not merely before-class preparation. Not all students arrive owning their own computers or, indeed, even with computer experience. While this problem should diminish in the coming years, it probably will not go away. The amount of class time that is devoted to rectifying computing deficiencies can become a remediation resource problem. How much student effort should be invested in learning the technology of a course as opposed to the course subject matter? How should the University provide instruction in high-tech data searching? How much technological training is essential to the students' later careers?

These issues are not new for the University, but they need to be brought into sharper focus. In the summer of 1996 the Informational Technology Advisory Committee (ITAC) was created to advise the Vice President for Academic Affairs and the Vice President of Administrative Affairs on policy, priority, and budget issues that relate to information technology. Instructional technology clearly is a part of its charge. While no committee can ask all of the questions or provide all of the answers to issues of such complexity, ITAC is an important instrument to provide focus to the University's discussions about the roles, operation, and management of technology in instruction.

**B. Interdisciplinary Programs and Research Activities**

**Problems**

The changing boundaries of disciplines will strongly influence the directions of teaching and research, and any examination of the future shape of education at a research university must devote major attention to the place of interdisciplinary programs. Interdisciplinary programs and research offer at least three problems for consideration. The problems are to define interdisciplinary, to relate interdisciplinary activities to recognized disciplines, and to make available to these activities resources that are scarce and that are customarily located in discipline-based units such as departments.

One reasonable definition would hold that interdisciplinary scholarship involves the integration within a single intellectual space (a research project, a syllabus, a discussion) of the knowledge, object of study, perspectives, methodologies, and/or self-understanding of at least two disciplines. While necessarily vague, this
definition allows for acknowledgment of the relationships to recognized disciplines and the shifting boundaries of those relationships. The difficulties arise, however, because the interdisciplinary teaching and research can be perceived either as intellectually challenging--involving the mastery of or immersion in the methods and materials of at least two fields--or as intellectually suspect--lacking rigor and depth in any field.

The problems of definition and relationships to recognized disciplines contain powerful realities. Faculty hold their degrees in recognized disciplines, they usually have primary residence in a discipline-based department, and much of their work is to educate others in their discipline. Virtually all tangible rewards are departmentally based. Merit pay, promotion and tenure review, and research awards are all strongly, if not exclusively, housed in the department. Where resources are scarce, it is understandable that departments are wary about the development of interdisciplinary programs at the expense of the fundamental responsibility to the disciplinary program.

Current Directions

While acknowledging that interdisciplinary programs and research pose problems that must be considered, the reality at the University of Maryland is the presence of some strong and promising interdisciplinary programs. Undergraduate interdisciplinary programs perceived as exemplary by faculty and administrators are the Honors Program, College Park Scholars, Gemstone, and the IBM-Total Quality Program (most of these are discussed above, I.B.2). Exemplary models of graduate interdisciplinary programs include Molecular and Cellular Biology, Comparative Literature, and the Maryland Estuarine Environmental Studies Program; and exemplary models of interdisciplinary research programs include the Institute for Physical Sciences and Technology and the Institute for Systems Research. The presence of these programs testifies to long-standing faculty interests as well as significant, ongoing administrative support. To assist existing interdisciplinary degree-granting programs as well as such programs that aspire to degree-granting status, the Graduate Council recently approved a set of guidelines covering such issues as program structure, responsibilities of programs and participating departments to students and faculty, relationships between intercollege programs and the participating deans, and other related issues.

The types of support available include General Research Board (GRB) funds for summer salaries for faculty engaged in interdisciplinary research, internal research grants through the GRB that can be used to support interdisciplinary research, matching funds to support interdisciplinary efforts funded by external sources, administrative willingness (in some units) to make space available for interdisciplinary activities, and assistance in the identification of possible external funding sources to support the development or maintenance of interdisciplinary activities.

