The MIT Faculty Newsletter

MICAR Report

Military Support and MIT

Herman Feshbach

In the spring of 1985 an *ad hoc* Committee on the Military Presence at MIT was appointed by the chair of the faculty to "gather facts, organize them in a suitable fashion, and present them to the faculty for discussion." The chair was Professor Carl Kaysen. This study was in response to the concern of members of the faculty because of the possible impact on education at MIT resulting from "the shift of government support for scientific research and education from the civilian to the military sector." At that time two-thirds of the annual Federal expenditures for research and development were provided by the Department of Defense (DOD). This issue had flared up because of the absurd "Star Wars" (known officially as the Strategic Defense Initiative [SDI]) proposal by President Reagan. Massive appropriations and a massive research effort, some of which was to be performed at universities, was mounted. One notes that the SDI, greatly but not sufficiently changed, is still in the Federal budget to the tune of several billion dollars.

Research Versus Engineering: A Delicate Balance

Robert V. Whitman

Last fall there was considerable discussion on the question of teaching versus research. We heard the argument: The best education for research is working with skilled, accomplished researchers. I suspect that most faculty and students agree with this proposition. Thus, if education for research is the goal of the Institute, then our present system may function reasonably well — although doubtless it is time for some adjustments and fine-tuning.

However, at least in my small part of the Institute (Civil Engineering) the issue is not teaching versus research. Many students — both undergraduate and graduates — are not planning careers in research; they aim to spend their careers in engineering practice and in positions of leadership that may flow from such efforts. Applying the same logic as applied to education for research, the best education for engineering should involve working with faculty who are skilled, accomplished engineers. Unfortunately, the culture at MIT today does not encourage this arrangement.

Editorial

A Call For Faculty Involvement: A Modest Proposal

Charles Vest became president of MIT with a mandate for change. In his inaugural address he spoke of the need for openness and for diversity at the Institute. It is now more than two years since he came here, two years in which the world has changed to a degree then unimaginable. One may ask how much MIT has changed, and whether it should matter to the faculty.

More than lip service has been given to the need for diversity. Both the Minority Faculty Initiative and the Women Faculty Initiative have the highly visible commitment of the president, of the provost, and of Institute funds. However, we are in a period of national economic and policy change, with shrinking prospects for research funding. Even with the very best intentions on the part of every department at MIT, it will be very difficult to accomplish the kind of major improvement that was possible in the early 70's. Funding uncertainties will put our commitment to this issue to a real test.

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Contents

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Editorial

A Call For Faculty Involvement:
A Modest Proposal

(Continued from Page 1)

On the question of openness, it is business as usual. Governance at MIT is still top-down, with the faculty as a whole playing no active role. The administrative structure described by the organization chart in the January 29,

format of the faculty meetings, scheduled by the administration and chaired by the president, where matters are presented after decision is taken, for the "consideration" of the faculty. Most of us are too busy to spend time as rubber-

No. 3).

The faculty is accustomed to this style of operation which dates back at least to the 1930's. Only if there is a matter that implicitly affects us — as in the arbitrary and ill-justified abolition of the Department of Applied Biology — will we come to faculty meetings and form our own committees. The faculty has become a reactive body, limiting damage only when it becomes too much to bear.

> **We suggest representative democracy — the formation of an *ad hoc* faculty senate, convened to represent the faculty on issues related to the change in funding and support patterns. A useful mechanism for initiating such a senate would be the convening of a deliberative body of faculty representatives, two from each department, elected by a vote of all assistant, associate, and full professors in that department.**

The irony is that the matter of future funding, an issue that presumably has been a major concern of the administration this year, is something that should be of particular concern to all faculty members. The faculty should be deeply involved, both as individual members and as an entirety, in the discussion of the consequences of reduced overhead payments. When the money runs out, what gets cut? Is it Department XXX, or a number of upper level administrative positions and associated staff, or perhaps an across-the-board percentage faculty cut?

We must decide what role we want the Institute to play in the future — what we want to do, who we want to do it for, and how we want to do it. The question at hand is mechanism. How can so large a faculty reach consensus? How can the "faculty" interact with the administration?

1992 *Tech Talk* makes this unambiguous. The people who are members of the Vest administration are much more indicative of continuity than of change. Yes, there are different faces in many positions, but they are faces that are familiar to us from the previous administration. Some people have been replaced, others shifted to new roles, but there are no appointments signaling a significant change in policy. Decisions are made by a small group and the faculty is called upon to ratify those decisions.

