Case as a Research University: Opportunities and Challenges

Recommendations of the Commission on Research and Graduate Education

April 2004

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Introduction and Overview

This is an historic and exciting time for the University, with a renewed commitment to learning and service at all levels. Such times present both opportunities and challenges. Case has a distinguished history of research and scholarship. How can we proactively maintain our research standing in areas of traditional strength, and build up those areas where increased strength would produce significant returns? What steps are required to meet the challenges of a changing research environment? How can we address the promise presented by new large interdisciplinary programs, as well as the burden imposed by rapidly escalating costs of recruiting and supporting faculty and students?

The Commission on Research and Graduate Education was convened in order to identify and explore the opportunities and challenges associated with flourishing as a major research university. The specific charge to the commission included the following:

(a) To explore possible administrative changes at the University that would facilitate research and graduate programs throughout the University. Recommendations can range from budgetary changes to University and management center administrative changes. In particular, how can interdisciplinary research be facilitated?

(b) To examine current levels of infrastructure and recommend needed infrastructure to effect significant improvements in research and graduate programs at Case Western Reserve University.

(c) To explore other mechanisms that can be implemented at the University to encourage faculty in their research and support of graduate students, including changes in tuition policies, graduate student stipends, and other academic and financial strategies.

(d) To make recommendations on how to improve the quality and quantity of graduate students coming to study and carry out research at Case, and on how to improve their research experience while they are here.

Over the course of our investigations we developed the goal of presenting a series of recommendations whose immediate implementation might be possible, and then to sketch future directions that will require further analysis and exploration in order to improve our national ranking across schools and departments. Our motivation has been to raise the profile of research and graduate education issues among the faculty, the administration, and trustees at a time when many aspects of the University are under discussion. We hope our recommendations will stimulate both discussion and action.

The Commission is comprised of faculty representatives from most management centers at Case, as well as representatives from the postdoctoral community, graduate and undergraduate students. During the past academic year, our Commission has received feedback from faculty, students, and administrators at Case and elsewhere. We strove to gain a comprehensive understanding of the current status of the University, including existing impediments, and opportunities that might exist for significant new initiatives.

President Hundert has presented an inspiring vision for the University to become the "most powerful learning environment in the world." This vision compels us to examine what comprises "learning" within the context of a modern research university. The central missions of a research university are the creation and the dissemination of knowledge including the techniques for generating new knowledge, and the application of knowledge for the benefit of the community at large. At a vibrant research university learning emerges from the joint activity of faculty, researchers, alumnae, staff and students, who together create a community interwoven by shared values.

At a research university, the ability to sustain first-rate education *at all levels* depends on the development and maintenance of the very best research programs, which in turn depends upon developing and maintaining the very best faculty. From this flows the translation of knowledge to the community, and increasing institutional recognition. Top research universities achieve and maintain pre-eminence by attracting and retaining outstanding faculty and providing the infrastructure for cutting-edge research. These faculty attract the best students, they provide new knowledge, and they establish and maintain the intellectual climate of learning that is the essence of the university community. In order for Case to prosper as a pre-eminent institution of learning, including the undergraduate experience, we recommend significant new investment in basic research infrastructure; in forward-looking research facilities that will keep us at the cutting edge; in faculty development, including both recruiting new faculty and support of successful existing faculty members; and in recruiting, training and support programs for both postdoctoral researchers and graduate students, both domestic and foreign. These individuals are the lifeblood of any research enterprise.

There are great synergies between the research mission of the University and the undergraduate learning environment, especially as it relates to several of our core educational goals, including the development of new experiential learning opportunities, and the promotion of life-long learning. To this end we believe that research and scholarship should drive the allocation of resources, including new resources to accommodate proposed changes in the undergraduate curriculum. Ultimately, we believe that excellence in scholarship, research, and performance among faculty is the best way to ensure the quality of undergraduate education at Case. We note that this connection was also advocated by the recent President's Commission on Undergraduate Education and Life.

We also frame our recommendations with the understanding that research and graduate education cannot be judged solely in monetary terms. Money raised for the research enterprise should be viewed as an investment in the central mission of the University, the creation and dissemination of knowledge. Faculty must share in the responsibility of raising funds to support their research endeavors. In addition, we respect and appreciate the fiduciary responsibility of the administration and the Trustees. But we affirm a central value: research income alone is not the sole measure of success in research and scholarship. Although we appreciate the importance of technology transfer, and the civic importance of its associated spin-offs, excellence cannot be judged primarily according to possible revenues that may accrue to the University. More generally, all avenues of

research and scholarship, even when externally funded, require an investment of resources by the institution.

