The MIT Faculty Newsletter

The Muddy River Revival: An Educational Opportunity for MIT?

Stephan L. Chorover, Jovan Ristic, Bob Nesson

In her column "From the Faculty Chair" in this issue of the *Newsletter* (Page 3), Professor Lotte Bailyn reviews the latest Carnegie Foundation (Boyer Commission) Report: "Reinventing Undergraduate Education: A Blueprint for America's Research Universities." As she notes, the report is consonant with the call for an MIT freshman year that is inquiry-based and intellectually integrated. Pertinently, an article in the May/June '98 issue of *Change: The Magazine of Higher Learning* describes a similar program that has already been in effect for several years at Holy Cross College. (We thank our colleague, Chris Luebkeman for bringing this article to our attention.) Professor Bailyn mentions "the scarcity of time." It is our contention that it is still not too late for MIT to put such a program in place for incoming first-year students this coming fall.

Much of the groundwork has already been laid. Discussions along these lines have been ongoing here for at least a year. In an effort to advance the process, one of us (Steve Chorover) reported to more than four score MIT faculty colleagues in early May on the initial meeting of the Muddy River Education Initiative (MREI) held at Northeastern University on April 23. The meeting included individuals affiliated with many different citizens groups and organizations. Many of the 74 attendees and other interested people representing or affiliated with 22 institutions were identified as sharing an interest in

Food For Thought

Joel Moses

MIT Provost Joel Moses has announced his intention to resign his position on August 1st and return to teaching and research on a full-time basis.

I would like to begin with some educational issues:
1) There was some concern that with Travis Merritt no longer cajoling faculty members to teach Freshman Advisory Seminars that we would have far too few such offerings next fall and beyond. I am pleased to note that once we announced a $1500 grant to faculty teaching such seminars (and a similar grant for staff) we were able to get commitments for over 130 such seminars for next fall.

2) Several people have noted with understandable frustration that educational proposals made by faculty committees often do not get implemented. One reason that has been suggested for the lack of implementation is that there was little analysis of the cost of implementing the proposals.

At a recent meeting of the Education Committee, a subcommittee of Academic Council that is chaired by the provost, a process for dealing with this issue was discussed. We wish to continue having educational proposals arise from and be discussed by faculty committees. We recognize, however, the need to alert the academic administrative structure early on about the proposals and their possible implications. It was agreed by the Education Committee that chairs of faculty committees, such as the chair of CUP, should discuss proposals on educational initiatives with the deans on the Education Committee.

http://web.mit.edu/fnl

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From The Faculty Chair

Boyer Report Offers Guidelines for Undergraduate Education

Lotte Bailyn

I have just finished reading "Reinventing Undergraduate Education: A Blueprint for America's Research Universities," the recently released report by the Boyer Commission on Educating Undergraduates in the Research University. Much of what it says is congruent with findings from our own Task Force on Student Life and Learning and from the Student Advisory Committee to the Task Force, which has just published its final report, showing that our problems are not unique.

One of the key recommendations of the Boyer Report is the provision of research opportunities for undergraduates. There MIT is ahead of many. But on some of their other recommendations, like their call for a freshman year that is inquiry-based and intellectually integrated, we fall back into the pack. Of course we rightly value the solid science basis on which our freshman curriculum is based, but while the freshman year is intellectually powerful, for many it is a discouraging year. Their call to rethink the freshman curriculum reinforces our own efforts in this direction.

And what about the Boyer Report's call for a "student-centered research university" – is that useful for MIT? The Student Advisory Group seems to go along with this idea. They want faculty to "play a more prominent role in the community," and to "apportion more resources toward excellence in teaching, both inside and beyond the confines of the classroom." But, as Jesus Del Alamo made clear in his criticism of the Boyer Report (*Tech Talk*, April 29), the issue of resources

to support their ideas has not been addressed. I would add, though, that in introducing the section entitled "Ten Ways to Change Undergraduate Education" (p. 14), the Report does provide some hints as to how financial resources could be found. More important, however, is the scarcity of time.

In some ways, the changes being suggested seem to imply a "super faculty" role: men and women who can do their classroom teaching, their research, fulfill their outside professional and personal commitments, and still have time and energy to interact informally with students outside of the classroom or the research lab. This reminds me of the "super mom" of the last decade who was supposed to be tops in all areas: career, care taking, community involvement. We now know that such a role is not easy to fulfill and so we are rethinking how men and women should allocate their involvements over a lifetime.

In the same way, we may need to disaggregate the "super faculty" idea and allow for "serial specialization." Yes, do all of these things, but not necessarily all at the same time. The notion of temporary "teaching" or "community" chairs that provide recognition and support for informal interactions with students, as suggested in the Student Advisory Committee Report, is an interesting approach.

Changes such as these are not trivial. They would certainly require a creative look at many aspects of Institute life, from incentives for faculty to the basic way the Institute is organized. From this point of view, it is telling that the

Boyer Report echoes the Task Force's identification of the structure of the university around strict disciplinary departmental lines as an underlying problem. It urges interdisciplinary and intergenerational (undergraduates, graduate students, and faculty) intellectual communities. It reinforces the Student Advisory Committee's call for housing that mixes undergraduates, graduate students, and faculty, and urges a widening of graduate education to include emphasis on communication (both written and oral), training in the principles underlying pedagogy, and opportunities for crossing disciplinary lines.

The Report is consistent with the Student Committee's recommendation of a minor field in the graduate program. And though I suspect that this may not be the right vehicle to reach the breadth they seek, it emphasizes the need for graduate education to broaden out, so that the role that graduate students play in undergraduate education as TAs and as future faculty can be better met. (On this latter point, incidentally, it is discouraging to note that the percentage of PhDs going into the academy, as into government, has dropped since 1975, with industry showing an increase (Boyer Report, p. 30).)

There are lots of ideas in this Report that add to those already coming from the faculty, the students, and the administration. Our challenge now is to sort all this out, select specific targets for action, and do something creative in following through.✣

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TEACH TALK

Special Considerations for Teaching in the Multicultural Classroom

Jane Dunphy

MIT's commitment to diversity in the student body is truly commendable. The Institute's increasing attention to quality teaching is equally impressive. However, these two laudable goals may, to some extent, be at odds.