The three faculty meetings that have been canceled this year are symbolic of the lack of broad faculty involvement in major issues. We say symbolic rather than symptomatic, because attendance at these meetings by faculty members, at least those who are not part of the administration, is very low unless a controversial issue is being discussed. Part of the blame can be attributed to the

stamps.

To be sure, many of the recommendations presented for ratification by the "faculty," the very small subset at the meeting, are based on reports by faculty committees or presidential committees with faculty membership. However, faculty known to be outspoken critics of administration policies seldom are nominated or appointed to presidential committees.

The reason that this system of governance continues at MIT is, however, not due only to the administration — it is also due to the apathy of the faculty. Most of us say, "Leave us alone to do our thing. Just keep the money coming." Perhaps the biggest contrast between this technical school and the private universities is that nobody would rise at an MIT faculty meeting and say, "President Vest, WE are the Institute" (see Editorial, *FNL*, Vol. IV,

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A Call for Faculty Involvement

(Continued from preceding page)

assistant, associate, and full professors in that department. This body could select its chair and executive committee, and divide into working groups to consider possible solutions to important problems facing us, including, of course, the solutions preferred by the administration.

The idea of convening a faculty senate is not to cast a new group into opposition to the administration. Quite the contrary. It is rather to ensure that the administration is aware of faculty wishes and has a representative body of reasonable size with which to engage in discussions and mutual development of the best possible policy.

Such an approach would not work without a major commitment on the part of both the faculty and the administration. The preparation of realistic and detailed alternative solutions would require considerable effort on the part of the working groups, and willingness by the administration to supply and help in the understanding of facts and data required for these deliberations. The deliberative body as a whole would vote on alternatives developed by the working groups and report to the faculty and to the administration.

The power of decision would still rest with the administration, but these decisions could then be made with meaningful input from the faculty. This approach would represent a grand experiment in faculty-inclusive decision-making at the Institute during a period crucial to our future.

Editorial Committee
Next Issue

This is the final issue of the *MIT Faculty Newsletter* for this term. During the summer months, Editorial Committee members will be preparing the September issue, whose major theme will be the freshman year at MIT.

We also anticipate articles in response to this issue's call for an *ad hoc* faculty senate, and on the continuing questions of graduate student funding and budgetary concerns.

We encourage submissions on these or on any topic of interest to the MIT community. Please address your commentary to: *MIT Faculty Newsletter,* **38-160; by FAX to 617-253-0458; or by E-Mail at FNL@ZEISS.MIT.EDU.**

Faculty Meeting
May 20, 1992
Tentative Agenda

Vote on the Motions to revise the Rules of the Faculty pertaining to membership, speaking privileges, and membership on faculty committees
           — Professor Vandiver

Election of the Chair of the Faculty and members of standing faculty committees; members of the Faculty ex officiis
           — Professors Gyftopoulos and Vandiver

Report of the Killian Award Committee
           — Professor Hax

In recognition of retiring faculty
           — President Vest

Update on the work of the Ad Hoc Presidential Committee on the Academic Calendar
           — Professor Silbey

Update on the work of the Ad Hoc Faculty-Administration Committee on Indirect Costs and Graduate Student Tuition

Note cancellation of May 27 special meeting according
to November 20 vote to abolish this meeting

Killian Award, Committee Reports
Highlight Final Faculty Meeting

J. Kim Vandiver

The last faculty meeting of the year will be a combination of pure pleasure and serious discussion. Pleasure comes in the form of opportunities to recognize the contributions of our colleagues. We have had several opportunities to do this throughout the spring. At our April 15 meeting, we announced Professor Henry Jenkins as the 1992 recipient of the Harold E. Edgerton Award, which recognizes distinction in teaching, research, and service by a young faculty member. On April 8, Noam Chomsky, the 1991-92 Killian awardee, presented his James R. Killian Faculty Achievement Award Lecture to a full house in Kresge Auditorium. At the meeting on Wednesday, May 20th, Professor Arnoldo Hax will announce the 1992-93 recipient of the Killian Award. The presentation of this award promises to be an enjoyable event for all, and a thrilling moment for the recipient of the highest award that the MIT faculty bestows on one of its own.