Over the course of our deliberations, three findings quickly became clear:

1. Significant development and investment of resources in graduate programs and research infrastructure will be required to maintain and enhance our status among top level research institutions.

2. We must work to ensure an attractive and supportive environment for quality research at all management centers, as well as interdisciplinary research programs that exploit synergies between different management centers.

3. The resources required to meet all needs are greater than will be available in the short term. Therefore, Case should make focused investments in targeted areas of strength and in areas in which there is a need to build strength. This strategy has been used successfully by other universities to raise overall institutional quality.

The recommendations we make involve both systematic administrative and financial changes. Some of these are based on prototype programs that exist here and elsewhere, and some are proposals that may require testing via the creation of prototypes. These will require the development and allocation of significant resources. However, we feel that their importance warrants a concerted effort to develop them. We are not alone in this belief. For example, Stanford recently embarked on a $200 million fundraising program for graduate fellowships, while Harvard has announced a new $200 million investment in five new interdisciplinary research initiatives, including genomics and nanotechnology.

We also recognize that increasing the resources for research involves a partnership between faculty and the administration. In particular, faculty bear a significant portion of the responsibility for attracting outside funding for their research. The role of the university is to provide the necessary infrastructure to facilitate these efforts.

We present both recommendations that we believe can and should be implemented in the short-term, as well as recommendations that will require resolution in the longer term, where further analysis involving cost estimation and priority-setting will be required.

Our report is structured as follows. We first present our major recommendations. Then, we present a series of sections corresponding to the issues within our mandate, presenting a philosophical overview of our position, followed by a brief summary of our findings. In appendices that will be available on a web site we present the results of various questionnaires, and other documentation obtained by the commission.

The challenges we face are many, but so too are the opportunities. Recent initiatives are making progress, and the committee is unanimous in its faith that with bold actions taken in a timely manner the future of Case as a world class research university can far outshine its distinguished past.

Recommendations

(A) Immediate Implementation:

1. We recommend the creation of a Research Council, comprised of 10 leading research faculty from among all management centers, as well as the Provost, Vice-President for Research and Technology Transfer, the Dean of the Graduate Studies, the Vice-President for Development and University Relations, the Budget Director, and representatives of the Deans for each management center, the faculty senate, the graduate student senate and postdoctoral research council, and chaired by a distinguished senior faculty member. This body, convened by the Provost, would meet monthly to discuss key issues associated with the research environment at Case. This group would serve in an advisory, not a monitoring, capacity, and would proactively investigate new research opportunities, and help propose mechanisms to strengthen ongoing programs and address shortcomings. It would make recommendations to the Provost, and serve as an advocate for faculty interests in decisions associated with research and graduate education. The chair of this council should be a member of the President's cabinet and will appear before the faculty senate at least once each term to outline the issues that have been raised in council meetings.

2. We recommend that the Research Council described above immediately appoint a working group to examine four proposals that could rapidly lead to improved facilitation of graduate education at Case. This group should also include, besides selected members of the council, the chief financial officer, and Budget Director, and the Chair of the Research Committee of the Faculty Senate   This working group should be charged with identifying changes that can be implemented in the near future. The proposed changes are:

   a. Eliminating overhead charges on tuition to the extent possible with minimal impact upon the University Budget

   b. Partial subsidy of the current graduate tuition for students supported by grants.

   c. Implementation of a policy of tuition-free graduate courses after a student has completed the tuition requirements of his or her program of study.

   d. An allocation formula to allow some flow of graduate tuition to the management center in which graduate courses are taught.

3. We recommend that the Dean of each management center appoint at least one Associate Dean for Research and Graduate Education within that management center, who will attend meetings of the Research Council described above, and also be a point person for research concerns at the management center level.

4. We recommend the appointment of a full-time Dean of Graduate Studies, along with the creation of a dean's office with the necessary infrastructure to provide adequate support for strategic planning, graduate student recruiting, and support for graduate students and postdoctoral scholars.   The dean would be expected to be a faculty member of distinction who can help provide strategic leadership and resource development.

5. The Office of the Provost and the Office of the VP of Research and Technology Management should work in a proactive manner with faculty to anticipate broad new thrusts or programs and to help organize the University response. The staffing of the research enterprise must be characterized by both accessibility and accountability, with facilitation being far more important than policing. Specific proposals for improvement include:

(a) Central administration funds should be made available to support hiring or contracting with seasoned proposal development professionals who can assist, particularly with the development of large, interdisciplinary or multi-institutional applications. In addition, there are now many grants that require the same (extensive) institutional information to be provided. For example, training grant applications require multiple tables of all applicants to the graduate programs, all training grants available in the institution, and the application and acceptance record for each individual department.   This material could much more easily and accurately be collected centrally and archived electronically than to have it collected anew by each PI for each application.   The sources of external support for the humanities are structured very differently from those for science or engineering. The Office of the Vice President for Research and Technology Transfer should explore ways to help better support faculty interested in obtaining funds for arts, humanities, and social science-based research projects, and should also take the lead in providing text for proposals that require outreach activities for minorities, women, and K-12 education.

