

**University of Minnesota**

**Action Agenda Progress Reports**

**March 10, 1989**

**Nils Hasselmo, President**

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**University of Minnesota**  
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**ACCOUNTABILITY**

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# ACCOUNTABILITY

Few colleges or universities enjoy the degree of public trust and the resulting operational freedom that the University of Minnesota has had. That trust and freedom carries with it a responsibility to account for the uses made of resources, from whatever source derived, and to make clear what results supporters are getting for their investments. An attitude of openness and accountability must pervade every level of the organization. In its own interest as well as in fairness to its publics, the University community must be concerned that resources are being used wisely and effectively. Such an attitude throughout the organization can only flow from a firm and unfeigned resolution at the leadership level.

Effective accountability requires the capability to generate useful information but it also implies an extra effort to ensure that it is communicated to the proper persons and agencies promptly. All activity must be open, and efforts must be made to see that information is not only presented, but that its implications are understandable. The responsibility is on the University. That responsibility is to present continually an explanation of how available resources are being used and what outcomes are being produced. Those messages must be provided not only to the Governor, Legislature, regents, and others with oversight functions, but also students, faculty, staff, alumni, and the general public. There can be no "quiet" agendas and no withholding of legally public information. Even in the case of information that has always been available, efforts must be made to bring it to the attention of interested parties in usable, intelligible form.

## **Actions already taken by the University:**

### **Audits, Reviews, Reports:**

The University of Minnesota, in normal times, is audited extensively. Recent events have added additional audits and reviews.

- An Audit Committee of the Board of Regents was created in 1984 and adopted a charter in 1988-89.
- Financial statements of the University, University Hospital, and RUMINCO (Regents of the University of Minnesota Insurance Company) are audited annually by an independent external auditor. For the past ten years the University has received an unqualified opinion affirming that the statements are an accurate reflection of the University's financial condition.
- The University is subject to audit at any time by any federal agency with which there are financial transactions. An example is a recent audit of federal funds being used for AIDS research.
- The University, like all federal grantees, is required to engage an independent auditor to examine the administration of federal funds on an annual basis. Over the past four years audit of the expenditure of \$919.1 million of federal funds disclosed no material weakness in funds administration and resulted in no disallowances of federal payments.
- The University's independent auditor also conducts an audit of federal student aid programs on all five campuses. No major problems have been found.

- The University is subject to both fiscal and program examinations by various state agencies. The Legislative Auditor has, in recent times, examined the University's use of reserve funds, the financing of improvements at Eastcliff, practices in Physical Plant operations, and the recording and reporting of student enrollment data, to cite a few.
- On the initiative of the Board of Regents, Ernst and Whinney audited the activity surrounding improvements at Eastcliff and the renovation of the Presidential offices in Morrill Hall. This and the Legislative Auditor's report resulted in the clarification and tightening of reporting and approval procedures detailed elsewhere in this report.
- The Governor's Blue Ribbon Commission conducted an extensive review of the University's financial management systems. Key recommendations are being implemented by the University.
- A temporary University Financial Review Committee with executive, legislative, regential, and student participation met during the period of September through December, 1988, examined the University's budgeting and financial practices, and made recommendations which are in process of being carried out.
- The Legislative Auditor's report on Physical Plant has resulted in a regular cycle in which that unit's management is reporting reaction to and progress on each audit recommendation. An action timetable is in effect. The University is reporting progress to the Legislative Audit Commission semiannually.
- Designation of a compliance officer to follow up on recommendations made by both internal and external review agencies has been approved by the Board of Regents.
- The University's Department of Audits is the internal auditing agency. It currently averages around twenty audits per year, mostly of major units. Information on audit plans and findings is regularly presented to the regents. The reporting relationship of the Department of Audits was changed in 1987-88. It now reports functionally to the chair of the Regents' Audit Committee and the Vice President for Finance and Operations and administratively to the latter. It has had a charter since 1984.
- For the first time since 1979-80, the University's annual financial report for 1987-88 has been produced as a comprehensive report with extensive narrative and given wide public distribution.
- Starting with 1987-88, the University's annual budget had been converted to a comprehensive budget which estimates all income and all expenditures.

#### **Internal Controls:**

Guidelines for reporting and approval of purchases and of reserve spending have been established.

- Central Reserves Expenditure Guidelines have been adopted.
- An annual spending plan is in effect. Changes in that plan exceeding \$100,000 require approval of the Board of Regents; changes of less than that amount must be reported to the board. Activity and ending balances are reported to the board monthly.

- Revision of the financial management systems is being aggressively pursued as recommended by the Blue Ribbon Commission report. This will permit timelier and more certain detection of internal control problems.
- Purchasing regulations have been clarified and are being carefully enforced. Purchases in excess of \$250,000 require specific board approval.
- Responsibility for the management of Eastcliff and for decisions about its operation and upkeep has been changed to avoid possible conflicts of interest and to broaden the expertise which can be brought to those decisions. The Regents have established a Technical Advisory Committee, and day-to-day management responsibility has been placed with the Assistant Provost for Support Services and Operations.

#### **Executive and Legislative Reporting:**

In the present legislative request process the University has, for the first time in many years, reported on income, expenses, and balances for all funds, not only the operations and maintenance and state special appropriations funds. The University's legislative request contains a complete and detailed report on the uses of the repair and replacement monies appropriated by the 1987 legislature, together with a discussion of the adequacy of that funding. As required by law, the University has reported on its experience and projections with regard to the enrollment objectives stated in the 1987 appropriations act and on the uses made of the rank funding adjustment funds in the 1987-89 appropriations.

#### **Outcome Accountability:**

Efforts are in progress to add to both quantitative and qualitative reporting of instructional outcomes. Volume measures of instruction, research, and public service continue to be available.