Further, the most recent draft of the Report of the Provost's Committee on Policies for Continuing Education points to the support of deans for interdepartmental and intercollegiate research and teaching that is evidenced by the mention of interdisciplinary activities in 10 of the 13 unit strategic plans. The Office of Academic Affairs has assisted in the formulation of complex programs such as the proposed Environmental Sciences and Policy Program. In addition, the Office of Academic Affairs has facilitated the making of joint faculty appointments and affiliate appointments, and it has developed ways to credit appropriately interdisciplinary
advising and teaching. Senate procedures also have been changed to simplify approval procedures for interdisciplinary programs. Indeed, because they can be started using existing course offerings and faculty, a good many of the programs that have been approved under the recent budgetary difficulties are interdisciplinary.

Issues for the Future

The current climate for interdisciplinary programs and research at the University of Maryland can be described as an environment that is generally supportive, but neither universally nor uncritically favorable to interdisciplinary activities. Embedded in the problems and the current status of interdisciplinary activities are several issues that require the University's further consideration within the context of society's changing demands and intellectual developments. Many of today's departments are the descendants of fragmented or combined disciplines from earlier formulations of academic organization, and scholars are aware that these changes were sometimes difficult responses to the society's needs and to new intellectual models. The advancement of knowledge occurs importantly where disciplines meet and interact. The University will need to explore where its teaching and research strengths can be best used to fulfill its educational goals.

**Issue:** Interdisciplinary activities can provide innovative solutions to societal problems and can lead to economic benefits for the citizens of Maryland. This public research university has a land-grant mission and a State mission to address those problems to the best of its abilities. Yet no university can address all interdisciplinary problems. The issue is then how to select those problems in which the University of Maryland at College Park, with its current resources, can successfully contribute.

**Issue:** For undergraduate education, an issue is how to continue to provide exciting, even individualized, interdisciplinary courses of study without permitting a degeneration into superficial, unguided programs.

**Issue:** Graduate education necessarily is constrained by the recognition that graduate students are training for careers, but at the same time there is an awareness that interdisciplinary training in some cases may be the training better suited to the changing workplace. At the graduate level an issue is how to ground the student fully in the acquisition of a discipline-based knowledge and methodology before or concurrently with interdisciplinary training.

**Issue:** The dynamic relationships between established disciplines and interdisciplinary activities is and will continue to be a major issue, or series of issues. The administrative structures and intellectual communities are strongly grounded in the departments. What is necessary is the means to encourage the kind of intellectual environment in which faculty can engage easily in scholarly inquiry and education across departmental and college boundaries and in which innovative interdisciplinary research, education, and service can thrive. Tangible resources and incentives would be needed, not just for the sake of the resources themselves, but to balance the faculty's allegiance to the departmental system. The University might consider a system that fosters multiple allegiances by the faculty.
Issue: The question of multiple allegiances by the faculty suggests issues about the evaluation of program and faculty in interdisciplinary activities. Interdisciplinary activities must be reviewed periodically and held to the same quality standards that apply to departments, but they also must demonstrate true interdisciplinary interactions among recognized disciplines. Perhaps the discourse can be framed in terms of partnerships where interdisciplinary programs and departments enhance each other in ways that benefit the increase of knowledge, the education of students, the betterment of society, and the realization of the University's mission.

C. Entrepreneurial Activities

Problems

The University of Maryland at College Park needs to expand in the marketplace of business, industry, and federal agencies. The University has the ability to contribute its important and, in some cases, unique skills and resources and at the same time to realize new or additional sources of revenue for its work. The Strategic Plan addresses both the problems and the opportunities when it urges that additional resources can be obtained through further development of entrepreneurial activities appropriate to the University of Maryland. It states:

Fortunately, there are a number of additional revenue opportunities, and we have begun to capitalize on some of them. Indeed, the campus's level of sponsored research has shown a steady increase over the last decade. However, a sizable and largely undeveloped entrepreneurial potential still remains to be tapped. Among the possibilities: joint ventures with industry, executive education and other non-degree instructional programs, licensing and patenting, instructional television, and technical-assistance centers. In each of these respects, our under-developed entrepreneurial capacities represent the single most promising means for diversifying our sources of revenue and securing a degree of financial stability even in the face of sharp fluctuations in State funding levels. We must, therefore, work to empower and expedite the efforts of those departments, colleges, and individual faculty members who have the capacity and desire to generate and utilize new sources of support.