A multicultural classroom implies multiple assumptions about academic conventions and success. This multiplicity can enrich the students' experience, but it can also present an obstacle to the full and productive participation of some class members. It is incumbent on us, as teachers in this environment, to understand these difficulties and help all our students to engage fully in their education.

Although these considerations apply to cultural diversity in the broad sense, my focus here is on MIT's international students, who come from 108 countries and constitute a large part of the student community. Eight percent of the undergraduates and 33 percent of the graduate students come from countries where academic conventions are vastly different from those of the U.S., in general, and from those of MIT, in particular. (See table.)

Many of us focus on language differences when we consider MIT's international students, but other aspects of our multicultural environment must be addressed. Three areas where our sensitivity to cultural difference can enhance learning are classroom dynamics, approach to assignments, and navigation of hierarchy.

Classroom Dynamics

With some exceptions, the general model of university education outside of the U.S. involves large lecture halls filled with many students listening to an authority read or speak in a formal manner from notes. In some countries, such as France, students graduate from the most prestigious engineering schools with an enviable theoretical

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Countries with the Largest Student Representation at MIT

		Academic Year		
93-94	**94-95**	**95-96**	**96-97**	**97-98**
China	Canada	Canada	Canada	China
Canada	China	China	China	Canada
India	Japan	Japan	Japan	Japan
Japan	India	India	India	India
Korea	Korea	Korea	Korea	Korea
Taiwan	Taiwan	Taiwan	Mexico	Mexico
Greece	France	Mexico	Thailand	Thailand
Germany	Mexico	Germany	Taiwan	Taiwan
Mexico	Germany	Italy	Germany	Germany/ France

Source: MIT International Students Office

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background, but have done very little experimental or practical work. There is seldom interaction between instructors and students in or out of class. As a result, international students accustomed to the "Professor as Authority/Student as Empty Vessel" model can feel adrift as they try to adapt to the interactive dynamic that is more and more the goal of education at MIT.

Understandably, a new Japanese student may feel alienated in a large management class, where 40 percent of the grade is determined by participation; or a Korean student may feel trepidation in a graduate seminar where students regularly make presentations.

Of course, students react differently. Some, regardless of their nationalities, embrace the chance to engage and do so appropriately. Occasionally, a student resents the time spent in discussion, has no patience with peer comments, and has trouble respecting the instructor or accepting the system. More commonly, students need time to learn our discourse customs. For example, we expect students to express opinions readily, but we typically soften disagreement in English using forms like "I see your point, but, … ", or "Don't you think…?" Extra encouragement is needed to overcome students' unfamiliarity with class

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dynamics, their self-consciousness about accent and lack of fluency, or their fear of being wrong.

We can provide this encouragement in several ways:

• If the context allows, we can use different kinds of questions to stimulate interaction. For example, students find solicitations like "Can you guess what might work here?" or "What are some situations where we'd find this?" less intimidating than the more direct "What do I plug in here?"

• Rather than waiting for volunteers to respond to each question, we can "cold call" on international students who are conspicuous for their lack of participation. In general, they welcome an invitation into the discussion but lack the confidence to initiate. If we make clear that they can "pass" penalty-free when they have nothing to contribute, most students do not find this system threatening.

• Occasionally, we can also try to wait up to 10 seconds after asking a question before moving on. Americans are more uncomfortable with silences than those from many other cultures. We often rush in to fill pauses. When international students are willing to make contributions, they may need extra time.

• They may also need us to check for clarification. An expression like "If I understand you, you're suggesting that … " or "So, you think that … " provides the chance to check for mutual comprehension and the opportunity for restatements.

Written and Oral Assignments

Explicit guidelines for oral and written assignments are helpful for all students, but essential for international students. While problem sets and exams that focus on data manipulation are relatively self-explanatory in approach, the content and format of other common assignments at MIT are not.

For example, we cannot assume that French students understand how to structure an argument memo or a research paper for an American academic audience. Our preference for the "bottom line on top," that is, placing the author's main point or opinion in the introduction to a document and using the following pages to support that opinion, is not a universal approach to writing. In fact, it is contrary to what many well-educated European students have been taught – to "save the best for last." Their rhetorical style requires an expansive overview of both sides of an argument before a final synthesis provides the author's position.

Similarly, many international students have no way of knowing how to structure and deliver an effective oral presentation that conforms to our expectations unless explicit guidelines are provided. They wonder what information effective American speakers typically include in an introduction to a 20-minute research presentation. What constitutes an effective slide? We need to provide them answers.

In class, we should demonstrate in our handouts the precise, organized, and thorough approach that we expect to see in students' written assignments. We should make great efforts to use the organized board technique, affirming body language, sincerity, and enthusiasm that mark effective presentation skills. In addition, we must make explicit our expectations about the format as well as the content of documents and presentations. Where appropriate, we should guide the students to models such as journal articles that exhibit the characteristics we seek in our students' work.

Another area that must be addressed explicitly is the role of academic honesty in assignments. Keep in mind that English language cultures have a particularly rigorous approach to

> **Imagine a typical MIT class – an 18.01 lecture, a small graduate seminar, or a HASS-D course. It is highly likely that some students are drinking Coke or coffee, likely that several are eating donuts or bagels, and possible that one has bare feet. This level of student informality is startling, even offensive, to new students from countries such as Mexico and Thailand. It can seem highly disrespectful of the instructor and, as a result, can affect the newcomers' attitudes towards their peers and their instructors.**

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protecting intellectual property. In some cultures, individual and independent expression of ideas is not greatly valued; instead, students are expected to honor respected authorities by repeating their contributions verbatim. In addition, standard documentation conventions are not widely used in all intellectual communities. Students from such cultures may have difficulty understanding or accepting our concept of plagiarism and the intricacies of documenting sources of information. By letting our students know that we are aware of such differences and by working with them to understand the expectations at MIT, we can avoid awkwardness or worse.

Respect & Hierarchy

International students frequently express concern about how to navigate the hierarchical system at MIT.

The difficulty is obvious even at the most basic level. The English language is unusual in that it does not have a grammatical way to indicate hierarchy. We use "you" for everyone – friends, parents, professors, bosses – unlike French with the tu/vous distinction, Spanish with the tú/usted distinction, or Japanese with its complex system of grammatical markers for respect and hierarchy. We sometimes indicate formality by using complex sentence structure (e.g., "I was wondering if it would be possible. ..", instead of "Can I..."), but not always. Something as subtle as rising intonation on one word can indicate acknowledgment of hierarchy. It is a challenge for new international students from cultures with strict linguistic and behavioral codes for showing respect to navigate the system here.