I recognize that, for some of these people, retirement from MIT is more of a change in financial arrangements than it is a change in their professional activities at the Institute. Still, this is a rare opportunity to recognize the distinguished careers of these colleagues, and we would not want to let the occasion go unnoticed. We will continue to benefit

> **The report of the Ad Hoc Faculty-Administration Committee on Indirect Costs and Graduate Student Tuition (the Weinberg Committee) will also address issues of considerable significance.**

from their teaching and research activities, and I look forward to their collegial presence on campus. The reception following the faculty meeting is intended to give us all a chance to share the moment with them and the Killian awardee.

There are also more serious matters to be discussed at the meeting. We anticipate interim reports from two committees that are addressing issues important to our future as faculty members:

An update on work of the Ad Hoc Presidential Committee on the Academic Calendar will be presented by Professor Robert Silbey, chair of the Committee. The Committee's findings and recommendations on the structure of the academic year could have a wide-ranging impact on all of us.

The report of the Ad Hoc Faculty-Administration Committee on Indirect Costs and Graduate Student Tuition (the Weinberg Committee) will also address issues of considerable significance. I believe that we are all aware of the budgetary crises that have hit many campuses across the nation. By comparison, MIT has done remarkably well in weathering these changes. Nonetheless, serious threats continue to exist and it is in our best interest as faculty to stay well-informed about the most important issues, such as the ones the Weinberg Committee has been asked to address.

I look forward to seeing you at the meeting. It should be both pleasurable and informative. ♣

At the May 20 meeting we will honor thirteen faculty who are retiring at the end of the academic year. They are:

Nesmith Ankeny	Mathematics
Gordon L. Brownell	Nuclear Engineering
Peter Elias	Electrical Engineering
Lawrence Evans	Chemical Engineering
Frank S. Jones	Urban Studies and Planning
H. Gobind Khorana	Biology
Patrick Leehey	Mechanical Engineering
Francis E. Low	Institute Professor/Provost's Office
Robert W. Mann	Mechanical Engineering
Lucian W. Pye	Political Science
Charles M. Satterfield	Chemical Engineering
Donald Schon	Urban Studies and Planning
David C. White	Electrical Engineering

Faculty Survey on the Academic Calendar
March 1992

Length of Term

Calendar just right, or more-or-less good as is - minor changes	85
Terms too short, insufficient time, too few lectures	43
Lengthen both semesters	25
Semesters currently too long	4

Starting/Ending Dates

Begin earlier than Labor Day

	Yes	14
	No	49

Begin the day after Labor Day

	Yes	51
	No	29

Register on Saturday

	Yes	28
	No	47

End fall term before Christmas	34
Extend fall term beyond Christmas	4

IAP

Eliminate it	15
Keep it	74
Shorten it	21
Lengthen it	5
Make better use of it	17
It is currently well used	2

Holidays/Vacations

Current calendar allows time for catch-up, research	21

Second day of two-day holidays

	Keep them	54
	Eliminate them	55

Insert vacation days at the end of IAP and spring term

	Yes	42
	No	36

Schedule spring vacation mid-semester	7

Reading Period

Increase it	38
No change	25
Decrease it	12

Summer Session

Increase summer offerings

	Yes	38
	No	29

Other

Switch to a quarter system	27
Maintain the semester system	66
Calendar not the problem - culture, curriculum is	25

On the Calendar

Robert J. Silbey and Stephen D. Immerman

Last November, President Vest appointed a committee to study the Institute Calendar. The committee is chaired by Robert Silbey with Stephen Immerman serving as staff. The other members of the committee are Lawrence Bacow (Urban Studies and Planning), Robert Brown (Chemical Engineering), Elizabeth Garrels (Foreign Languages & Literatures), James Harris (Philosophy), Linn Hobbs (Materials Science & Engineering), Arthur Smith (Dean for Student Affairs and Undergraduate Education; Electrical Engineering & Computer Science), Karl Ulrich (Sloan School of Management), David Wiley (Registrar), Norma McGavern (Undergraduate Academic Affairs) and two undergraduate students, Ted Ko and Rebecca Zavistoski. In spite of our efforts, we found no graduate student with the time and inclination to join the committee.

The president reminded us of the faculty discussion last year (surrounding the introduction of the biology requirement) that suggested that a review of the calendar would be useful, including the issues of the starting and stopping dates of the academic year, the use of IAP, the adequacy of reading and finals periods, and whether all class years need follow the same calendar. President Vest also asked us to consider the balance among departmental objectives, as well as pace and pressure on students and faculty.