(b) High priority should be given to streamlining the process of regulatory approval with an eye to *facilitating* (rather than simply monitoring) safe and regulatory-compliant research. Considerable thought has been given to streamlining the safety training requirements by extensive use of on-line training, though the record-keeping surrounding completion of the requirements should be improved. Obtaining regulatory and contractual approval for human and animal studies in a timely fashion is essential for the smooth conduct of research. The process should be transparent and rapid, and there should be regular re-evaluation of the time required for approval. In addition, continuing effort should be made to develop procedures appropriate for the minimal risk posed in much social science research. Use of on-line communication is a more and more prominent means of improving the timeline (e.g., Institutional Animal Care and Use Committee (IACUC) protocols).   There is variability among Institutional Review Boards (IRB's)) at different sites in the time required for approval, and contracting with outside payors for human and animal studies can still be a protracted process. All of these approval processes should be continuously under review.

6. Human Resources should provide assistance in recruiting research assistants, in matching qualifications to job descriptions, in responding rapidly to requests to establish positions, and in establishing competitive compensation both for routine jobs (such as secretarial and routine technical jobs) and for highly technical and specialized jobs (computer programmers, some library staff, technology transfer experts, and others with sophisticated technical skills). For some of the latter jobs, there may be no obvious suitable category with an appropriate salary range, so flexibility is in order.

7. Centralized grant accounting must be improved to assure report balances in near real-time, and to include online purchasing, accounting, declining balances, and projections. In addition, the accounting system should be transparent and customizable to satisfy the requirements of different granting agencies. In order to facilitate purchasing, the University should investigate the feasibility of assigning Pcard purchases to individual grants

8. Communication with the faculty regarding issues of Technology Transfer can be improved and streamlined, and should be a high priority. Faculty education needs to be continued, including the most efficient means of submitting materials, forms that facilitate the process, and mechanisms for follow up of important items. With increased use of web-based communication, it is critical to have a user-friendly, easily searchable, legible web site that includes information on how to access services in the most efficient fashion. The financial policies surrounding royalties and licensing, contained in the faculty handbook, as well as some explanation of what constitutes "expenses" associated with patenting and licensing that will eventually be charged against income, should also be clearly retrievable on the web site, which should be updated regularly. Mechanisms should be put in place (and monitored) for keeping the faculty apprised of the status of Materials Transfer Agreements or for invention disclosures, and difficulties encountered in executing them. Similarly, the status of an invention disclosure needs to be accessible at all steps.

9. The Office of Foreign Faculty and Scholars (FFS), in conjunction with the Offices of the Provost and Research Administration, should have the capability to liaise with foreign scholars and institutions, help organize or host visits from or to foreign institutions, assist faculty and departments in developing joint programs with foreign institutions, and work with faculty and students on foreign exchanges and in garnering fellowships for foreign study. On a fundamental level the operations of this office could be made more transparent and easily accessible to faculty. The current staffing levels are thin making a service-oriented approach to visas and green cards for faculty and postdocs difficult. Communication is a serious problem in both directions and must be improved. One strategy could be to provide resources for a web-based interface with FFS. This could provide, for example, on-line tracking of the status of visa and green card applications, a concise road map outlining the steps to be taken to process applications, and examples of letters and advertisements that meet the legal requirements imposed by the government. In addition, the Commission is concerned that the level of staffing and support of ISS (International Student Services), which is responsible for visa and other issues for both

international graduate students (approximately 1200) and international undergraduate students (approximately 140), is not commensurate with the increased responsibilities and importance of its work. As currently constituted, International Faculty and Scholars is part of the University Attorney's Office. International Student Services reports to the Office of Student Affairs. The Commission recommends that this organizational structure be revisited in light of the increasing importance and difficulty of the functions that these groups provide.

10. It is important that the assignment of costs of maintaining research space be uniform, and transparent. For example, when insufficient space is available on campus and faculty are housed in rented space, the basic costs for such housing should be borne from the University's indirect cost recovery. Also, research grants should not be used for building maintenance. Costs for items that would move with the investigator should be assigned to the investigator, but items that would not move with should be the responsibility of the institution. It is of course crucial that the institution comply with federal regulations on this score. Ultimately, there should be a systematic financial and administrative plan for upkeep of all research areas.