Imagine a typical MIT class – an 18.01 lecture, a small graduate seminar, or a HASS-D course. It is highly likely that some students are drinking Coke or coffee, likely that several are eating donuts or bagels, and possible that one has bare feet. This level of student informality is startling, even offensive, to new students from countries such as Mexico and Thailand. It can seem highly disrespectful of the instructor and, as a result, can affect the newcomers' attitudes towards their peers and their instructors.

To further confuse the situation, the MIT faculty, and academic and research staff vary in their levels of familiarity. Some conduct themselves, their classes, and their interactions with a formality that may be comfortingly familiar to some international students. Informality, however, seems to be more common at MIT. Instructors regularly sit on desks, swinging their legs as they talk or listen. They are sometimes on a first-name basis with students, and many are available for help, or enjoy friendly conversations outside of class. The level of comfort is such that the better teachers at MIT can admit ignorance in class, not a common occurrence in many countries.

There is, in fact, much more negotiation of hierarchy at MIT than international students are likely to have encountered. It is confusing. The result may be inappropriately passive or inappropriately bold demeanor in the classroom. Again, many problems can be avoided by being aware of potential difficulty, by explicitly acknowledging our own styles and motivation, and by stating our expectations in matters

such as terms of address and classroom behavior.

Realizing the Potential of the
Multicultural Classroom

The cultural diversity at MIT is an exciting resource, which, if fostered sensitively, can enrich the intellectual lives of all of us. If we, as teachers, make a concerted effort to chat occasionally with international students before or after class and express our curiosity about, or awareness of, some of the differences between MIT's educational culture and that of other countries, we will go a long way toward increasing comfort levels. We must be willing to spend some time in the first week of classes discussing our motivation for structuring classroom dynamics the way we do. We should provide throughout the term explicit guidelines for any assignments where different cultural assumptions may shape the end product in a way that does not meet our expectations. These guidelines will allow international students to play the game with the same rules as the American students.

International students who feel their differences are understood will be more likely to engage fully in the experience that MIT provides. In addition, they will feel more comfortable pursuing questions about other aspects of their environment.

Explicit discussion of these issues in and out of class will have the added benefit of heightening the awareness of American students to different cultural assumptions in academic life. As teachers, we can be instrumental in creating a multicultural environment that truly benefits everyone.✣

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The Unspeakable Subject

John Hildebidle

My title is not wholly facetious. I really *do* think that there is at least one subject that cannot be discussed in any variety of "polite" company, especially within the Institute. Yes, I know that the particulars of the intimate anatomy of political figures are now subjects of prime-time TV and comic strip humor. But still – when was the last time you had the unmitigated gall to ask someone exactly what his or her salary was?

Being the holder of more Harvard degrees than any sane being can find use for, I get, regularly, *Harvard Magazine*. And there on the cover of the May/June 1998 issue was the neatly-alliterative, modestly-sized headline "Hobbled." Investigation led me to an article jointly-authored by James Engell of the Harvard English Department, and Anthony Dangerfield, trained in English at Cornell. The gist of the article was all-too-painfully-clear: my specialty, the study of "humane letters," is withering in the modern age of the "market model university." If the problem is apparent even at Harvard, how could it not be evident a few stops down the Red Line as well?

This thought is prompted, of course, by crass self-interest – I have attained that problematic moment in the life cycle when the elder of my two children is about to head off to college, and so when (even with the MIT faculty tuition-support benefit, great be its praises) it would seem that anything short of uncovering a hitherto-unknown rich ancestor, I face some years of considerable penury. The other day much was made in the local press of the decision, by a man proclaimed to be one of the world's most renowned younger economists, to turn down a vast contract at Columbia, and stay at Harvard. This news followed right on the heels of the report that Yankee Stadium is crumbling, but that may be pure coincidence.

Anyway, Jeremy Knowles announced that, while Harvard did not intend to discuss the particulars of its contractual relations with this clever fellow, it did not, as a matter of course, engage in salary wars. "At Harvard, every faculty member is a star." That has a nice ring to it, doesn't it? But in the light of the Engell article, one can but wonder.

Which brings us around, at long last, to MIT. Can the Institute say what Knowles says? I mean not that it has a faculty of stars, but that it doesn't engage in salary-bidding wars? Alas, I have it on reliable authority that the matter may be a bit more complex than that. I want to be careful not to embarrass my sources by giving clues as to who they are; suffice it to say they have the personal integrity and the administrative rank to know whereof they speak, and to speak frankly. And the word I hear is that the disparity in salary between Institute faculty members at the same purported rank is considerable, and growing.

Which is made worse by the sad truth that not every MIT faculty member is compelled to live exclusively on his salary. I won't stoop to vulgar language, but it is hard to avoid the term "consulting." And I know, the next time I sit at a faculty meeting, officially among my peers, I will be, inwardly, looking at the other faces in the room, wondering dark things. Even more so when I try to figure out a way to write the first room-and-board check that Trinity College demands of me.✣

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Summer Testing For Faculty Bulletin Board

After almost a year of extensive modifying and evaluating, the software which will allow for a verifiable and totally secure Electronic MIT Faculty Bulletin Board is ready for on-line testing.

Web Crossing, the software that will be utilized, offers a variety of potential applications. Among them are Web-based discussions that allow participants to post messages, as if on a bulletin board, and let others read and respond to them at any time. Participants check in periodically to read new messages.

Another possible use is the Chat Room feature that would enable participants to have conversations in "real time," by typing in text messages. The exact form the Faculty Bulletin Board will take has yet to be decided, and testing will take place over the summer, with a projected on-line date of early September.

If you'd be interested in participating in testing over the next couple of months, please contact us at <fnl@mit.edu>. To see other uses of *Web Crossing* at MIT, see <http://web.mit.edu/webcrossing/www/>.✣

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collaborative education programs focused on the ongoing revival of the historic Muddy River (water quality improvement, flood mitigation, and ecological restoration). Some financial resources were identified that might be available to support the establishment of such a program in the near future.

