Faculty Senate Planning and Resources Committee
October 1, 2003

Objective

To set forth observations and suggestions of faculty in the Rensselaer School of Engineering at an early stage in the annual performance planning process.

Overview

Rensselaer is in the midst of four highly advertised thrusts: a major commitment of resources to biotechnology, a well-developed program in nano-technology, a less-focused effort in information technology, and a very large building program in support of the arts. Work in these areas is unstinting, even in the face of an uncertain investment market. Indeed, the September 19, 2003 report to the Board of Trustees Finance Committee concluded that:

“FY03 Financial Activity is indicative of Rensselaer Plan momentum despite current economic conditions.”

It is a problem that the concentration of resources in the Rensselaer Plan thrust areas appears to be threatening vested, widely respected Rensselaer programs – programs with which many faculty strongly identify.

Beyond this, there have been many staff additions to the administrative branches at Rensselaer, and a general expansion of the roles of these branches vis-à-vis line administration within the School of Engineering and its Departments. This has led to confusing and sometimes impractical implementations of elements of the Rensselaer plan, compromising faculty, departmental and school efficiencies.

In this context, faculty input reflects the following:

a) Many faculty sense little involvement with the Rensselaer Plan, except for unpredictable and constraining diversions of their professional practice resources.

b) There appears to be little or no budget flexibility at the Department and School of Engineering levels. While substantial resource growth may be cited, it seems generally devoted to new staffing and related facilities in the thrust areas. As far
as mainstream Rensselaer activity is concerned budgets are cited as “flat”, at best. Last year’s Faculty Senate Planning and Resources Committee published *Remarks on Rensselaer Performance Planning*, addressing this dilemma, with emphasis on faculty inability to react to and take advantage of work-a-day opportunities.

c) Finally, there is a widespread concern amongst faculty that the current diversion of resources to the thrust areas threatens the survival of Rensselaer’s foundations in such areas as undergraduate education in engineering practice, graduate program advising and administration, and our traditional, widely-respected leadership role with industry.

**School of Engineering Faculty Input**

The Faculty Senate Planning and Resources Committee received a large number of comments and questions from faculty of the School of Engineering in response to the solicitation from Cheryl Geisler, president of the Faculty Senate. These inputs have been consolidated and summarized below.

1) Many planning problems are due to the “flat budget”. What is the “flat budget”, and why do we have a “flat budget”?

2) Is there any plan to reduce the student-to-faculty ratio, and does the administration see this ratio as fundamental to Rensselaer’s ranking amongst peer institutions (either nominally, via ranking algorithms, or more fundamentally in terms of actual program quality)?

3) What are the prospects for teaching assistant and adjunct faculty support?

4) What are the prospects for a consistent policy on teaching assistantships and research assistantships? We need a stable policy.

5) Are teaching assistantships going to be moved to Departments with higher levels of research assistantship support?

6) Should students begin their studies as teaching assistants or research assistants? Is there a policy on this?

7) What is the plan to rejuvenate our interface with industry?

8) Many faculty feel that planning input is a waste of time in the face of overriding central administration policy. How can the School of Engineering address this?

9) How is the centralization of administration (new administrators, limited School of Engineering flexibility) being addressed in the School of Engineering’s planning, especially with “flat budgets”? That is, can the role of a growing Rensselaer
administration be utilized to download School of Engineering workloads, instead of adding to them?

10) How is space being allocated for new and/or junior faculty?

11) What is happening in our relations with SUNY-Albany?

12) Will we make space adjustments to provide an appropriate physical environment (studio/laptop) for interactive learning in large core engineering courses?

Remarks from the Office of the Dean of Engineering

Dean Baeslack addressed the School of Engineering Faculty Early Input Forum on Wednesday, September 17. A copy of his presentation slides is attached to this report. The Dean summarized a number of major objectives devoting resources to the major Rensselaer thrust areas, including emphasis on entrepreneurship and diversity. A number of faculty performance goals were cited, particularly in regard to the development of research funding.