- A system to track progress, persistence, and completion rates of cohorts of entering freshmen and of transfer students has been developed and is operating. In time it will allow assessment of whether the University is getting improved results in these areas.
- Substantial work has been done in improving statistics on minority students and faculty. Reliable information, particularly over time, is difficult to obtain in this area and efforts continue to improve our information and performance. Appointment of an Associate Vice President with responsibility for minority concerns is a commitment to improve our cultural diversity as well as our delivery of services to minority students.
- A sophomore assessment project was carried out in spring, 1988 to measure performance against national norms on a sample basis. University students scored above the 75th percentile of the national data. We expect, through this and other methods, to establish a baseline against which to measure future performance.
- A major research project is underway aimed at identifying factors associated with student retention and achievement and, conversely, what conditions seem to lead to dropout, slow progress, and delayed graduation. We expect this to allow identification of the most cost effective areas of practice changes and increased resource investment. The project should be complete before the end of this calendar year.
- The University has begun participation in the Cooperative Institutional Research Program Freshman Survey, a national effort to monitor students' prior experiences,

expectations, attitudes, interests, and values and, thus, to be better able to tailor services to student needs.

- During 1988 a Baccalaureate Degree Graduates Survey was conducted for the Twin Cities campus. It was possible to compare results with a study done in 1978. The results have helped in identification of aspects of their collegiate experience with which graduates seem most dissatisfied as well as those areas in which we seem to be doing a good job.
- A grant through the Higher Education Coordinating Board has been used to plan a study to assess the impact of baccalaureate education on students' critical thinking abilities. The study has been designed jointly by faculty on the Duluth, Morris, and Twin Cities campuses and would be carried out on those campuses. The HECB Quality Assessment Task Force has approved our proposal. Actual funding depends on legislative response to HECB's request.

### **Program Planning:**

The biennial planning report to the Higher Education Coordinating Board, required by existing law every two years, fully describes the University's existing program plans and any changes in those plans.

### **What the University will do in the near future:**

#### **Audits, Reviews, Reports:**

The problem has not been lack of external review, but the communication of the results and their usefulness for purposes of accountability. It is clear that the independent CPA audit that has been done annually since 1977 has not been effective in highlighting issues of management accountability. However, certified financial statements are required in connection with the University's debt activity. The usefulness of the independent accountants' report will be enhanced through wider distribution of the audit letter to keep its suggestions before decision makers. It is also clear that the already high quality internal audit activity should be strengthened. We are proposing to add 2.5 additional audit positions if resources can be provided. In addition, before the end of the current fiscal year, a compliance officer will be following up on both internal and external audit recommendations.

#### **Internal Controls:**

A comprehensive set of controls is in place. Three additional actions will be taken. The establishment of all quasi-endowments will be reported to the Board. The annual financial report will clearly display all non-mandatory transfers among funds, together with a discussion of such transfers. These actions will also be routinely reported to the Department of Finance and to the staffs of the relevant legislative committees. By April 30, 1989, a statement of financial policies will be completed, as recommended by the Blue Ribbon Commission. It will receive wide distribution.

#### **Executive and Legislative Reporting:**

There is a balance to be struck between the desire of the political branches not to be overburdened with detail about operations for which they do not appropriate funds and their need to have a comprehensive picture available. In addition to the Non-state Funds

Supplement introduced this year, an annual report, with clear graphics, detailing the year-to-year situation and changes in the University's revenues, expenditures, and balances, will be provided to the legislative oversight committees and the Commissioner of Finance, and the underlying detail will be reported to their staffs.

#### **Outcome Accountability:**

Several additional efforts at measuring instructional outcomes are in process.

- An active committee has been attempting to decide on a few key indicators to be pursued intensively to monitor improvement in instructional outcomes. Among indicators being discussed are the following:

- Preparation requirements
- Academic potential of entering students
- Students of color
- Advising resources and outcomes
- Classroom facilities and study space
- Retention rates of entering students
- Instruction of lower division students
- Undergraduate curriculum
- Use of sound educational practices and principles
- Class sizes and student experiences with class size
- Grades received
- Training and performance of teaching assistants
- Monitoring of student experiences
- Student course evaluations for high enrollment classes
- Students' participation in key University activities
- Graduates' performance on the Graduate Record Examination
- Employment experiences of graduates
- Postbaccalaureate educational experiences

- During the current calendar year, we will select a set of indicators believed to be significant in assessing outcomes and build baseline data against which to monitor progress. We will specify a timetable to produce those results possible with existing resources.
- A new study of the effects of the University's sponsored program activity on the state's jobs and economy will be completed during the coming fiscal year.

#### **Program Planning:**

Although a biennial planning report to HECB is not due until the fall of 1990, the University will voluntarily produce and widely disseminate a report in similar format in fall, 1989, specifying clearly the program goals of the new administration. If this is judged to be useful, we will continue to do it on an annual basis.

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**GOVERNANCE AND ADMINISTRATION**

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# GOVERNANCE AND ADMINISTRATION

## **Background:**

Because of the complexities inherent in a multi-campus university, debates over the proper degree of centralization and autonomy have arisen periodically within the University of Minnesota. It has been asserted that individual campus administrations do not participate sufficiently in the development of policies which affect the entire university system, that budget decisions are not preceded by the opportunity for the campus to state needs, or that those decisions appear to lack both consistency and an objectively applied, programmatically based rationale.

Changes have been made to address these issues. In the past few years, the president has met regularly with chancellors. Within the past year, campuses have been accorded more extensive participation in budget development. Promotion and many managerial decisions have been decentralized to the campuses. Yet, the absence of an annual, all-funds, campus-discrete budget process remains a major obstacle to resolving the recurring concerns about the equity, responsiveness, and effectiveness of the fiscal relationship between the campuses and the central administration.

The Governor's Blue Ribbon Commission on Financial Management of the University of Minnesota made six explicit recommendations for a stronger governance structure that would offer an open, predictable, timely, and rational decision-making process with strong financial management and give an adequate voice in those decisions to all parts of the University, especially to the campus chancellors.