The Muddy River watershed and floodplain contain a unique concentration of educational institutions, museums, and health care facilities and provide a superb setting for the integrated study of often-separated issues of urban ecology and basic science. A study of the urban environment through which the river flows offers insights into the relationship between the natural and the built landscape.

The MIT campus is not situated in the Muddy River watershed or floodplain. Why then should we participate in an educational initiative that takes it as the focus? At least two of our independent living groups *are* located in the floodplain, as is the Museum of Fine Arts, which the Institute participates in operating. Moreover, the Muddy empties into the Charles directly opposite our doorstep. Its effluent directly affects the quality of the waters on which we sail and row and along and across which we travel daily on our ways to and fro.

The general idea that emerged from the meeting is to draw on the intellectual resources available among the stakeholders to create new approaches to collaborative and integrative learning. It was agreed to apply for support under a recently announced NSF program: Urban Research Initiative: The Dynamics of Change in Urban Environments. Under this program, 10-20 awards totaling $6-10M will be made to U.S. colleges and universities for the support of inter-institutional partnerships dealing with "functional interrelations among physical, biological, social and engineered systems and processes." The deadline is mid-July (for further information, see <http://www.nsf.gov/pubs/1998/nsf9898/nsf9898.htm>).

The authors of this article agreed to participate with others in the development and submission of the proposal. In preparation, a second communication was sent to essentially the same group of MIT faculty colleagues in mid-May, inviting interest in an MIT role in the project. It was further suggested that the MIT component be an alternative first-year undergraduate program like the one described in a previous *Faculty Newsletter* article ("I Have Truly Found Paradise," Vol. X No. 1, September 1997). A more specific purpose of this second message was to determine whether or not there is any serious interest in MIT serving as "lead institution" in the prospective collaborative submission to NSF.

The answer remains – muddy. To begin with, only 13 replies were received from the people to whom the second message was sent. Most of those replies were supportive of the idea, but pessimistic about the capacity of MIT to mount such a program. The following excerpts are representative:

"It would be great if we could apply these ideas in our own back yard, so to speak, as well as in Bangkok, Mexico City and other far-flung locales. I think the most appropriate response would be from the Civil & Environmental Engineering and Urban Planning folks- I hope this works out, but ...."

"I think it's a terrific idea. My problem is I'm so overwhelmed....

"It's unclear to me that MIT's senior administrators would commit to any educational initiative without more of the MIT community involved. [However], I really don't believe that the...faculty will take on an initiative...unless it is legitimized by the President and/or Provost. So, this becomes very problematic. I have been struggling with this for several years at this point, and I don't have an answer. I used to think that if I had lots of money people would show up. I no longer believe that, because the real currency of academic life at MIT is tenure and promotion and in that sense, education...does not now really make a good case. Without a change in the faculty incentives and reward structure, I'm not optimistic. I do regret coming off so negative, but I really do believe that the above is at work in this instance. I am not negative about what you are trying to do, as I suspect you already know."

"I wish you well in this... if you don't get overwhelming support, there are other ways for you to proceed that may be easier."

"I am just overloaded and trying as I have been for a long time to do something worthwhile here at MIT with little or no support....I see no institutional interest here for this kind of project....I won't tell you what you should do, but I am limiting my horizons and muddling through, as I have, in fact, been doing for some time. So, you have my heart in this one but not my body...."

The Muddy River Education Initiative is conceived as a scientifically-informed education action research project. Its goal is to create some much-needed cross-disciplinary, hands-on, inquiry-based learning and teaching programs that connect science subjects – e.g., math, physics, chemistry, biology – to their social, cultural, and historical context, as well as to each other. The NSF initiative specifically focuses on "functional relationships among physical, biological, social and engineered systems and processes." This makes it easy to imagine the outlines of a proposal directly responsive to the NSF agenda.

In sum, MIT could and should be playing a leadership role in a partnership under which innovative and effective educational programs would be collaboratively developed. Each of the participating educational institutions would develop and use educational materials in its own way, and all would exchange information of common interest. As an educational resource, the Muddy River contains all the elements needed to develop and test such programs. Here is an opportunity to serve the educational interests of MIT while enabling the development of pedagogical models that would be transferable to any educational program in which an urban waterway is available as a resource. Is this not an end worth pursuing?

A second meeting of those interested and willing to get involved in the MREI project will be held at MIT on the morning of Wednesday June 10. At that time, or soon thereafter, the lead institution will have to be determined, so that a proposal to NSF can be prepared. Whither MIT vis-à-vis the MREI? ✤

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Food For Thought

Deans can then alert department heads about the possible changes. I expect that this simple change in the process by which educational proposals are discussed will have very beneficial consequences.

3) Several long term interdepartmental teaching programs have encountered a similar difficulty. The faculty originally passionate about the programs have retired, are on leave, or have simply changed their areas of interest. New department heads have not been involved in the original discussions leading to the creation of the programs. Departments feel that their core educational missions must be served first and foremost. Thus, faculty interested in teaching in the interdepartmental program are either not available or else are strongly advised to teach in departmental core programs. In order to deal with this issue I believe that new interdepartmental teaching programs should obtain written guarantees by relevant departments that they will provide a specified minimum amount of faculty effort each year. Similar arrangements should be attempted for existing interdepartmental programs.

I would like to make some comments regarding the budget:

MIT is undergoing significant structural changes in its finances at this time. For the past 50 years we have been one of the universities most reliant on federal support for research. In recent years, as we are all painfully aware, changes in accounting rules have reduced our annual support from overhead and employee benefits by an estimated $50M a year. Fortunately, our endowment has doubled in the past four years, and our annual gifts have also grown significantly. I am optimistic that by fall the Corporation will agree to new operating assumptions

for the Institute for the coming years, and in addition approve a major increase in the endowment payout and a new capital campaign. The current payout is approximately 3.2 percent of the present value of the endowment.

The transformation to an Institute that is much more heavily reliant on private support than it has been in the past will not come about without some stresses in the community. The stresses can arise because some parts of the community will no doubt benefit more than others from this transformation. In order for us to avoid the frictions that such a situation may entail, it is time for MIT to recommit to core principles, such as those established by the Lewis Commission nearly 50 years ago. One such principle is that we have a single faculty with no distinction between those who teach undergraduates and those who teach graduate students. I would add to the Lewis Commission principles certain operating principles, namely that we have a single overhead rate and a single endowment payout rate.