It should be understood by all parties that our objective here is not that faculty in all campus units should proceed to do whatever makes money, or to do only what makes money. Rather, our point is that we should encourage those academic units that are prepared to do so to pursue activities that are consistent with the campus's mission, grow out of the expertise of the faculty, and have sufficient value in the marketplace to generate positive cash flow. Indeed, many entrepreneurial efforts have the potential to generate substantial academic benefits--as in the recent partnership agreement between Molecular and Cell Biology and NIH, or the proposed joint Center for Earth Science Systems with Goddard. The campus administration will also continue to identify new sources of revenue, with the understanding that not all forms of privatizing and commercial collaboration will advance the interests of the University.
While the primary initiative in this area must come from individual faculty and units, the campus administration must strongly encourage and support entrepreneurial activities.

Current Directions

Although the University has not fully developed its entrepreneurial capacities, it nonetheless has undertaken several successful engagements which may serve as models for future developments, and the Provost has recently called for proposals for new, entrepreneurial programs following these or other models.

1. The Initial Investment Model has been the normal process by which new programs have been introduced. In this model the unit proposes a program and requests certain resources to enable it to run the program. The University invests in the program with resources that may include faculty and/or staff lines with salaries, as well as operating funds. All revenues generated by the program go to the University, but the unit benefits from the resources, such as faculty positions, that will contribute more to the unit than simply participating in the program.

2. The Loan Model has the University lend an academic unit one-time funds to start a program. The unit then runs the program as an independent operation. All funds generated by the program go to the unit which has the responsibility of repaying the loan. The Instructional Television program is an example of this kind of development.

3. The Joint-Venture Model has been used in the Professional Master's in Engineering program. The University and the College of Engineering agreed to share the start-up costs, with the University's share to be paid back along with a percentage of the revenue once the program showed a profit.

Issues for the Future

While it is clear that entrepreneurial activities are not new to the University, the increase in such activities and the directions taken must be part of the discussions of the shape of the University's future. An organized enlargement of such activities raises a multitude of issues for the University and especially for units and faculty with little experience in such activities.

Issue: Academic issues for discussion include the control of content and the approval of programs. The University will need to give serious consideration to the effects of entrepreneurial activities on faculty and academic units. Concerns such as rewards to units and faculty have been raised and will require continued discussions. Also of concern is the issue of the quality of the offerings and how quality is be maintained when financial opportunities beckon at its expense.

Issue: Resource issues require discussion. While the expectation is that entrepreneurial activities will be profitable to the University, start-up costs use scarce resources. Where profits are generated, the University must evaluate the range of uses for those profits. Because such activities may not always succeed, the risks must be apportioned. Further, care must be
exercised that entrepreneurial activities reach new markets rather than draw students from other University programs.

D. Continuing Education

Problems

In one way or another, continuing education has long had a place at College Park, but the nature and place of continuing education within the University of Maryland at College Park have changed over the years. University College, which provides much of the continuing education, was separated from College Park as a free-standing campus in 1970. The Cooperative Extension Service, which occupies an historic place in cooperative education, was separated at the same time but has recently returned to College Park. In addition many units, notably Education, Business and Management, and Engineering, have been long-standing providers of continuing education.

The fundamental problem is for the University to provide continuing education appropriate to the needs of Maryland as well as to the strengths of the University. The University cannot attempt to offer continuing education to everyone for any purpose. Rather, the University should identify its areas of strengths that most selectively match the public needs for continuing education, so it can deliver the appropriate education where it is needed. A considerable effort must be made so the public thinks of the University of Maryland at College Park as the best source of high-quality information.