Dean Baeslack had indicated to the Faculty Senate Planning and Resources Committee that he would not be able, at this early stage of planning, to quantify budget elements. Moreover, a number of his goals did not seem to involve a commitment of new resources. However, he did note plans to establish two new school-level interdisciplinary research centers and to expand the Multidisciplinary Design Laboratory capstone design experience, involving at least 250 students from at least six departments.

The Dean commented at some length on items 1) through 7) above, and his remarks were embellished by questions and comments from the floor. In regard to question 1) about “flat budgets”, the Dean noted that we do not really have a flat budget. In fact, he said, many new resources are available, including capital investments in the new Biotech building, start-up packages for new faculty, and diversity hiring positions available through the Provost’s office. The operating budget also includes equity increases for faculty. Acknowledging that the operating budget is basically flat, Dean Baeslack noted that there are substantial new resources available through these special programs.

Regarding the student/faculty ratio, Dean Baeslack stated that the intent is to keep the number of entering undergraduates flat at 1200. The number of graduate students, especially doctoral students, should increase. Meanwhile, many new faculty are being hired and this will improve the student/faculty ratio. There are a few “pinch” areas where we have not been able to add faculty quickly enough to meet the high student demand, i.e. in Biomedical Engineering. This is a transient situation and will be corrected in time.

An forum attendee asked how the student/faculty ratio affected national ratings, such as those in US News and World Report. The Dean said that the ratio does not
directly affect ratings. It matters only in that it may influence the opinions of the engineering school deans who rate Rensselaer.

Regarding the prospects for TA and adjunct faculty support, the Dean noted that the total amount of TA support has not changed. The difference now is that every TA receives a full 20 hours of support, whereas, in the past, some students had 10-hour or 5-hour TA support. The result is that there are fewer TAs now than before; however, the total number of TA slots has not changed. Currently, every slot is filled with only one student and not with two or more students. There may be some loss of flexibility as a result. A minor cut in adjunct support was necessary due to the need to balance the operating budget.

Beyond this, Dean Baeslack noted to the Faculty Senate Planning and Resources Committee that there have been some tactical year-to-year adjustments in the TA slots, even though the baseline number of slots has remained essentially constant. Last year, because of the necessity to cover all “spot labor” TA’s from the previous year, 35-40 additional TA slots were allocated. During the current year, the number of TA’s returned to the baseline number, but 6 additional TA’s were provided by the Provost to cover the additional sections of core courses needed in response to high freshman enrollments.

A forum attendee asked if the number of adjuncts had shrunk or not. Dean Baeslack replied that there is no purposeful intent to shrink adjuncts. However, as we need money to support new faculty, we may have to decrease support for adjuncts. We have more adjuncts per faculty than most schools. Adjuncts bring an industrial perspective to the classroom and are especially valuable in our design classes. We will continue supporting them. Dean Messler added, from the floor, that too many courses are currently taught by adjuncts and reiterated that Rensselaer hires more adjuncts than other institutions.

Addressing prospects for a consistent policy on TA’s and RA’s, the Dean noted that we have an algorithm for TA loading. Sometimes, last minute changes are necessary because courses are added or dropped or an unexpectedly large freshman class is recruited. A graduate policy is in place and is being reviewed. We need to ensure that TA’s matriculate into RA’s in a timely fashion and we are putting in place a policy to track TA’s so that this occurs.

Dean Apple noted, from the floor, that there is an incentive plan in place. After a student has been supported for four semesters on TA funds, the school will pay half their support if a faculty member pays the other half. A forum attendee noted that this policy may have unintended consequences in that it provides a disincentive to give RA slots to entering students. Dean Apple replied that the policy is designed to do what is best for students. Currently, there are about 40 students “at risk.” These are students who already have three semesters of Institute support and need to be transitioned to RA posts. The forum attendee further noted that graduate policies need to be stabilized. Dean Apple replied that oscillations in policy are generally due to a softening of the policy to make allowances for individual cases.
Dean Baeslack described the new policy of tracking graduate students from day one. An individual plan for each student in each semester will be developed so that students make acceptable progress towards their degree. Efforts will be made to link students with faculty early in their education.