We asked a number of guests to give us their views on various problems, and quickly noticed there was some strong feeling (particularly in the School of Engineering) that the fall and spring terms did not have enough class days to cover the necessary material in many subjects in an adequate manner. This leads to an unfortunate increase in pressure for students and faculty. We surveyed the AAU universities and found that MIT did indeed have fewer days of instruction (*excluding* IAP) than most, and most did not have an equivalent to IAP. We then began to think about increasing the number of days in the terms while at the same time asking the faculty, who now feel pressured to finish on time, **not** to increase the amount of material they ask the students to cover.

If we constrain the fall term to begin after Labor Day and end before Christmas, we can increase the number

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of available days by holding classes on the two-day Columbus and Veterans Day holidays, and/or by having registration the day after Labor Day and beginning classes the next day. In the spring, we could end later in May, and give up the Presidents' Day and Patriot's Day vacations. If we were to do **all** of this, it is likely that pressure would not decrease; we feel it is important to have some of the in-term holidays, and perhaps a full week of vacation in the fall term. Starting the week **before** Labor Day in three out of seven years (but not before September 1) allows for consistent terms of adequate length, as well as adequate in-term holidays to address pace/pressure issues.

We have discussed IAP: whether to do away with it, to lengthen or shorten it, or to use it for required subjects (perhaps *only* given then). There is strong feeling on this campus that IAP is important and useful in many ways; however, there is also strong feeling that we could offer additional academically-demanding subjects in IAP that lend themselves to shorter, though intensive programs. For example, subjects in computer programming, or in foreign languages, or many lab subjects would be appropriate. If we were to do this, it is important to maintain IAP of sufficient length for these subjects to proceed.

Other issues discussed have been: increasing the number of undergraduate subjects offered in the summer, increasing the number of days in reading and/or exam periods, and more radical changes such as going to the quarter system.

More fundamental questions have emerged in our discussions as well: Can changes in the calendar ultimately address that component of pace and pressure which is culturally determined at MIT; and is there a fundamental conflict between a calendar which supports the teaching function, and a calendar which supports the research function?

Last month, the faculty were asked to respond to a "Quick Survey on the Academic Calendar." Two hundred twenty-five faculty replied, an indication that the calendar is important. In the table opposite (page 6), we give a view of the more quantifiable responses. It is clear that there is no overall consensus on many issues. A similar survey has been sent to a sample of students.

In the near future, we will send the faculty and students a few possible calendars for discussion. ♣

Research Versus Engineering: A Delicate Balance

(Whitman, from Page 1)

I am not arguing against research. Our technological leaders must be well-versed in fundamental sciences and motivated to look beyond conventional wisdom. Teachers of engineering should be involved to some degree in research; certainly we all want our professors to be growing intellectually. I believe, however, that in moving from an "Institute of Technology" to a "University Polarized Around Science" to a "Research University," we have lost sight of some prerequisites for good engineering education.

My claim is that our faculty — and especially our younger faculty — should have experience in engineering decision-making. Such experience should include first-hand knowledge of how results of research are brought into practice and how engineering decisions are influenced by non-technical as well as technical considerations. These are just the types of experiences that the "Research University" makes it difficult for young faculty to gain.

Witness the typical career of a young engineering teacher. The key step is the doctorate, which is judged largely on its contributions to scientific knowledge and upon how well the methods of science have been followed. Increasingly the next step is a "postdoc," during which the new doctor develops research proposals based upon her or his dissertation — so that she/he can begin a faculty appointment with research funding in place. During the first five or more years on the faculty, there is heavy emphasis on research and publication, so that the new professor's name becomes known nationally and then internationally among the research community — for letters from "outside" academicians are the key to tenure and promotion. These rites of passage have all been borrowed from science, where apparently they have served well to identify and encourage the best of researchers.

However, there is little or no time in this schedule for gaining experience in engineering. Taking a job for several years immediately after the completion of the doctorate is discouraged, as interrupting a promising career in research. Working in practice during summers would use up valuable time for writing papers or proposals. Even occasional consulting is frowned upon as a diversion. When there is consulting, it usually involves performance of some specialty task — with scant opportunity for meaningful glimpses of the decision-making side of engineering practice.

Cannot this system be modified? Suppose academe and industry could agree upon terms for meaningful "postdocs" in engineering practice. Suppose a young faculty member need not start her or his career with a research plan *cum* funding all in place. Suppose young faculty members could be evaluated not just on their contributions to scientific knowledge but also on their contributions to important actual engineering projects.