At this time, it is especially important that we permit the central administration to smooth out some of the differences among our units that are likely to arise as we transition to a period of much greater reliance on private support. The forthcoming capital campaign must also be one that deals with community-wide issues as well as local ones. Thus continued

attention to scholarships, undergraduate educational initiatives, and unrestricted funds needs to take place along side support for particular research, educational, and construction initiatives. I firmly believe that with some care to such issues, the Institute will achieve continued greatness in the coming decades.

> **Finally, let me point out a common theme in several of the initiatives in which I have played a role in the past dozen years....The reason that these initiatives have been successful has been in part because of the existence of that four-letter word, food.**

Finally, let me point out a common theme in several of the initiatives in which I have played a role in the past dozen years. I am thinking of the Faculty Lunchroom, the Keyser dinners, the Symposium (a monthly dinner discussion by a group of about two dozen faculty), and the "Moses" seminar (a biweekly faculty seminar on issues related to the brain, learning, and complex systems). In each case I have tried to foster the notion that MIT is a collegial community of scholars. In each case we have also tried to engage faculty from all parts of the Institute in discussion of issues. The reason that these initiatives have been successful has been in part because of the existence of that four-letter word, food. Of course, Jay Keyser has played a crucial role in a couple of these initiatives, and I am pleased to say that he will continue to do so in his retirement. I am very optimistic that all these gatherings will continue in the coming years. I hope that we can create new ones as well.✤

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Corporations and Alumni Help Launch New Program

Arthur Steinberg

Over the last few months we have started a small new program to place freshmen in summer internships in companies where they will have interesting work, and will have alumni mentors to help acclimate them to the workplace. The idea for this program was suggested and promoted by Joel Moses, to whom I am very grateful, since it is a wonderful idea. There are a number of reasons for starting this program which, I think, will help remediate what some of us think are serious problems in our undergraduate education.

A constructive summer experience will go far to combat the loss of self-esteem that many of our students suffer in coming to MIT. Many of us notice that our happiest upperclassmen are those who had an internship experience during the summer. Such students are happy because they get to see that their MIT education has a real value in the outside world, and they can then begin to feel better about the tough academic year they have just been through. This positive experience should be transferable to the freshman year as well.

These internships may also help change the attitude of MIT undergraduates toward written and oral communication. By placing interns in situations where they can see the importance that others place on these capabilities, our students will be more eager to learn to communicate better when they return to campus in the fall.

Another important skill we wish our students to be more positive about is teamwork. MIT emphasizes, and appropriately so in many cases, the importance of individual work. Yet teamwork is increasingly important in many careers. Our students should adjust to this work style when they see it in action.

Finally, the MIT ethos of hard work and attacking absolutely any problem, inculcated early at the Institute, is not seen as an asset by many under-graduates. But our alumni frequently tell us how important this aspect of their education was to them when they entered the workplace. We hope the freshmen interns will also see this at work, and will bring a more positive appreciation of MIT's pace and pressure back to the campus with them.

An important component of these internships is to involve MIT alumni in them. Many alumni have asked how they can help the Institute in ways other than by donating money. Our alumni also can recall well their experiences at MIT, and can thus understand what the current students are going through. We see this as a unique opportunity for alumni to have a positive mentoring effect on a group of students. The fallout from this will be that when these students return in the fall they will help change the malaise and disaffection of many MIT students toward what is happening to them at the Institute.

The response from students to this internship program was overwhelming this year; 64 applied for 22 jobs, and they are now being placed in

> A constructive summer experience will go far to combat the loss of self-esteem that many of our students suffer in coming to MIT. Many of us notice that our happiest upperclassmen are those who had an internship experience during the summer. Such students are happy because they get to see that their MIT education has a real value in the outside world...

internships in companies where they will have close contact with alumni. We began this year with companies in northern California and the Boston area. [Our greatest support has come from Teradyne through the efforts of MIT Corporation Chairman Alex d'Arbeloff.] The alumni will act as mentors for the students, though the students may be working under non-alum supervisors. We expect that the students will get together with their classmates over the summer, and will also have contact with alumni in senior positions at businesses in the area.

To prepare the students for their experience we organized a seminar this spring which consisted of a series

Corporations/Alumni Help Launch New Program

Steinberg, from preceding page

of workshops. These workshops were run by myself, Marshall Hughes (staff member in F/ASIP) and Sarah Wu (a freshman). These workshops were facilitated by a marvelous group of people drawn from MIT staff and participating companies in the Boston area. Students worked in small groups with a facilitator on resume writing, interviewing, holding meetings and writing memos, and dealing with difficult confrontational situations.

The final workshop was an elaborate design game in which we tried to put all these skills together. Students were divided into teams, and had to design an elaborate museum case. In order to win the contract for it they had to reserve factory space, buy supplies, build a prototype, make a budget, and present a proposal to the museum board. Facilitators helped to make this a realistic work situation and pushed the students to propose designs that would make a profit for their company.

While in the workplace students will be keeping journals about their experiences and observations, and will then write a 2500-word paper for submission to us in the fall. They will

Students Creating a Museum Display and Travel Case for a Rare Dinosaur Egg

also have to give an oral presentation when they are back on campus, which we will use to recruit the next group of freshmen.

Students are paid over the summer by the participating companies, and receive academic credit in the fall for having completed the accompanying seminar. What has been extremely gratifying is the positive response and excitement that we have seen from both the students and alumni. We expect this program will grow much larger over the next few years. Please tell students about it next fall!

For more information about F/ASIP visit our Website at <http://web.mit.edu/fasip/www>, or e-mail me <arthurs@mit.edu> or Marshall Hughes <devil@mit.edu>.✠

Research Sponsorship Fiscal 1997
(figures in thousands)

Organization	Amount	Percent
Industry	$75,193	19.4%
U.S. Department of Energy	$70,753	18.1%
U.S. Department of Defense	$67,857	17.5%
U.S. Department of Health & Human Services	$57,214	14.8%
NASA	$36,947	9.5%
NSF	$36,346	9.4%
Other Nonprofit	$28,951	7.5%
Other Federal	$7,232	1.9%
Internal	$4,257	1.2%
State, Local, & Foreign Governments	$2,854	0.7%

Source: *MIT Facts 1998*

Annals of Reengineering

Update on HRPD and Management Reporting

Janet Snover

In the January/February issue of the *Newsletter*, I outlined the background of the Human Resource Practices Design team (HRPD) and the project teams charged with developing some of its recommendations into new programs for MIT. The March/April article about Reengineering summarized the continuation of the SAP rollout to departments, labs, and centers (DLCs). It seems appropriate to end the academic year with updates on the two HRPD projects that are furthest along, and to provide some additional information about the implementation of SAP.