11. We recommend that the President and Provost report on progress toward implementing these proposals to the faculty and Senate of the University at the beginning of the next academic year.

(B) Longer Term Recommendations:

(a) Endowment Needs

1. We recommend that a major development initiative to support graduate fellowships be initiated as one of the highest development priorities of the university. The fellowships will permit Case to attract the best domestic and international graduate students. They will provide a means to leverage external support and to free both students and faculty from the vagaries of external funding. We propose a program that will, in the long term, support 300 Case Graduate Fellowships. This is approximately 10% of the current graduate population. Three hundred fellowships will permit the University to improve the quality of graduate programs across the University and to make a major impact in some targeted areas. To support the long term goal will require an initial endowment of $210,000,000, which is based on an annual fellowship cost of $35,000 and a 5% payout from endowment. As a short term goal, and to get the program started in targeted departments, we propose obtaining endowment support for 30 graduate fellowships, requiring an endowment of $21,000,000.

2. While the development program required to achieve many of the current goals of the institution will need to be substantial, we recommend an additional development initiative for $150 million so that the University can provide an initial *additional* $7.5 million annually (to be increased as further resources are developed) to support the management centers in helping create and foster new research opportunities and challenges that may arise on a one-time basis. Such opportunities may include, for

example, assisting in the development of interdisciplinary research centers (see below), fine arts facilities, and recruiting and retention of "superstar" research faculty, as well as for the recruiting of junior faculty. In some years these funds might not be needed; in other years accrued funds might be required to make a multi-year commitment. We view the loss of outstanding research faculty at Case as one of the most serious problems currently facing the University. In this regard we recommend that financial and other new methods of recognition at Case be developed to reward and foster stellar efforts or leadership in a field. At the same time, attracting the best junior faculty in fields considered to be integral to our mission as a national research university will entail offering competitive start-up packages, often in excess of $1 million. We also propose that each major thematic area have at least one nationally recognized star. If in a field integral to our mission a department of thematic area lacks a star, then funds for a competitive senior-faculty recruitment package should be raised for the specific goal of nucleating that field at Case. As expenses such as those mentioned in this paragraph could be in the range of $1-3 million apiece, a fund at the recommended $7.5M level could address several such opportunities each year.

3. Although the space needs differ from management center to management center, there are some novel research and educational facilities that will require new, customized, and common space. In many areas, space for graduate students and postdoctoral fellows is extremely limited. We recommend significant investment in space, and propose that the research council should work closely with those involved in the ongoing space planning exercise at Case. Space needs include new space for faculty and graduate students, a room for small conferences of 100 to 200 people, space for training and housing research staff, and labs for observations of human interactions, as well as more traditional laboratories. As an example of the kind of focused investment required to revitalize the arts and humanities, significant upgrading of performance spaces for the arts will be required. In addition, providing space for collaborations for musicians, actors, dancers, designers, playwrights and composers with professional musical, dance and theater organizations of national and international reputation should be explored.

4. Create a number of endowments for faculty fellowships. These endowments can be used for direct support of faculty research and/or to obtain a sufficient number of teaching assistants to create opportunities for faculty in small departments to have teaching load reductions for scholarship, sabbaticals, and academic leaves. It is recommended that a subcommittee of the Research Council be established to work out various possible strategies in this regard.

(b) Interdisciplinary Programs:

Because future opportunities increasingly lie at the borders between conventional fields, we have recommended that funds be raised centrally for centers and facilities that cut across management centers. The recently initiated Centers of Excellence Program is a first step in this direction, but significant new resources will be required to make this truly effective. In addition, the University must be prepared to provide and maintain interdisciplinary core facilities with some central funds. The core resources needed may

be intellectual resources, physical plant resources, large equipment resources, or simply services that are more effectively provided centrally than in private enclaves. Examples of cross-cutting initiatives are a center for nano-fabrication or the current developing Bioinformatics initiative. Guidelines should be developed as to what constitutes interdisciplinary or cross-cutting facilities, and for their access and utilization once they are developed. The ongoing university-wide effort to distinguish the university's technology-based research via Centers of Excellence in Advanced Technology and Faculty Research and Development should be continued with additional support.

(c) Faculty and Graduate Education Issues:

1. It is vital that faculty salaries at Case be competitive with peer research institutions. We recommend that the existing seed programs be expanded and generalized to encourage and reward success. Details will differ among management centers. Such programs may include aspects of salary recovery, teaching load, and matching funds for equipment and sabbatical leave. We highlight in particular the importance of bridge funding mechanisms for successful programs of research.