There are challenges here for all of us. Engineers in practice must learn how to provide academics with significant short-term engineering assignments, and how to write meaningful evaluations of this work. Professors must develop new metrics for judging their young colleagues as engineers. If these changes are initiated by the faculty in engineering, I am sure that department heads and deans will happily follow!

If such steps could be coupled with those reducing financial dependence upon research money as the main method for funding graduate students and the infrastructure of the "Research University," I believe we would see major leaps forward in the quality of engineering education — and teaching versus research would be greatly diminished as an issue. There will be those who will worry about teaching versus consulting, but...what better education for engineering than working with faculty who are skilled engineers? ♣

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<u>In Response</u>

Politically Correct at MIT?

Ian Hutchinson

By a strange coincidence, the article in the last *Faculty Newsletter* entitled "A Short History of *Politically Correct*" by Ruth Perry appeared a couple of days after the *Sunday Globe* published an extract from the book by Dinesh D'Sousa, which also addressed the origins of the phrase 'Politically Correct.' It was fascinating to juxtapose these two articles and observe the different slants placed on what appear to be fairly similar readings of the historical facts. (Excuse a scientist for using such a naive — one might almost say incorrect — expression as 'fact.')

The revealing section of Professor Perry's article is at the end where she diagnoses the *real reason* for the protest against the imposition of political correctness. It is, she asserts, a thinly disguised attack on "the theory and practice of affirmative action." This section strikes me as an example of what the protesters object to in the enforcement of politically correct speech. Those who disagree with the feminist/multicultural agenda, or even who think that it warrants serious debate rather than intellectual demagoguery, are typecast, either explicitly or by implication, as racist, sexist, chauvinist, or some other kind of illiberal 'ist. Their critiques and opinions are thus to be rendered suspect and discounted by those who see *adherence to the cause* as their test of value. Moreover, all too often, the 'correct' seek to drown out the questions and arguments of the critics by a chorus of name-calling and *ad hominem* attacks, combined with a recitation of all the injustices that correctness is supposed to redress.

If further evidence were needed that my characterization is accurate of the typical 'correct' response to its critics, it is amply provided in the *Sunday Globe*

of April 5th, coincidentally the Sunday after Perry's article appeared. Senator John Kerry, surely a politician of impeccable liberal credentials, was inadequately circumspect in a speech at Yale and dared to suggest, concerning affirmative action (which he clearly supports, saying "We don't want to lose it"), that "we ought to be willing to

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acknowledge the downside aspects of it." In the words of the *Globe's* Robert A. Jordan, "these and other remarks created, and rightly so, a firestorm of anger across Boston's African American community." Derrick Z. Jackson devoted his column to an angry attack on Kerry and majored on the recitation (of injustices), ending with the obser-vation "many African Americans who thought Kerry was *on their side* feel stabbed in the back." (Italics mine). What a remarkable example of the fury unleashed on anyone, especially one within the fold, who dares to question the 'correct' orthodoxy concerning any of its sacred cows. And what a clear demonstration of the divisiveness of the purely partisan approach that interprets everything in terms of whether you are 'on our side.'

Of course, contrary to Perry's diagnosis, the issues for the academy are much broader than affirmative action, even though that *is* one of the touchiest subjects. The question comes down to

whether we are going to permit, let alone encourage, a free and respectful debate on actions and subjects related to feminist/multicultural ideologies or whether we will allow that most precious of academic freedoms to fall victim to the 'politically correct.' Will we be allowed to seek the truth together on the merits of the evidence or will everything

we say be judged primarily by its measure against imposed 'correct' orthodoxy?

In the sciences and engineering, we are somewhat isolated from the post-modernist erosion of the belief in truth and merit. However, we are not permanently inoculated against it. We would be well advised, therefore, even at MIT, to realize that some of those who have abandoned the enlightenment overconfidence that critical investigation is the route to all knowledge want to put in its place new orthodoxies, especially the one labelled 'politically correct.' Perhaps it is altogether too far-fetched to subscribe to Perry's suggestion that scientific disciplines would be different if the world were viewed through feminist spectacles. (What would be different about, say, Maxwell's equations if they had not been discovered by "white middle-class men"?) But then again perhaps not. Who is to say that a new Lysenko is not waiting to be adopted by an orthodoxy that recognizes no merit above its own agenda.