Recognition and Rewards

The Recognition and Rewards project team of HRPD has designed a series of options for showing appreciation to employees who make a significant contribution to the Institute. The multi-level program they are recommending was designed to build on and formalize current MIT recognition and rewards practices. The team reviewed input from more than 1,000 MIT employees from a broad range of areas on campus prior to writing its report. They also collected information about how other organizations reward employees.

Designed to operate at both the local and the Institute level, the proposed program provides the flexibility and consistency that employees stressed as important. The team's report includes a cost analysis and recommendations for program administration, implementation, and evaluation. The report has been given to Vice President for Human Resources Joan Rice, who is HRPD's sponsor, and it was also discussed with the Reengineering Steering Committee in late May.

Orientation

This HRPD project team has prepared the first draft of its recommendations for a comprehensive orientation program to help new employees understand MIT's organizational structure, culture, and resources. The program is designed to complement, rather than replace, existing orientation efforts.

The recommendations are based on suggestions from new employees, employees in departments with and without orientation programs, best practice research, Website data, and information from a review of management and human resource journals. Employee input proved very helpful in identifying the critical components of an orientation program, as well as providing ideas for program support and delivery.

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SAP at MIT – A Review

Though staff from the Management Reporting Project have done countless presentations and written numerous articles and Web documents about MIT's new financial system, many faculty members have probably not had the time (nor interest) to pay attention to all the news about SAP. In case you're wondering why the Institute is going to all the effort and expense of installing SAP R/3, here are a few of the reasons, as well as some background information.

It's been more than 30 years since MIT's core financial systems were updated, and during that time the various areas of accounting, procurement, budget, and the Office of Sponsored Programs have each developed separate systems. This has created an unwieldy network. (For example, if you were connected to the general ledger and wanted information on a particular purchase order, you had to change systems and computers.)

The new system – SAP R/3 – will replace the separate general ledger, accounts payable, accounts receivable, procurement, and financial reporting systems with a single, integrated software program. Some advantages include the following:

• data is entered only once and is available to all the functions that require it;

• authorized users can view up-to-date accounting statements any time during the month;

• since the system is on-line, it works in real-time for most transactions, giving users a much clearer picture of what funds are actually available.

The last feature will be particularly valuable when DLCs begin using SAP for purchasing this fall.

Needed Flexibility

The capacity to create new accounts in the old MIT financial systems (with five-digit account numbers and three-digit object codes) is almost exhausted – seriously constraining the Institute's ability to respond to sponsor and internal reporting needs. The new financial architecture designed in SAP (with seven-digit "cost objects" and six-digit general ledger accounts) will relieve this constraint. DLCs as well as central offices will have much greater flexibility in setting up new research accounts.

Not all of MIT's administrative financial systems that interact with SAP are compatible with this new architecture; the goal is to upgrade all these applications to seven and six digits

Update on HRPD and
Management Reporting

Snover, from preceding page

by December 31, 1998. Departments with systems that receive financial data from the central applications must also upgrade them by that date.

Year-2000 Compliance

A major benefit to MIT is that SAP R/3 is "Year-2000" compliant. SAP AG designed the R/3 system to support four-digit year dates at the inception of the product five years ago. R/3 also automatically recognizes and converts two-digit year dates passed from external systems to proper four-digit numbers.

Faster Closing

The Audit Committee of the MIT Corporation requested that year-end financial results be available in a more timely manner than with the Institute's old systems. In addition, the federal government shortened the deadline for the A-133 audit beginning in fiscal year 1998. In order to provide this financial information earlier, SAP electronic journal vouchers will be used for the 1998 fiscal year closing – and for all business thereafter. (The use of paper and $SumMIT journal vouchers will be discontinued at the Institute after June 24, and June 26, 1998, respectively.) Using SAP journal vouchers will dramatically speed up the closing time, and also will allow users to see the effect of journal voucher transactions on accounts immediately, instead of having to wait until the end of the month.

Easing the Discomfort

There will inevitably be some discomfort from changing business processes as SAP is rolled out to departments, labs, and centers. Many employees will need to learn new procedures and abandon old, familiar methods of doing financial work. To support users during the transition, the Management Reporting Project is offering extensive training at the W89 Professional Learning Center. In addition, the MIT SAP Website <http:// web.mit.edu/sapr3/> has online documentation for all procedures and reports. The new Business Liaison team in Information Systems is also now in place to provide SAP help via e-mail <business-help@mit.edu> and by telephone (252-1177).

As of May 1998, four school and area coordinators have been appointed to assist departments, labs, and centers as well as administrative areas during the transition to SAP. Coordinators Bob Davine, Jennifer Kratochwill, and Brian Tavares are former MIT fiscal officers or administrative officers; and Shirley Picardi is a former Institute Bursar. (Two additional school and area coordinator slots are still unfilled.) The coordinators' main task for the summer of 1998 will be to help areas to create requisition approval structures for use in SAP.✤

[Janet Snover can be reached at jsnover@mit.edu].

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Letters

To The Faculty Newsletter:

After reading the latest "mail-bashing" by the "Newsletter Staff" in the March/April edition of the *Faculty Newsletter*, I am compelled to write.

First, the delays the unnamed author decries are not always the fault of Mail Services, the Personnel Department, Reengineering, or even El Niño. The "week's delay" the author refers to was actually, in February, a delay from Thursday afternoon, when we received the materials from the printer, until Tuesday morning, when they were delivered to the Distributed Mail Centers on campus. We labeled them on Monday, with distribution Monday night. The March/April *Newsletter* had better timing. We turned it around within 24 hours of receipt of the materials.

It is true that there is a "hierarchy" of labeling and mailing priorities here. However, a better characterization would be a "triage." Like other services, we queue the tasks we perform for the Institute, normally on a first come-first served basis. But, if something arrives with a specific date, such as an invitation to a function in the very near future, or a "news flash," such as the President's letter to the faculty concerning the Provost's resignation – yes, we move it ahead of material that is not quite so urgent. I consider this logical, good customer service.