2. All faculty should be provided with basic desktop computing resources. We understand this initiative has recently been approved, and we urge that its implementation begin as soon as is practical.

3. Ensure that graduate teaching, including supervision of graduate students is equitably considered as part of the teaching load of faculty. In addition, efforts should be made to ensure that adequate mentoring of graduate students is taking place, and that this mentoring is factored into teaching responsibilities.

4. Develop a centralized system to collect longitudinal data about faculty need for and satisfaction with resources to support the teacher/researcher role. We are aware of some current initiatives to support this initiative within the university by the Resource Equity Committee and the newly formed Re-accreditation Subcommittee on Faculty Engagement, Motivation, and Commitment. We suggest that the work of such groups be used to formulate a functional unit within the university responsible for a centralized system for ongoing assessment and monitoring of faculty resources. As the creation of the most powerful learning environment in the world will be likely to require significant faculty involvement in new teaching and service programs, care must be given to ensure that existing duties in these areas are adjusted accordingly so that faculty research is not adversely affected.

5. Provide support for lecturers and teaching assistants, including a centralized orientation/training program, space and computers.

6. The University Office of Special Events should be expanded to help the faculty in hosting and marketing conferences, including help with securing rooms, registrations, and all the ancillary services need to bring sponsor such events.

7. Several departments are extremely small, having four or fewer members. Even several of the larger ones in arts, humanities, and social sciences lack scholars in basic areas. The University should direct the College to identify specific strategies for promoting targeted development of doctoral and post-doctoral programs and possible links that could be developed over the next five years. The University should target some graduate programs in which it should invest resources to develop recognition of those programs nationally and internationally (while maintaining basic levels in the core programs in the arts, humanities, and the social sciences). This strategy has paid off at institutions such as Carnegie Mellon, where targeted resources in specific centers of excellence have had a non-linear impact on the quality and ranking of various graduate and undergraduate programs, such as theater and computer science. Some graduate programs might benefit from being combined, perhaps via centers of some sort. These could include a humanities center, and a social sciences research center. In this way, research resources could be combined. The Institute for Social Research at the University of Michigan at Ann Arbor offers one successful model of how such a complex might function.

(d) Library and Network Infrastructure:

1. The University should continue to increase expenditures on the library dramatically, following up on initial efforts that are currently underway. According to data from the Association of Research Libraries, an additional acquisitions/personnel budget of at least $3.5 million/year will to be required to allow sufficient collection growth and staff to closer align the Case Libraries with the top 100 academic research libraries. Long-term planning to develop and house adequate research collections and provide study facilities adjacent to them would aid scholars already here and help attract dynamic new faculty. The different reference needs of humanities versus science departments are important in guiding development. Specific requirements include: spending significantly more on acquisitions; create more study carrels for faculty and graduate students; provide personnel with advanced degrees in appropriate academic fields to build collections, and to assist faculty and students; continue to refine the library search and on-line reference and journal access to make them more accessible on and off campus. Also we must continue to create closer ties with and improve accessibility by integrating Case libraries with the Cleveland Public Library and University Circle institution libraries, and make use of research and graduate resources in Cleveland by creating open networks or consortium of libraries, archives, faculty cooperative research ventures, with free access, transportation, seminars, etc. (The Five College system in Massachusetts and the Claremont California system are possible models).

2. Leveraging the internet network in support of the research mission is now one of the most significant and urgent pre-requisite to the research infrastructure at Case. Specifically, we are proposing support for four inter-related initiatives:

i. Following the lead of research colleagues in genetics, physics, and astronomy, Case should invest in an advanced computational research facility. It is both impractical and undesirable to replicate research investments in computation. Most importantly, our research community should not be required to become, or pay graduate students to

become server and storage administrators. Working together with the Information Technology Services Division, we recommend investment in advanced computational research including a multi-terabyte storage facility and a series of linux clusters for research needs. We also recommend that the facility be staffed with central resources so as to optimize the investment in that area.

ii. We propose that the University support investment in grid computing, similar to efforts currently underway at other major research universities. Such efforts will allow computational facilities at Case to be joined to the Ohio Super Computer and other centers to support collaborative research.

iii. As described earlier, we recommend accelerated development of the University's network support of modern grants management, with the goal of eliminating costly shadow systems and other inefficiencies.

iv. Over the next 18-24 months, we recommend the roll out of desktop and classroom video conferencing across our university network to enable faculty collaboration across the country and around the world. This investment will reduce travel and off site costs, and it will augment the interaction and collaboration of researchers who are now moving to the collaborative, internet-based videoconferencing environment.