Regarding the question of TA’s being moved to departments with more RA support, Dean Baeslack said that the appropriate number of TA’s will be assigned to each department. Every effort will be made to assign the most qualified TA to each course, keeping in mind that every TA must, in due course, be moved into an RA slot.

Dean Baeslack stated that no policy exists regarding whether a student should start his or her studies as a TA or an RA. Moreover, there is no plan for such a policy. If a faculty member wishes to hire a student in as an RA, that will be acceptable. He will not support a policy that requires everyone to start as a TA. We need flexibility in our graduate recruiting.

The Dean noted that the rejuvenation of our interface with industry is an important priority. Graduate tuition increases have impacted negatively on our relationship with some industrial partners. We are currently working to improve communications, and some companies will return. Industry will ultimately return because we have excellent people with cutting-edge research. As we increase the number of world-class faculty, industry will be attracted back. Dean Gerhardt added, from the floor, that the character of industry support has changed. Now there are fewer big companies and more small and mid-sized firms. Rensselaer still attracts two to three times the national average in industrial support.

An attendee asked about support for more traditional areas of research and the prospects for a new engineering building. Dean Baeslack replied that the campus space planning committee (SUMAC) is very aware of the need for more space. We also have a need to renovate existing space, such as the Ricketts building. It is unlikely that there will be a new engineering building in the next ten years. As to traditional areas of research, the Dean affirmed that a university always needs some diversity in faculty expertise and research interest, but that we must focus on the promising areas that have been identified. He encouraged faculty to align their research with the focus areas.

The discussion with Dean Baeslack went beyond the time allowed, and it was not possible to address items 8), 9), 10), 11) and 12) directly. Responses to these items will be solicited from Dean Baeslack at a later date. Regarding item 10), it should be noted that the Dean’s presentation of “Top Priority ’04 Actions” included effective mentoring and supporting of new faculty to promote career success.

**Emerging Criteria for Performance Plan Evaluation from School Of Engineering**

In this context, the following criteria are set forth for continuing School of Engineering performance plan evaluation.
1. How does this performance plan enhance the participation of faculty in the planning process?

2. How does this performance plan provide some measure of flexibility to take advantage of unanticipated opportunities?

3. How does this plan sustain undergraduate recruitment into traditional areas of engineering practice?

4. How does this performance plan extend graduate student advising?

5. How does this performance plan improve our relations with industrial partners?

6. How does this plan work toward the goal of reducing the exceptionally high student-faculty ratio in SOE?

7. How does this plan work to stabilize and communicate the policy on teaching assistantships and research assistantships?

8. How does this plan reduce faculty’s service loads by migrating tasks to administrative functions?

9. How does this plan alleviate the growing space crises in SOE?

The Faculty Senate Planning and Resources Committee expects to see consideration of the above concerns in the development of the School of Engineering Performance Plan for this year. The Committee expects continuing dialog on these matters, and hopes that this report can be a reference for such discussions.

It is particularly important that a reasonable balance be created between a) the use of resources for the Rensselaer thrust areas, and b) the requirements for maintaining a strong central program.
Faculty Senate Town Meeting

School of Engineering

Bud Baeslack
Dean

September 17, 2003

SoE Performance Plan Overarching Goals

- Expand the Research Enterprise
- Enhance Education
- Achieve Diversity
- Increase Scientific and Technological Entrepreneurship
- Build Communities
- Redesign and Invigorate Enabling Activities
### Goal - Expand the Research Enterprise

- Hire several "rising star" senior and high-potential junior faculty in the BT and IT Constellations – complete Future Chip Constellation.
- Hire top-notch individuals into Clark and Crossan and Redfern endowed chairs.
- Hire 7 research-intensive, senior and early-career replacement and new faculty in SoE Key Research Focus Areas – focus on Biological Engineering and Information Systems.
- Establish two new School-level interdisciplinary research centers – e.g., Fuel Cell Materials and Manufacturing.