## **Actions already taken by the University:**

The President has instituted changes which implement all six of the commission recommendations. He has:

1. Reported to the Board his intention to continue the "dual-hat" organization.
2. Established a cabinet consisting of the president, the chancellors, and the vice presidents, to meet regularly twice monthly to deal with policy, planning, budget, the development of biennial requests, and current issues.
3. Announced that the cabinet will meet in special sessions on each campus each year.
4. Reported to the board his intention to seek authorization to appoint a vice president for administration.
5. Strengthened the position of chief financial officer by appointing a senior vice president for finance and operations and proposed streamlining by giving operations responsibility to new vice president for administration.
6. Redefined roles of other committees to clarify their authority and scope, and to emphasize the role of the cabinet as follows:

- When vice presidents and the president meet without chancellors, it will be as a Provost's Council, chaired by the provost, to deal only with Twin Cities campus issues.
- A Resource Committee, consisting of the president and two senior vice presidents, chaired by the senior vice president for finance and operations, will coordinate and make decisions concerning resource allocations within the framework established by regents' policy and the annual budget. All meetings will be open to chancellors and other vice presidents. (This replaces the old Management Committee chaired by the president with the same membership, which often dealt with policy questions without the participation of all parties).

This clarifies and strengthens role of chancellors as participants in all system-wide decisions.

### **What the University will do in the near future:**

- The opportunity for consultation among the president, the vice presidents, and the chancellors that is provided by the cabinet will be extended to assure similar consultation among vice presidents and campus and college officials.
  - Budgetary and accounting policy will involve vice chancellors for finance as well as collegiate budget officers.
  - Admission and graduation standards -- even if confined to the Twin Cities campus -- will involve academic vice chancellors from other campuses because of the potential impact on those campuses.
  - Each campus will participate with the vice president for external relations in communicating to the public the university's message, so that the unique role of each campus will be understood by the public and will be preserved.
  - Similarly, policy issues regarding academic personnel, plant maintenance, management information systems, etc., will be discussed across the system; budgetary decisions that will significantly affect the level of service to individual campuses and colleges will be discussed with those who will be affected by proposed changes.
  - The university-wide role of the staff of vice presidents (associate vice presidents and staff personnel of similar level) will be clarified regarding their roles and prerogatives in policy setting, decision making, consultation and the implementation of central administration decisions.
- Much discussion on such issues takes place now, but to systematize the process, each vice president will submit procedures to make sure that relevant officials on each campus, including representatives of collegiate interests, have an opportunity to participate in formation of policy and budgetary issues affecting them. Communication will take place at least several times each year, and there will be a regular mechanism for college and campus officials to bring continuing problems to the attention of the vice president.
- As part of the process, each vice president and each chancellor will submit to the cabinet for review at the first April meeting an organization chart showing reporting

relationships as well as "dotted line" policy consultation relationships with the larger system and with college and campus officials (illustrative samples will be distributed for review).

- The vice presidents are jointly charged to determine whether common procedures are feasible, for ease of understanding and enforcement. Procedures will be developed and submitted to the president by June 30, 1989.
- The president will establish, by May 31, 1989, an explicit written cabinet policy and timetable for the annual budget process and for formation of legislative requests for capital and operating funds.
- The University will move as expeditiously as possible to the implementation of an annual, all-funds, campus-discrete budget process in which the President's Cabinet will serve as the final deliberative body prior to the president's fiscal decisions.
- The University will commit itself to developing criteria related to its three-part mission of teaching, research and service as a general framework for allocation decisions. Such criteria shall be sensitive to the individual circumstances and programs of each campus.
- The University's legislative request will continue to be aggregated as a single systemwide proposal.

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**MANAGERIAL EFFECTIVENESS**

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## **MANAGERIAL EFFECTIVENESS**

Improving managerial effectiveness involves changing the institutional value system to encourage, recognize, and reward managerial excellence in programs and services through effective people and resource management.

Critical to improving managerial effectiveness is the support of the president and vice presidents in delegating, empowering, and holding their areas accountable for quality and excellence. In addition, the full involvement of the University community is needed to enhance administrative processes to support management excellence. It is important; and it is needed. In President Hasselmo's words:

"This institution depends . . . on finding and developing good managers, defining their responsibility and authority, providing the tools, and holding them to a high standard of demonstrated effectiveness."

### **Actions already taken by the University:**

- Interim President Sauer shared objectives for all of the vice presidential areas with the Board of Regents. President Hasselmo has directed the administration to provide updates to those objectives.
- Strategy for Focus planning resulted in both academic and support units preparing long-range plans. The final piece of that initial process, reviews of a select group of support units, is occurring now.
- A budget process proposal that would facilitate better management of financial resources consistent with University priorities is being considered for action.
- Development of financial systems and policies is under way to provide better and more timely information for managers to monitor use of resources.
- The number of University Senate Committees has been reduced to better concentrate governance and management issues.

This represents a good start, but additional work needs to be done to provide the tools to support managerial effectiveness and uphold performance to a high standard of demonstrated effectiveness.

### **What the University will do in the near future:**

#### **Recommendations:**

- 1) **Recruitment:** "This institution depends on finding . . . good managers . . ."

The University uses a search committee process to recruit and select qualified candidates for key administrative positions. The process is time-consuming and only partially effective. A committee will be designated to identify ways to make the search process more efficient, with recommendations completed by October 1, 1989.

- 2) **Defining of Responsibility:** "This institution depends on . . . defining their (managerial) responsibility and authority . . ."

Few managers totally understand the decision making process at the University. A definition of that process, charters of the regents, the president's cabinet, the provost's council and the resource committees, and mechanism for communicating decisions will be developed no later than July 1, 1989, and widely communicated.

- 3) Providing the tools: "This institution depends . . . on developing good managers (and) . . . providing the tools . . ."

Currently, no training is provided for new directors or administrators. Academic Affairs has plans to develop that training, will be endorsed and supported. Initial plans to develop and implement that training will be developed by the assistant vice president for academic personnel by January 1, 1990.

To assist new appointees in the transition to the University community and to develop the skills of less experienced managers, each vice presidential area will develop a "mentor" program by August 1, 1989.

To ensure that committees operating outside of the University's faculty governance committee charter support the mission of the University, it is suggested that a central authority, perhaps representing the president's office, be responsible for a review of the purposes, charters, and effectiveness of committees. Charters will indicate the creation date, as well as expected completion date to accomplish the charter. The president's office will also consider a mandatory two-year "sunset law," with the committee disbanded at the end of the two-year period unless renamed by the central authority.