In Response

Grassroots Initiative Drives
K-12 Education Committee

R. M. Latanision

Recent editorials in the *Faculty Newsletter* have focused on the faculty's role in charting the intellectual direction for MIT. The January edition referred in particular to the evolution of the institutional initiative in K-12 education and asked "Is faculty initiative the sustaining force?" In fact, I consider this to be a good example of a case where the senior administration is responding to the faculty and where a positive and productive dialogue has developed. This is a grassroots initiative in which the MIT community — faculty, students, staff, and alumni — is the driver. I'd like to briefly describe the origin of this initiative — not just for historical reasons, but because I believe that the initiative in K-12 education and those focused on global climate change and industrial productivity, among others, represent an important cultural change at MIT — and then, building on the theme of cultural change, to discuss public service as a component of our mission at MIT.

The present initiative in primary and secondary education evolved from discussions which began during the fall of 1989. These discussions were inspired in part by a recognition within the MIT community that there were at that time a number of ongoing K-12 outreach activities at MIT, but no dialogue among the principals involved. Not surprisingly, Margaret MacVicar's interest and encouragement were present and her staff in the Office of the Dean for Undergraduate Education was instrumental in bringing people together. A small group — including Ron Parker, Judah Schwartz, J.J. Pitts, Al Doig, John Wilson, and myself — then began to meet with Dean Gerry Wilson who ultimately charged a committee to

explore the question of whether MIT should become involved as an institution in K-12 education. The workproduct of the committee, the report *Education: To Move a Nation*, has been described earlier, and I will not repeat its findings here. I should, however, mention that a copy of the Strategic Plan of the Council on Primary and Secondary Education will soon be distributed to all of the faculty as Provost Wrighton pointed out at the Institute faculty meeting on April 15th.

Gerry Wilson's role in this process was important since he established a vehicle for institute-wide discussion (rather than delay the discussions) — namely, the Committee on K-12 Education — during the time of the transition in presidential administrations. The Committee ultimately reported its findings to President Vest and Provost Wrighton in June, 1991.

It is clear to me that there would be no institutional initiative in K-12 education without the support of the MIT community. It goes without saying that K-12 education does not appear at the top of everyone's list of priorities — any more than does global climate change, productivity, high-speed computing, etc.

What emerged from a series of meetings that began in the fall of 1989 and culminated in the fall of 1990 with Gerry Wilson's charge to the Committee on K-12 Education, was a deep sense of concern and a need to determine whether that concern should be expressed institutionally. The Committee's answer was "Yes!"

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That we have embarked on an institutional K-12 initiative is significant, it seems to me, in that it represents commitment beyond our traditional mission in higher education and research. This is not to say that such a commitment is unique in our history. Indeed, more than 30 years ago — shortly after Sputnik — MIT played a seminal role in launching a nationwide wave of educational reform in the form of the work of Jerrold Zacharias and the Physical Sciences Study Group. In another time of need, the Radiation Lab served the national interest: we were then at war and the future of America was a stake. And there have been others.

The issue that I wish to address, and which I believe the faculty should discuss, is whether such episodes of public service should become integral to

Grassroots Initiative Drives K-12 Education Committee

(Latanision, from preceding page)

life on this campus; that is, should become part of our mission. Such action would carry both intellectual and fiscal commitments. There is a basis for such action. According to our original act of incorporation in 1861, MIT was founded "for the purpose of instituting and maintaining a society of arts, a museum of arts, and a school of industrial science and aiding, generally, by suitable means, the advancement, development, and practical application of science in connection with arts, agriculture, manufacture, and commerce." The useful "arts" of the day included such fields as printing, engraving, heating and ventilation, metallurgy, and others. Moreover, Jacob Bigelow, a prominent figure in the founding of this institution, as the first Rumford Professor and Lecturer, presented his lectures on the Application of Science to the Useful Arts to large audiences in Boston and included not only college students but the general public. This history is chronicled by Loretta Mannix and Julius Stratton in *Mind and Hand, M.I.T. in the Nineteenth Century*.

It seems to me that the decade of the 1990's will present both needs and opportunities for institutions such as MIT to exercise leadership in addressing the issues of our time in the most publicly visible way. This does not necessarily mean that MIT should attempt to shape public opinion, but rather that it could provide a balanced, objective view of contemporary issues. The issues of concern are broader than science and technology alone, but given the role that science and technology play in economic growth, the national defense, the necessities of life on this planet — shelter, food, clean air and water, waste

treatment, etc. — and others, it would seem that institutions such as MIT could play a key role in creating an environment in which informed citizens may become meaningfully engaged in the democratic process. This seems especially important today. The United States is in trouble socially, economically, and politically. Education and technology are, I think, central to this nation's future.