### Metrics for Expanding the Research Enterprise

- Sponsored and gift-supported research of over $40M/year by FY08.
- 75% of new junior hires receive Career Award.
- Number of World Class Faculty – 15% by FY08.
- % of Research Active Faculty – 80% by FY08.
- Average Research Expenditures/research active faculty of $300K/year by FY08.
- Number of Research Faculty and Staff – 50 by FY08
- # of GRA’s – 50% of all GA’s.
- Establish and provide seed support for two new SoE or joint research centers in FY04.
- USNWR Graduate and Research Rankings – Top 15 by FY08.
Goal—Enhance EDUCATION

- Create an innovative, state-of-the-art Core Engineering experience – pilot implement Core Engineering Renaissance Program in Fall of 04.
- Incorporate new topics/courses into the curriculum that are critical to the career success of our graduates – e.g., entrepreneurship and biosciences.
- Implement improved student advising policies and procedures.
- Expand the Multidisciplinary Design Laboratory capstone design experience – involve at least 250 students from not less than 6 engineering departments.
**Goal – Achieve Diversity**

- Aggressively seek, interview and hire qualified women and underrepresented minority faculty – especially rising-star faculty at the senior ranks.
- Promote interest and the enrollment of women and underrepresented minority graduate students in the School of Engineering.
- Highlight and promote WIE events, activities and programs, including scholarships, mentoring programs, etc.

**Goal - Increase Scientific & Technological Entrepreneurship**

- Integrate principles and practices of engineering entrepreneurship across the curriculum – from Core Engineering to the Multidisciplinary Design Laboratory – incorporate entrepreneurship components into at least 25% of MDL programs.
- Grow involvement of students with entrepreneurial companies in the Incubator and Tech Park.
Goal – Build Communities

- Create comprehensive, strategic partnerships with major U.S. and international corporations, including research, EWP, philanthropy, etc.

Goal – Redesign & Invigorate Enabling Activities

- Hire outstanding faculty into BME and CHBE department chair positions.
- Finalize and implement revised annual performance review and merit salary increase processes.
- Work with the Institute SUMAC Committee to relocate research-active faculty with peer-reviewed external funding in strategic Biotechnology areas.
Summary of Top Priority ’04 Actions

- Grow Research
  - Aggressively seek and hire Constellation faculty.
  - Hire 7 research-active, senior and early career replacement faculty in Key Focus Areas of Biological Engineering (>50%) and Information Systems.
  - Effectively mentor and support new faculty to promote career success.
  - Grow number of Interdisciplinary Research Centers.
- Complete development and pilot implementation of Core Renaissance Program.
- Hire women and/or underrepresented minorities into replacement faculty positions.
- Develop New Undergraduate Advising programs.

Legacy Effects of the 90’s

From AY92/93 to AY97/98 – 22 SoE hires, 36 departures, net loss of 14 faculty

The 15 hires who remain at Rensselaer:
- Shiv Kalyanaraman, Terry Blanchet
- Michael Shur, Kenneth Jansen
- Natacha DePaola, Antoinette Maniatty
- Richard Siegel, Alek Ostrogorsky
- Pulickel Ajayan, Daniel Walczyk
- Linda Schadler-Feist, James Li
- Chip Kilduff, Kurt Anderson
- George Xu

Excellent faculty – virtually all junior hires NSF Career Award Winners
Demonstrates impact of hiring in focus areas of high potential – e.g., Nanomaterials
Legacy Effects of the 90’s

90’s Faculty Hiring in SoE Departments
Key to Info/Bio/Nano Research Thrusts

From AY92/93 through AY98/99 (8 years):

- ECSE – 2 hires, 12 departures = net loss of 10
- BME – 1 hire, 2 departures = net loss of 1
- CHE – 4 hires, 5 departures = net loss of 1
- MSE – 6 hires, 6.5 departures = net loss of 0.5