Communication within a large complex institution such as the University poses a continuing challenge. To ensure that leadership directives and priorities are communicated from Morrill Hall to those responsible for implementing plans, each managerial person (from president on down) will conduct regular staff meetings, with this expectation clearly monitored through the performance appraisal process.

Recognition of managerial effectiveness is critical to reinforce excellence. A recognition program will be developed no later than January 1, 1990, to establish awards from the presidential or vice presidential level to any director or department head who successfully:

- develops and implements a significant improvement in service--without added resources;
- receives acknowledgement from within or outside the University of excellence in service or program delivery;
- operates a particularly well-managed, effective administrative function worthy of emulation.

- 4) Upholding a high standard of demonstrated effectiveness: "This institution depends . . . on . . . upholding the (managers) to a high standard of demonstrated effectiveness."

The professional and administrative (P&A) appointments process allows managers and administrators to be hired for fixed terms, typically from one to four years. The requirement for performance appraisal prior to contract renewal will be enforced.

Civil service managers will continue to be evaluated at least annually, in accordance with civil service regulations.

A significant aspect of managerial effectiveness is achieving a balanced staff that represents the diversity of our local and regional constituency in regard to sex, race, national origin, handicap, and veteran status. The assessment of managerial effectiveness will include an assessment of progress towards meeting affirmative action goals.

In-depth assessment of program or operations areas, when done in a positive manner for purposes of offering suggestions for improvement, can do much to foster management effectiveness. The senior vice president for finance will establish a program and five-year review cycle similar to the academic accreditation reviews by May 1, 1989. Components will include (1) self review; (2) peer review, with representation from both academic and support areas; and (3) external review from academic and support areas outside the University.

5. **Managerial advisory group:**

Managerial effectiveness is a dynamic concern that should not stop being a priority upon the completion of these recommendations. It is an issue that requires frequent review, openness to change, and a willingness to try new ideas. To that end, an advisory group of Carlson School of Management faculty and key alumni in management positions will be selected to continue to counsel the University on how to improve its managerial effectiveness.

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**UNDERGRADUATE EDUCATION**

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## UNDERGRADUATE EDUCATION

The undergraduate report card focuses on areas essential to obtaining an excellent undergraduate education at the University of Minnesota. These are a quality undergraduate curriculum, dedicated instructors, ready access to first-rate advising, state-of-the-art facilities for instruction and study, and simple administration. For each area, the University is establishing performance benchmarks with which to hold itself accountable to its undergraduate students and to the public.

### **Enhancing the curriculum:**

The centerpiece of any effort to enhance undergraduate education must be the curriculum. The University is concentrating on analytical or critical thinking skills, writing across the curriculum, ethics across the curriculum, international education, and opportunities for active learning including undergraduate research projects, internships, and study abroad. Noteworthy are efforts to substantially improve the freshman year and a reassessment of general education requirements. Much of our planning is completed. Since 1984, the University has released 13 reports focusing on the undergraduate experience. Many of the recommendations which involve changes in existing structures and programs have been implemented. Significant progress on major initiatives such as improving the student-faculty ratio awaits a commitment of substantial resources.

The University has made progress. Noteworthy is Project Sunrise, which we will implement this Fall in the College of Agriculture. Project Sunrise represents a complete rethinking of the agriculture curriculum and is a prototype for quality undergraduate education. Active learning opportunities include the Undergraduate Research Opportunities Program, the Office for Special Learning Opportunities, individually designed majors in the College of Liberal Arts, College of Biological Sciences and University College, and senior design projects in all engineering majors. At the Morris Campus, Project PROSPER, introduced in 1988, emphasizes active learning including a performance requirement in the arts and a small-section Inquiry course for all freshman in their first quarter in residence. At the Duluth Campus, the College of Liberal Arts is sponsoring a year-long freshman core curriculum experiment. The School for Fine Arts is delivering computerized instruction in graphic arts and for ear-training of music majors.

In the next 6-9 months we will fund three to five demonstration projects to improve instruction in classes with enrollments greater than 100 in a single section. Funds from the Educational Development Program will support five major demonstration projects in liberal education including an active learning strategy for large physics classes, a cross-collegiate learning community on environmental issues and sections of a world politics course for students with proficiency in French or Russian. The Undergraduate Research Opportunities Program will be continued. We will establish for the Twin Cities campus a 50-minute class hour Winter quarter 1990, consolidate study abroad programming, and initiate the major task of revising Liberal Education requirements.

### **Dedication to teaching:**

Just as the University must be a national leader in research and service, the University must be recognized as an exemplary provider of innovative and dedicated instruction. As a research and land grant institution, the University has at its disposal a plethora of human and material resources with which to provide a unique undergraduate education.

Major initiatives in the area of teaching include the University's recognition of its distinguished

instructors with Morse-Alumni Awards for Outstanding Contributions to Undergraduate Education (now in its 25th year). This Spring, the University will honor nine faculty. Over 175 faculty have received Bush Sabbatical which afford them an opportunity to integrate their research, scholarship, and creative activities with their undergraduate teaching. Funding will be made available for twenty more Bush Sabbaticals for academic year 1989-90. All new faculty receive an Office of Educational Development Programs packet of materials to improve teaching. With support from the Bush Foundation, the University is engaged in a multi-year collaborative project for faculty development with colleges and universities in Minnesota and the Dakotas.

The most common complaint directed at undergraduate education at the University concerns the employment of teaching assistants. As a graduate center, the University will always employ substantial numbers of apprentice scholars. The University's objective is to expand training so that it includes all teaching assistants. Practically, this means requiring a mandatory and formal training program in departments that do not have one, including videotaping and periodic review and evaluation of teaching assistant performance on the Twin Cities and Duluth campuses.

Since 1984, the Minnesota English Center has tested all teaching assistants who are not native speakers of English and provided training in English and classroom skills for 802 international students. English as a Second Language training has reduced but not eliminated the number of complaints about language. Currently, the Institute of Technology provides, in addition to department training, a half-day of college led training for all new teaching assistants, which covers problems in the classroom, learning styles, and sexual harassment. The Composition Program conducts a week-long workshop for 30 new teachers of writing courses, and has a regular meeting for experienced teachers during the year. The College of Home Economics holds weekly graduate level seminars for teaching assistants and has paired faculty with teaching assistants.