I certainly appreciate the author's comments about the helpfulness of Mail Services personnel. We take pride in the service we provide, and it's gratifying to see that recognized.

The *Newsletter* article had a valid point in complaining about the cumbersome system for producing labels for campus mailing. And we are attacking that problem. Hopefully it will not be long before the I/T requirements for downloading address information directly to Mail Services will be available. At that point, mailers can come directly to us to get labels, eliminating the hand-off from Personnel. Believe me, we will be as happy as the "Newsletter Staff" when that happens.

Penny Guyer, Manager
Mail Services

MIT Faculty Can Lecture Worldwide
With Alumni Travel Program

Melissa Chapman

MIT alumni have an ongoing desire to learn about the world around them and a strong interest in participating in continuing education programs. Through the trips offered by the MIT Alumni Travel Program, designed to offer travel with education, MIT faculty can become involved and reap the satisfaction of sharing their expertise with our curious alumni while traveling to destinations around the globe.

During the past few years, a growing number of distinguished faculty have generously offered their time and energy to our alumni and in turn have enjoyed every aspect of the experience. The MIT Alumni Travel Program staff would like to speak to other faculty members who might be interested in similar opportunities.

This past March, MIT Professor S. Jay Keyser led an Alumni Travel Program trip from New Orleans to Chicago on board the *American Orient Express* luxury train. Twenty-four alumni and friends of MIT, along with travelers from other institutions, learned about the history of jazz in the United States and enjoyed some great music from Professor Keyser and his New Liberty Jazz Band.

Of his experience, Professor Keyser explained, "Playing jazz on the *American Orient Express* for the MIT alumni was like being in a 1950s movie. I half expected to see Dick Powell come through the Rocky Mountain Lounge car looking for clues. Who was that blond who left a lipstick-stained cigarette smoking in the ashtray? Why did she leave just as the band began to play 'Do You Know What It Means To Miss New Orleans?' It was the experience of a lifetime. I don't think any of us would have

Jay Keyser and the New Liberty Jazz Band

missed it for the world. How I long to hear 'all aboard' all over again." Professor Keyser is hosting an alumni program in Kenya this fall.

Professor Emeritus Ernst Frankel of the Ocean Engineering Department is busy preparing for his alumni trip to China this fall. The group of 40 travelers will visit Beijing, Xian, take a 4-day cruise on the Yangtse River, and spend some time in Shanghai. Professor Frankel served as a consultant to the Chinese government on infrastructure development, and he will share with the alumni group his knowledge of the Yangtse River development projects. "I have led alumni groups traveling through Europe, Russia, and China and have enjoyed my travel experience with alumni very much, making long-lasting friendships along the way. The intellectual exchange with the alumni travelers has always been a rewarding one. I feel it is very important as a faculty member of MIT to make the connection with our alumni – it not only benefits MIT, but I feel I benefit from the experience as well."

Ford Professor Emeritus Dr. Donald Harleman will be leading a group of MIT alumni on a river cruise from Budapest to Amsterdam this fall. Of his past experience, providing lectures to a group of alumni who made the passage through the Panama Canal, Dr. Harleman comments, "My wife Martha and I have made some wonderful friends by arranging on-board social gatherings with the alumni group. I heartily recommend this to my faculty colleagues."

"I can truly recommend the assignment – it was a great experience"

MIT Faculty Can Lecture Worldwide

Chapman, from preceding page

says Ford Professor Emeritus Lucian Pye of MIT's Political Science Department, who escorted alumni groups to China in 1993 and 1996. Professor Pye speaks highly of his experience and remarks on the rewards: "The group was made up of people with a high level of sociability and intellectual curiosity, so aside from their responding to the lecture sessions, we had many interesting conversations."

Later this year, Professor William Brace and Professor Samuel Bowring, both of EAPS, will lead programs to Iceland and the Galapagos Islands, respectively. Professor of History Peter Perdue departs this month to lecture to a group of alumni on board a Russian river cruise.

Upcoming Alumni Trips

Since we are now planning our 1999 programs, as manager of the Alumni Travel Program I would like to speak to faculty interested in joining these trips to help provide educational content for our alumni. Some of the destinations for which there are faculty openings are The Great Whales of Baja (January), Tahiti and Easter Island (February), Costa Rica & the Panama Canal (March), Holland and Belgium (April), South Africa via Rovos Rail (April), Bohemia and Saxony: the Vltava and Elbe Rivers (June), Greenland & Maritime Canada (August), Alaska Family program (August), Bordeaux (September), Columbia River via paddle wheel boat (September), Brazil & the Amazon (October), as well as two river cruise programs in Europe in July and September.

How do I find out more?

Please contact me to get more information. I can be reached at <mchapman@mit.edu>, 253-8265, or by fax 258-6211.

If Traveling for an Extended Period of Time is Not Your Thing...