Current Directions

During the past three years, the University has undertaken several studies about the role of continuing education. While no plan has been finally adopted, these studies offer a picture of the current situation and possible developments.

The University offers a variety of continuing education programs. Most are directed at post-graduates whose work requires new skills or the recertification of skills. These programs, especially in the technological areas, have grown because the University has the faculty and other resources to answer those needs. By and large, it is the level and sophistication of the curricula that differentiate the current programs of the University from those of University College. As the University expands its continuing education role, it is expansion in a direction that essentially differs from the traditional direction of University College.

While the kinds of programs offered have an external dimension, the organization of continuing education is largely internal to the University. Up to now, most of the University's continuing education has arisen from within the academic units in response to a perceived demand. The recent change of the title of the Dean of Summer School to the Dean of the Office of Continuing Education, Summer and Special Programs (OCESESP) opens the possibility for a different, more centralized organization of continuing education with a more entrepreneurial mandate.

Issues for the Future

The University is in the midst of defining discussions about continuing education. The discussions are not about whether there will be continuing education
but about the directions the University might take in the further development of continuing education. Administrators, task forces, and Senate committees are examining continuing education’s future, and issues about definition, organization, faculty, and campus resources are frequently voiced.

**Issue:** The issue of definition for continuing education raises many questions. Who will define continuing education in a University where there is already a variety of continuing education programs? Where are the boundaries between continuing education housed in traditional academic units and new kinds of continuing education programs involving OCEESP? Issues of definition can affect students if they seek to move between continuing education and regular academic programs.

**Issue:** The issue of organization focuses on the role of OCEESP. Discussions about that role often see OCEESP as a central control of continuing education. One view sees such centralization as necessary for growth and innovation, but another view sees it as bureaucratic interference with successful programs. Organization also affects financial matters. A central office can be the source of start-up funds for a program, but it can also be viewed as an office that will require a large share of whatever profits are generated by a continuing education program.

**Issue:** For faculty, continuing education poses opportunities and problems. While some faculty may welcome the expanded use of their expertise, others question the ways continuing education programs may be staffed. Where a program is profit-driven, adjunct faculty may be sought as a less expensive "outsourcing" to fill courses. Adjunct faculty could be so heavily used that the program loses touch with its academic base in the University, or adjunct faculty might be engaged for departmental courses so that regular faculty would be available for a profitable continuing education program. Another form of the staffing issue is whether some continuing education should be a normal part of faculty workload, in which case a member of the faculty might be required to teach continuing education courses with appropriate funding.

**Issue:** Continuing education calls upon the services and facilities of the University. The use and fair compensation for the use of those services and facilities are issues for the University. Expansion of continuing education will increase the burden on service units such as accounting, advising, admissions, financial aid, records, and registration. As a consequence, these services may need more staff and space. Facilities such as laboratories, libraries, and computers as well as parking, transportation, and buildings will be more heavily used and require expansion or more frequent maintenance to meet increased demands. Whether the University can accept increased usage of some its services and facilities must be considered, and if it can accept the increase, the forms of compensation will be an issue in an expansion of continuing education programs.
E. Human Resource Development

Problems

Historically, the functions of the Department of Personnel Services at the University have been driven by its predominant responsibility of ensuring that all necessary transactions are properly carried out for Classified and Associate Staff employees. The efforts of the Department consequently have been focused on providing entitlements to these Classified employees comparable to their State counterparts. This has meant that the Department of Personnel Services largely has played a "policing" role, tightly controlling and administering personnel policies and procedures within the context of comprehensive University of Maryland System (UMS) policies and procedures. These traditional methods are insufficient to challenges raised by the implementation of the Strategic Plan, the development of the UMS pay plans, and other recent unprecedented changes.