The University will continue to support the foreign teaching assistant training program as well as college and departmental-led training for all teaching assistants. We will establish a student advisory group to evaluate teaching assistant training and performance.

#### Advising:

Proper academic advising for students is fundamental to making informed choices about their education and future career. Minimally, students should have access to one to two hours of advising per quarter from an appropriate combination of faculty, professional, and peer advisers. On the Twin Cities Campus, for example, College of Liberal Arts has an advisee:adviser ratio greater than 450:1. The University seeks initially to reduce the ratio to 300:1. In addition, advisers need a more effective data base to support advising. We will incorporate course transfer information (from other schools and Continuing Education and Extension) into students' academic records and implement an academic progress system. A major impediment to enhancing faculty advising (as well as the curriculum and the quality of instruction) remains the severe shortage of professorial staff. The ratio has improved to 20:1 at the Waseca campus.

As part of Project Sunrise, the College of Agriculture introduced "advising portfolios", a highly individualized and personal approach to making choices during a college career. The College of Liberal Arts's "Cluster Advising System" received an award from the National Academic Advising Association for being one of the outstanding advising models in the United States. Some Institute of Technology departments, including Computer Science, employ undergraduate peer advisors to supplement other forms of advising. The Carlson School of Management is implementing a pre-management advising program for Sophomores interested in business careers. The Carlson Advantage Scholarship Program provides 28 prospective minority business students with financial and academic

support. Programmatic improvements have been made to the Office of Minority and Special Student Affairs, including an improved data base with which to establish performance benchmarks. A directory of 52 programs in support of minority students has been published, and funds have been allocated to pre-college programs for 7th graders in Minneapolis and St. Paul schools, the Duluth Public Schools, and the Fond du Lac School System. An advising network of staff members with primary responsibility for collegiate advising has been created and a newsletter is being published. A computerized academic progress system has been purchased and is being pilot tested. The Morris Campus has an Annual Academic Planning Period each Spring, supervised by an Academic Advisers' Council made up of faculty. At the Duluth campus, the College of Science and Engineering has in place an intensive faculty advisement program using readily accessible/computerized student tracking data and the College of Liberal Arts has implemented a peer advisement system for freshmen. An intensive freshman orientation program begins in the Spring prior to enrollment and continues through the first six weeks of Fall quarter.

This fall, we will implement the College of Liberal Arts' prototype Computerized Degree Progress Audit; undertake a second survey of graduating seniors to monitor their satisfaction and progress; establish a closely supervised and trained group of undergraduate students in selected departments and colleges on all campuses who will form a cadre of peer counselors; distribute a 24-page booklet for Institute of Technology students which helps them to select liberal education courses. The University of Minnesota at Crookston has received a Title III grant for a computerized advising support system which will be operational in academic year 1990-91. The University's future plans include the extension of the General College advising system to students in other colleges who are on probation or otherwise academically fragile.

#### **Improving the physical environment and instructional facilities for students:**

We need to provide satisfactory instructional equipment, adequate computing and library facilities, upgraded study space and increased space for student activities, and attractive and functional classrooms.

Improving existing facilities for instruction is a major financial challenge for the University. The average age of buildings on the East Bank of the Twin Cities campus is 62 years. Budget retrenchments have caused the University to under invest in instructional equipment so that an estimated \$50 million is needed just for catch up. Some progress has been made. The completion of the Computer Science/Electrical Engineering Building and the renovation of Smith Hall has added improved classroom and study space to the Twin Cities space inventory. Twelve general purpose classrooms have been upgraded (\$2 million appropriation this biennium) on the Twin Cities Campus. Equipment expenditures for undergraduate engineering have risen by a factor of 3 to \$700 per graduating senior. However, this sum is still only one third of the average of fifty engineering schools. Smaller but important projects include the creation of computer labs such as the writing facility and open computer laboratory on the Waseca campus.

We will improve 1200 study spaces or 23% of our unrestricted study spaces on the Twin Cities Campus by December, 1989; we will introduce an improved sign system which identifies the location of study space. The Recreational Sports building has been started; 9 additional classrooms and auditoriums will be upgraded; we will add group study rooms to the study space inventory. We will complete the bar coding of library materials and expand the computer network to the library's electronic catalogue (LUMINA) thereby enhancing access to the University's rich collections at all of our campuses. The Morris campus will complete the automation of its Briggs Library.

Future plans include improved access to computers for undergraduates; enhancing supply and

equipment budgets; additions to Wilson and St. Paul Central Libraries and remodelling of Walter Library; upgrading general purpose classrooms and furnishing them with modern audio-visual aids. Additional space is needed for student activities and organizations, as at the Morris campus which does not have a student center.

**Simplify admissions and administration:**

The University will assure that its procedures are as easy for the student as possible, consistent with ensuring adequate advice. We will simplify the Twin Cities campus for prospective students, their parents and their counselors. And we seek to improve the transition from high school or community colleges as well as intrasystem transfers.

The Board of Regents has approved the Common Entry Point concept for the Twin Cities campus. We have improved our publications for students and counselors. Joint admission and joint registration programs with community colleges have been implemented. Listings of transfer equivalencies for most frequent transfer courses have been distributed to community colleges. The University of Minnesota at Waseca and Crookston has completed a joint admissions agreement with the College of Agriculture and College of Home Economics (Waseca only). The Institute of Technology has established a student complaint/compliment form.

For the Twin Cities campus, recommendations in support of a Common Entry Point will be implemented in fall 1991 (e.g., one entrance standard, specific college admission not required); we will reduce the number of holds on student records and rationalize procedures for their addition and deletion; we will expand complaint/compliment form to other colleges; we will simplify application procedures: undergraduate admissions, honors programs, merit-based scholarships; and we will expand the colleges' role in orientation programs this summer.

The University plans to construct a new student service center. Admission, financial aid, housing, honors and scholarship applications will be coordinated (combined wherever possible). Information services for prospective students (publications, tours, campus contacts, school visits) will also be integrated with a new student service center. Transfer information will be automated for institutions that send large numbers of students, including the University's own campuses. Processing times will be reduced and hotlines made available. Registration time, which averaged 73 minutes in 1982 on the Twin Cities campus, has been reduced to an average of 6 minutes in 1989. New identification cards will be distributed to facilitate automated library checkout.