If you travel regularly or occasionally, to do research, attend professional conferences, consult, visit friends or family, or headline a special event, and you have time and are willing to fit in some alumni interaction during your trip, let us list you with the Alumni Association's Speaker's Bureau.
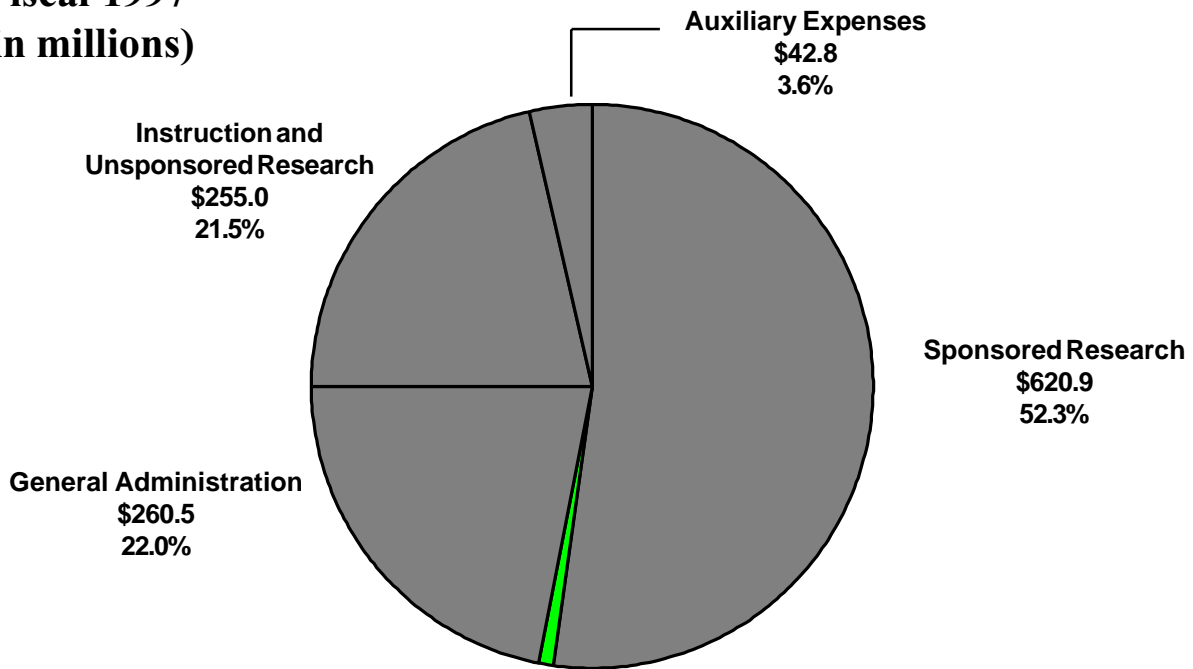
The Speaker's Bureau offers a pool of MIT faculty and topics from which MIT clubs and other MIT alumni groups may identify speakers and topics of interest to their groups for dinner talks, seminars, or special events. The Speaker's Bureau coordinates speaker recruitment and logistics for the general audience of alumni and friends who want to keep abreast of the excitement that is MIT.

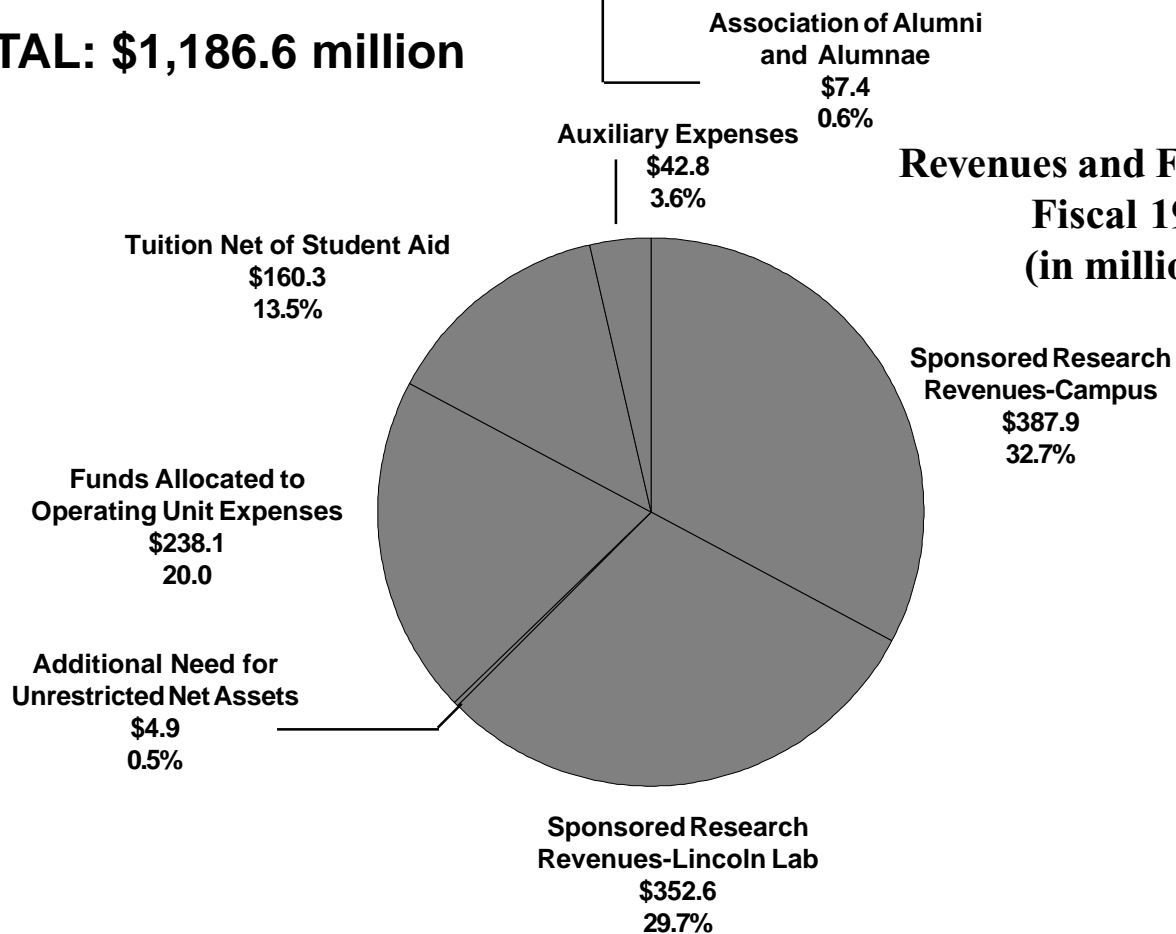To learn more, contact Bob Blake HM, at <rblake@mit.edu>, 253-8243; or by fax 617-258-6211. ✤

M.I.T. Numbers

Operating Expenditures
Fiscal 1997
(in millions)

Auxiliary Expenses
$42.8
3.6%

Instruction and
Unsponsored Research
$255.0
21.5%

Sponsored Research
$620.9
52.3%

General Administration
$260.5
22.0%

TOTAL: $1,186.6 million

Association of Alumni
and Alumnae
$7.4
0.6%

Auxiliary Expenses
$42.8
3.6%

Tuition Net of Student Aid
$160.3
13.5%

Revenues and Funds Used
Fiscal 1997
(in millions)

Sponsored Research
Revenues-Campus
$387.9
32.7%

Funds Allocated to
Operating Unit Expenses
$238.1
20.0

Additional Need for
Unrestricted Net Assets
$4.9
0.5%

Sponsored Research
Revenues-Lincoln Lab
$352.6
29.7%

Source: *MIT Facts 1998*