My ultimate point is that in addition to our tradition of higher education and research, MIT should consider taking on a more substantive public service mission. Someone or some institution, and this should be MIT in my view, must make technology understandable and palatable to the American public. The public is, I believe, anxious today about the risks connected with tech-nology, and I mean not just risks that involve public safety, but social, economic, and environmental risks as well. In commercializing scientific understanding, technologists must become sensitive to not only issues of economic growth, but also to issues with broader societal impact than ever before. There are clear instances in our technological history where technology

and economic growth have not served the common good. I believe that we have an opportunity to steward MIT and the nation toward an era of greater social and technical harmony and to do this not at the expense of our core values but by building upon them. As a starter, why not follow the lead of Jacob Bigelow with a contemporary version of his Rumford Lectures as a means of

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encouraging public discussion of complex technology-policy issues? We can become a part of the education of more than our own students.

At a recent meeting of the American Association for Higher Education, Harvard's President Emeritus Derek Bok suggested that universities, currently under siege regarding a number of very public issues, could regain public confidence by taking leadership roles on national problems. I agree, and I would add that the public's current, often defensible, disaffection for many of our political and social institutions provides a compelling reason for the university system to muster the will to take on leadership positions in developing and implementing a responsible national agenda. ♣

MICAR Report

Military Support and MIT

(Feshbach, from Page 1)

Among other efforts, the Kaysen Committee conducted a poll of the students. The report revealed the students' interest in and concern regarding MIT's military involvement in military research. But strikingly, relatively few felt that they were well informed. Two-thirds of the respondents believed that MIT had a close association with the military. Moreover, according to the foreign students, some (66 on-campus research) had been excluded from research opportunities, the majority citing U.S. national security as the reason.

With regard to career choices and future employment, there was a clear call for more information on the military dimension of various career fields. About two-thirds of the respondents said they had an "aversion" to working for the military.

The report of the Kaysen Committee in the spring of 1986 was followed by the authorization by the faculty committee of MICAR, the *ad-hoc* Committee on the Military Impact on Campus Research. It was a presidential committee, whose members at the time its report was issued were: S. Chorover, H. Feshbach (chair), T.L. Kirtley Jr., V. Kistiakowsky, D. Litster, F.R. Melcher, W.E. Morrow, M. Weiner, S. Farber (student) and R. Ghanbari (student). Prof. Litster replaced K. Smith, who served on the committee for most of its life.

Initially the chair was William Brace, who responded to the call for more information by organizing meetings of the EPS and EECS departments to discuss the nature of their DOD support. Professor Brace was succeeded by Arthur Smith, who in turn was succeeded by this writer.

The Committee represented a wide range of opinions. Everyone agreed with the traditional university attitude that a most important goal of university education and research is to improve the human condition. There were those who

felt that research for the DOD compromised this goal, that the national policies of the DOD were faulty, and that performance of DOD-sponsored research supported these policies. There were those who felt that there should be no barrier against accepting DOD support as long as the science and technology research was of high quality. [Note that there is no classified research on the MIT campus.] There were those who felt that university research should contribute to national defense.

Nevertheless, it was possible to arrive at a set of recommendations which are based on: (1) a policy of openness which would make the MIT research picture readily available to all; (2) a requirement that the research be appropriate and of high quality; (3) the need for a balanced program. Indeed, these recommendations apply to all sponsored programs, not just those supported by the DOD.

First some facts: a) There is little SDI supported research on the campus. Twenty-five percent of the Lincoln Laboratory program is sponsored by SDI; b) The fraction of MIT research sponsored by the DOD has remained at 17% since FY84. It was 16% in FY83 and hit a low of 12% in 1980. Since FY87 the total amount provided by the DOD has ranged from $45,000,000 to $51,000,000. In FY91 it was $49,104,00; c) DOD support is not evenly distributed among the departments and laboratories. A major fraction of MIT campus DOD support is received directly by the School of Engineering. If one adds to this the funds received by laboratories associated with that School, a total of 80% of the DOD support is obtained. Within the School the departments of Ocean Engineering, Civil Engineering, and EECS are the principal recipients, with 62%, 43% and 31% of their research budgets provided by the DOD in 1991, respectively. Among the

laboratories, Artificial Intelligence, the Laboratory for Computer Science, the Laboratory for Information and Decision Systems, and the Materials Processing Center obtained, respectively, 81%, 59%, 84%, and 56% of their support from the DOD in 1991. The table at the end of this article highlights the DOD support picture for FY1970, FY1980, and FY1990.