**Accountability:**

The University needs to report to itself and to its constituents the progress it is making toward undergraduate objectives contained in Commitment to Focus and Academic Priorities.

A series of 18 indicators of institutional quality have been identified. Several new reporting systems have been implemented, including retention, instructional management information, and seniors' views of their education. Overall retention has improved in recent years. Retention reporting systems will provide year-to-year comparisons, as will analyses of graduating seniors' views. Plans include evaluation of freshman attitudes and expansion of analysis to all campuses.

This fall, an institutional research group will be formed to provide routine evaluations of progress on the full range of indicators of progress toward Commitment to Focus goals. Retention reporting will be expanded to track specific student cohorts (e.g., athletes, minority students). Regular progress reports will be prepared for state government and the public.

**University of Minnesota**  
**Action Agenda Progress Report**  
**March 10, 1989**

**RESEARCH DEVELOPMENT**

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## **RESEARCH DEVELOPMENT**

Most people think of a university as a teaching institution. It is more appropriate and, indeed, more realistic to view it as a learning institution. Not only do students learn, but the faculty must also continually be learning. It is through their research, scholarship, and artistic endeavors that they learn. They discover new knowledge that enriches our understanding of the physical and biological world and of the nature of the human experience.

It is these new discoveries and new insights of the faculty and students working together that provide the added dimension to teaching that makes the student experience at the University, graduate and undergraduate, uniquely different from that provided by institutions of higher learning where the faculty is not expected to be working at the frontiers of knowledge. The product of these endeavors also provides a unique part of the knowledge base that is necessary for meaningful and useful public service activities.

The University's commitment to, and support of, research is a major factor in retaining quality faculty and in attracting new faculty of distinction and promise.

The question is, "How are we doing and what are we doing now to keep the University at the forefront?"

The success of the faculty to attract research funds is one measure. In FY 1987 that figure was \$160,000,000; in FY 1988 it was \$180,000,000--the 7th highest among all universities in the country. In the first six months of 1989 it is running at an annual rate of \$200,000,000. That is a projected increase over a two year period of 25%. This aggregate figure conveys the magnitude of the effort, but says nothing of the importance and excitement of specific research. Let us present just a few examples of what is going on now, to illustrate its richness.

Professor Robert Elde is the first scientist to discover a specific neural receptor for pain--a stunning breakthrough in Neuroscience that enhances our understanding of the nervous system and is an important step in learning how to treat pain more effectively.

Professor Margaret Davis of the Department of Ecology and Behavioral Biology studied the reaction of forests to the warming of the climate that occurred thousands of years ago. Her work indicates that the warming predicted for the next century may have a devastating effect on our forests and that plans should be made now for reforestation with new species.

Professor Peter Wells and his colleagues at the Center for Ancient Studies are just uncovering some of the secrets of the development of industry, commerce, and urbanization in Europe 1,500 years ago. This knowledge provides the basis for a better understanding of what is happening in many parts of the world today.

Professor Karen Mesce, of the Department of Entomology, has discovered how a single nerve cell and neural networks control behavior of insects in the different stages of metamorphosis when the gross anatomy and behavior are so different. Her work is leading to a better understanding of neural development in vertebrates.

The research of Professor John Adams in Geography is showing that the real value of assets in residential housing in the central cities and the first ring of suburbs in the metropolitan area is steadily declining. At the same time, in other parts of the metropolitan area, a combination of tax laws and new financial instruments are encouraging

owners to spend part of an increasing equity in residential property on current consumption. These findings have major implications for tax policy and aid to cities both at the state and national levels.

The High Energy Physics Group (12 professors, 7 research associates, and 24 graduate students) are conducting research in the laboratory at the bottom of the Tower Soudan Mine to answer a fundamental question in Physics: "Is matter stable?" The answer will have far-reaching implications for our understanding of the universe.

Professor Sara Evans of the Department of History and the Center for Advanced Feminist Studies has demonstrated in her research on women in American history, how women have dramatically shaped public and political life in the United States through the history of the republic.

We do not wish to give the impression that all the research being conducted at the University is the result of efforts mounted in the past few years. The Minnesota Heart Study in the School of Public Health is a major epidemiologic project designed to trace the changes and the incidence of survival rates of heart disease that will provide important information about the cost effectiveness of the new approaches in prevention and treatment in the major killer in America today. This is the largest effort of its kind ever undertaken with three experimental and three control communities. This work is the continuation of important epidemiologic research which began at the University over 40 years ago and has had a major impact in reducing death and disability from heart disease in this country.

These are examples of on-going research emphasizing findings of the past few months. What have we been doing and what are we doing now to ensure that our research, scholarship, and artistic endeavors will continue to prosper in the service of the state and the nation?

Several years ago the University made a concerted effort to obtain major federally financed research centers. Last August the National Science Foundation announced funding for the Center for Interfacial Engineering. Research of great significance is being done at the Center; for example, Professor D. Fennell Evans and W. Hendrickson, a 3M Industrial Fellow working in the Center, used a scanning tunneling microscope to take pictures of the structure of conducting polymers. They are the first to uncover the helical structure of these polymers; they now understand better how to improve conducting polymers which may lead to the development of better microelectronic devices.

Several years ago the National Science Foundation established the Institute for Mathematics and Its Applications (IMA) at the University--one of two national institutes in mathematics supported by the Foundation. A report from an NSF team that evaluated the Center has just come in and states "The IMA is a first class act and getting better. . . The IMA has become a national asset which has revived and strengthened ties between mathematics, engineering and other sciences. The panel strongly recommends that the National Science Foundation continue its current support of the IMA and, if possible, increase its support for the Industrial Problem Seminar." We expect that as a result of this very favorable evaluation, the National Science Board will extend the present IMA grant through 1994.