Current Directions

The University has begun to respond to the need for a different view of personnel functions in a variety of ways. The University has initiated programs, information, consultation services, and options that try to help staff and faculty support the teaching, research, and service missions of the University. There have been successful efforts to decrease, if not eliminate, some of the bureaucratic red tape and to increase the focus on service to people. Better utilization of technology has improved efficiency, effectiveness, transaction processing, and overall service. There also have been improved efforts to promote a learning environment for staff with professional development, training, mentoring, and continuing education.

The University is changing the ways in which it rewards staff. It tries to provide services and a competitive compensation and benefits program to attract, to retain, and to motivate its talented, committed, and diverse workforce. It is recognizing and rewarding performance and accomplishments by using the Performance Review and Development (PRD) Process, and it is seeking to offer competitive, market-based compensation and a comprehensive benefits package to its employees.

Issues for the Future

Changes in law and regulations as well as changes in the culture of the workplace have produced changes in the role of the staff in relationship to all aspects of the University. Human resource issues affect the total environment of the University, and they will require sensitive and thoughtful discussion.

Issue: The University needs to address the establishment of a comprehensive human resource policy that states the institution’s commitment to its employees as new directions are explored. Some of the directions that must be considered include outsourcing, productivity enhancements, program review outcomes, contingent workforce, and market-based compensation and benefits programs.
**Issue:** The University may want to consider the realignment of authority and accountability for personnel decisions. The introduction of redesigned business processes supported by information technology could place more authority and accountability at less central levels of the institution, and this could make the whole University more accountable for the human resource functions.

**F. Conclusion**

The choice and discussion of these five topics are not offered as grandiose visions of the future or as summons to great deeds. They are offered, however, as important topics or activities not yet fully defined or located within the University. The topics raise issues that should generate continuing discussions within the University. Guidance for these discussions can be found in the Strategic Plan, as well as other reports, for each of these topics.

Each of these topics is a part of the future of a public research university and its changing educational mission. Although the topics are not new to the institution, they are particularly cogent at this time and their future development can significantly affect the University. Full and balanced discussions that encourage participation from the University community and, where appropriate, a larger public should help in providing guidance and in securing acceptance of worthwhile changes. The presentation in this report should be understood as another stage in the discourse about the shape of the future of the University.

There are other important issues that will remain essential parts of the discourse on this and any other American research university's academic mission. These issues provide some of the basic competing and often contradictory demands on the University and the individual faculty member. As such, they will continue to be a part of the general campus discussion and form a background for more focused considerations of the issues raised above. One such underlying concern is the tension between research and teaching. Although the individual members on the Task Force on Undergraduate Education and the Task Force on Research held common interests, as they came together in their separate task force reports they advocated greater emphasis on undergraduate teaching or greater emphasis on research, respectively. Research and teaching were sometimes described as polarized endeavors that compete for resources within the University and at other times seen as mutually supportive in the discovery of knowledge and the production of an educated citizenry.

Research and teaching are not the only seemingly contradictory demands. Within teaching, some see a conflict between undergraduate and graduate teaching, with the latter often related to research interests. Within research there are the pulls between experimental and theoretical research, and between applied and basic research. The University's missions to advance knowledge is sometimes seen as in opposition to its obligations to the State and to society. Tensions have also been introduced by changes in expectations of faculty. The discussions of entrepreneurship, for example, bring new expectations for many faculty that compete with more traditional concepts of their roles.

Discussion of the changes in the University and in the role of the individual faculty and staff members will continue to be a part of the educational environment of the University of Maryland. The Strategic Plan is an important formulation of such discussions that will continue as it is implemented. Open consideration of these issues...
is one of the ways in which the University can demonstrate its continuing capacity to recognize new opportunities, to try to maintain a constructive balance among conflicting demands, and to adapt them to the educational mission of a public research university. Such discourse is essential to the task of shaping the University's future, and will continue as long as the University continues.