We have some momentum, but we cannot rest on our laurels. Our success has been partially due to the "seed money" the University has put into projects at very early stages that made possible the developments that led to major outside fundings. Some examples will illustrate the returns from this investment. Between 1967 and 1984, the Graduate School supported the work of Professor Emil Pfender in the Department of Mechanical

Engineering with \$51,000. At the present time his outside funding is running at a rate of almost a half million dollars per year, there are a dozen graduate students that work in his laboratory. He is part of an engineering research center funded by the National Science Foundation jointly between the University of Minnesota and the University of Wisconsin. He has just developed a new process for synthesizing the new high temperature superconducting compounds which are faster and simpler than the old methods.

Professor Tom Clayton of the Department of English has received about \$18,000 over a number of years for support of his research on aspects of Shakespeare's writing; he has recently received a grant from the National Endowment of the Humanities for \$100,000 to support his research which enriches our appreciation of the genius of Shakespeare. The Graduate School provided Professor Subbiah Ramalingam, from the Department of Mechanical Engineering, with \$33,000 in 1981 to get his research program underway. He has been a central figure in the development of the Productivity Center at the University; his research which is now supported from outside funding at a rate of over \$200,000 per year, has led to a patent which the University has licensed. It has received over \$400,000 in royalties.

The University has decided to increase the funds available for these very important "venture capital" investments. If funds for this purpose do not come from the present legislative appropriation, the University will find other resources for this high priority need. We are acting to keep our "venture capital" funds at a healthy level.

Other active efforts to support research are underway.

A group of scholars from the Duluth and Twin Cities campuses is working with the Minnesota Future Resource Commission and some experts from other universities to develop a set of research objectives for Lake Superior. Mutually agreed upon research projects will be identified. The purpose will be to understand the Lake and its problems; the overall effort will form the basis for the development of policies to protect this unique, valuable resource.

A committee from the Institute of Technology and the Medical School is developing a plan for a new vibration free environment to house the new generation of electron microscopes and other equipment that will be coming on line in the next five years. If we can develop such a facility, the University of Minnesota will be at the forefront of research that looks at the very architecture of matter.

Some important activities that are going on at the present time are the implementation of the recommendations of the Task Force on the Quality of Graduate Education and Research released in April 1984. For example, the Task Force recommended, "That the University establish a program of junior faculty fellowships. This kind of program would at the same time advance the careers of young faculty and create a sense of institutional loyalty." The McKnight-Land Grant Professorship program is a support program for junior faculty like the one recommended by the Task Force.

The Libraries lie at the heart of many research endeavors at the University. While for some time the acquisition budget, so essential to keeping the collection up-to-date, has been eroded by inflation, the University has committed \$2,000,000 in soft money to beef up acquisitions. Service is also improving; this last month the retrospective conversion of the card catalogue to machine-readable form was completed. Now a student or professor can search the catalogue from a personal computer at a remote location; books selected can be delivered the next day. Steps are being taken now to expand the database in this system

called Lumina so that much more bibliographic information will be available, literally at one's fingertips.

We have presented something of a snapshot of a segment of what the University is doing now in research, of how our plans of the past are coming to fruition, and of the actions we are taking now to assure a productive future for research in the service of the University, the state, the region, and the nation.

**University of Minnesota**  
**Action Agenda Progress Report**

**March 10, 1989**

**OUTREACH  
EXTENSION  
TECHNOLOGY TRANSFER**

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# **OUTREACH, EXTENSION AND TECHNOLOGY TRANSFER**

## **Background:**

The University of Minnesota is a land grant university. Part of its mission is to extend the knowledge it generates in its laboratories, experimental plots, libraries and offices to individuals and groups in the public and private sector. This knowledge takes a variety of forms. Some of it is new production technology, generally viewed as the engine of economic growth in a modern economy. Some of it is new products such as new pharmaceutical products for the better treatment of disease or improved seeds for agriculture that help to better feed our population. Some of it is knowledge which leads to improved decision-making by those in the public and private sector. And some of it just helps individuals lead more rewarding and satisfying lives.

Minnesota finds itself, together with other states, in a more open, highly competitive international economy. This has served to sharpen our competition with other states. Equally as important, the arena of competition has broadened to include the global economy. Minnesota workers now compete with those in Brazil, Mexico, Taiwan, and South Korea. Private companies compete with companies in those same and other countries. Whether we compete or not depends on how productive our private sector and workers are, on whether we have sound economic and social policies, and on whether we attract the savings from residents of Minnesota and elsewhere to make the investments which create new jobs and generate income for our citizens.

The University of Minnesota has a myriad of ties, associations, and connections with the public and private sector in this state. These include formal and informal associations with the State Universities and Community Colleges, with the private sector, and with government agencies locally and at the state level. It has similar ties and programs with groups at the national level and in the international economy. In the latter two cases the goal is to provide information that leads to an improved policy environment for our citizens, while at the same time assessing knowledge generated elsewhere for the benefit of our citizens, workers, and private companies.

## **Actions already taken by the University:**

Much of the action agenda for outreach was established in 1976 by the **Study Group on Outreach**, whose all-University study and report was certainly one of the influential and useful documents in the recent history of University planning. Far too detailed to be summarized here, that report essentially urged that outreach activities should not be regarded as "marginal, optional, and overload" activities, but regular, integrated parts of the teaching/research/service mission. The report urged building outreach activities directly into the regular responsibilities of individual faculty, the departments, and the colleges. Even an incomplete sampling of current outreach and extension programs demonstrates that this goal has been widely attained over the last thirteen years; there is plenty of work left to do, but the progress has been substantial.

The University's expansion of **technology transfer** activities, building new cooperative relationships with private industry and public economic development organizations, is a major new thrust that developed in the last five years. The **principal actions** taken have been to **strengthen the Office of Patents and Licensing**, to **establish a Technology Transfer Council**, and, working with local venture capital companies, to **establish a Technology Development Fund** to develop faculty discoveries and new technologies that have commercial potential.

Results have been immediate. From 1984 to 1988, the number of patents issued grew from 5 to 26, placing Minnesota fourth in the nation behind Stanford, MIT, and the nine-campus California system. From 1983 to 1988, the number of potential inventions disclosed by faculty grew from 23 to 169. Over that same period, industry sponsorship of University research doubled -- from \$5 million to over \$10 million a year. More than 400 industry contracts with the University are currently in effect.

Significant inventions of the last year include:

- an anti-viral drug that shows great promise for the treatment of AIDS,
- a vaccine for human and animals against Lyme disease,
- a new process to improve the nutrition and texture of soy protein,
- a new line of corn that is resistant to a widely used herbicide, and
- a new method for cleaning foreign contamination from silicone wafers, the greatest source of failure of newly-made integrated circuits.

University licensing efforts have resulted in 14 new start-up companies in Minnesota and licenses of technology to seven additional Minnesota companies.

The University works closely with the Minnesota Technology Corridor, Minnesota Project Information, the Minnesota Cooperation Office, the Minnesota High Technology Council, and Medical Alley. Most recently, the University is developing Minnesota Project Outreach, a cooperative effort with the Minnesota Department of Trade and Economic Development and the Greater Minnesota Corporation that will give Minnesota companies a ready opportunity to review University research and technologies that are available for their use and will enable companies to obtain technical advice from faculty members.

Cooperation with the Greater Minnesota Corporation also includes:

- the Natural Resources Research Institute (NRRI) at UMD serving as a Designated Research Institute of the Greater Minnesota Corporation,
- a joint effort of NRRI and UMD's School of Business and Economics to establish the Center for Economic Development,
- GMC sponsored programs at Crookston, Morris, and Waseca to develop new technologies for improved utilization of agricultural commodities, and
- the Institute of Technology Productivity Center's proposed Center for Advanced Manufacturing

### **Actions to be taken:**

The following sampling of outreach, extension, and technology transfer initiatives is far from a complete inventory. While even a listing of program names may give the flavor of the current outreach activities, this listing fails to give even the most basic information on the structure, programmatic efforts, and results of important outreach efforts. It is based on a quick survey of only some University units, and it has demonstrated the need for a much more comprehensive survey.

In the next round of University planning during the coming biennium, each campus, college, and academic administrative unit will be asked to pay particular attention to its outreach mission as an integrated component of its teaching and research, inventorying all current outreach activities and evaluating them to see that they continue to meet priority needs.

## **A sample of outreach, extension, and technology transfer programs:**

2,500 continuing education credit courses in 200 academic fields  
Enrolling Minnesotans from 85 of 87 counties in independent study courses  
Minnesota Extension Service's emergency drought programs, the Farmer-Lender  
Mediation program, and the Center for Farm Financial Management  
Proposed statewide satellite communications system  
LUMINA, the University Libraries' computerized card catalog system  
MINITEX, the University Libraries' interlibrary loan program, largest in the U.S.  
Humphrey Institute study of Minnesota tax policy  
Rochester Area Graduate Programs  
Center for Urban and Regional Affairs involving over 350 faculty and students with over  
175 state and local agencies and nonprofit community organizations  
Agricultural Experiment Station's Statewide Soils Survey - 64 of 87 county surveys are  
done, with microcomputer systems done for 23 counties to optimize fertilizer mix  
Traveling exhibitions by the University Art Museum reached 100,000 Minnesotans  
U of M/VA Medical Center Alzheimer's Disease Clinical Research Center  
Intercollegiate Nutrition Center and the Food, Agriculture, and Nutrition Extension  
Program, involving the Medical School, the College of Agriculture, the School  
of Public Health, the College of Home Economics, and the Minn. Extension Center  
School of Dentistry Clinic for Handicapped Persons and the No-Cavity Clinic  
Community University Health Care Center  
University Hospital and Clinic Community Services programs  
School of Nursing faculty and students volunteering with community service programs  
College of Pharmacy maintaining Hennepin County's Poison Control Center, a substance  
abuse center to identify unknown drugs, and a Drug Information Center  
School of Public Health Minnesota Heart Health Program, the largest community  
demonstration program in the U.S. for reducing risks of heart disease  
School of Public Health/School of Social Work Long-Term Care DECISIONS Resource  
Center for care of the elderly  
School of Public Health's Health Policy Analysis Group, assisting State government  
Veterinary Diagnostic Laboratory, the official laboratory of the Minnesota Board of  
Animal Health  
Veterinary Extension  
Large Animal Neonatal Intensive Care Unit  
Raptor Research and Rehabilitation Program  
Biomedical Engineering Center  
Center for Biomedical Ethics  
Minnesota Building Research Center  
Cold Climate Housing Information Center  
Center for Transportation Studies  
College of Natural Resources aquaculture program and Forest Vegetation Management  
cooperative  
College of Home Economics Forums on Farm Women  
Center for Youth Development and Research Youth Poll and "Youth at Risk" program  
Minnesota Landscape Arboretum  
Minnesota Landscape Arboretum/Walker Art Center Cowles Conservatory  
Minnesota Supercomputer Center  
Minnesota Talented Youth Mathematics Program  
Humphrey Institute Citizen Education Program  
Humphrey Institute Center for International Economic Policy  
Continuing Education and Extension's continuing professional education programs  
Institute of Technology Center for Interfacial Engineering

**Institute of Technology Project UNITE, providing off-campus engineering courses**  
**Institute of Technology Project Technology Power, to increase participation of high school minority students in science and engineering**  
**College of Liberal Arts departments and faculty interactions with dozens of community and state arts organizations for performances, conferences, planning efforts, exhibitions, fellowships and internships, and special programs for K-12 students**  
**College of Liberal Arts/Carlson School of Management Corporate Responsibility program**  
**The Ethics Project, a study group of 200 faculty from nearly all Twin Cities area colleges**  
**Law School Human Rights Center**  
**College of Education Center for Applied Research and Educational Improvement, actively linking the College with 44 member school districts**  
**College of Education/Minnesota Educational Computing Corporation Center for the Study of Educational Technology**  
**Minnesota University Affiliated Programs, a national network of universities and teaching hospitals working with developmentally disabled persons**  
**University of Minnesota Cancer Center**  
**Minnesota Area Geriatric Center**  
**Institute of Human Genetics**  
**UMD School of Medicine Center for American Indian and Minority Health**  
**College of Veterinary Medicine/Minnesota Racing Commission Analytical Laboratory**  
**Urban Design Center**  
**Minnesota Research and Development Center for Vocational Education**  
**Underground Space Center**  
**Immigration History Research Center**  
**... and more.**