The Pounds Commission Report of 1969, a study of the involvement in DOD-supported research, commented on issues which are relevant to those confronting MICAR. The following two quotes are taken from that report.

"MIT's evaluation of a project must address the questions of appropriateness that arise from the dedication of the university to humane objectives and must consider the attitudes of the MIT community."

"Activity in education and research at MIT must be consistent with the underlying principles of humaneness and public benefit. The impact on society and on the university community must be recognized."

These quotes emphasize the existence of an MIT community whose contribution to MIT policies is essential to their formulation and to their execution. Such participation requires a well-informed community. With that goal in mind, the Kaysen Committee made the following recommendations which also speak to the desire for information uncovered by the Committee questionnaires. It is recommended that: (1) The support picture for each department and laboratory and for the institution as a whole, and in what way that picture is compatible with the goals of the department, should be readily available and circulated to the MIT faculty, staff, and students; (2) There should be departmental and school seminars on their research support and its implications; (3) Each graduate research

MICAR Report

Military Support and MIT

(Feshbach, from preceding page)

assistant, graduate research fellow, post-doctoral fellow, etc. should be informed to the extent possible by a statement in their appointment letter at the time of his or her appointment of the nature of their support, the supporting agency and the goals of the supported research; (4) Information regarding the careers of MIT graduates should be readily available. We recommend regular surveys of recently employed graduates to find out what they are doing and under what sponsorship.

The Committee's report turns next to questions of appropriateness raised in the first quote from the Pounds Commission report, given above. Certainly a necessary condition is that "a project is appropriate when it takes advantage of educationally useful and intellectually important scientific and technical opportunities."

This suggests that: a) In order to ensure the quality and appropriateness of the research projects carried out at MIT, the programs of each of the major laboratories and projects should be evaluated regularly by an external committee consisting of recognized experts reporting to the cognizant members of the administration (dean, provost, vice president for research). Such an evaluation should be in addition to the evaluation carried out by the program officers in the supporting agencies, as well as in addition to the Corporation's departmental visiting committees; b) In a plural society such as ours scholars can choose among funding sources to pursue their interests. Unfortunately such plural support may be compromised by intra-agency agreements. One would hope that ethical considerations and the desire to improve the lot of humanity will influence what research is chosen and what sponsorship they accept.

As a corollary: MIT should reduce its dependence on sponsored research by developing resources which will permit scholars to pursue intellectually challenging projects which do not fit into the agendas of supporting agencies.

These last recommendations apply to all MIT campus research. Generally all sponsored research reflects the agenda of the sponsor. One must not permit that agenda to distort an otherwise balanced program for which DOD sponsored research has an additional concern. Accepting DOD support may imply support of DOD national policies, some of which are controversial (e.g. SDI). From the Pounds Commission we have the following quote: "The nation's emphasis on defense can produce a bias toward specific areas of research. MIT has a role to play in redressing the balance not only within itself but also at a national level."

Selected DOD Support Ratios
($000)

Department/Laboratory	FY70 DoD Support	FY70 Total Research	%	FY80 DoD Support	FY80 Total Research	%	FY90 DoD Support	FY90 Total Research	%
Aeronautics/Astronautics	744	2,839	26%	1,749	3,982	44%	1,570	6,741	23%
Artificial Intelligence Lab.	18	3,131	1%	0	6,335	0%	6,875	8,363	82%
Brain & Cognitive Sciences	25	882	3%	88	2,391	4%	1,218	6,821	18%
Civil Engineering	227	3,170	7%	136	3,812	4%	2,731	6,878	40%
Earth, Atmosphere & Planetary Sci.	1,185	3,167	37%	1,839	8,911	21%	1,332	10,855	12%
Electrical Eng. & Computer Science	1,186	2,194	54%	585	1,366	43%	1,643	5,706	29%
Lab. for Computer Science	0	0	0%	3,555	5,556	64%	9,699	14,881	65%
Lab. for Information & Decision Sys.	0	0	0%	780	2,134	37%	2,503	3,138	80%
Materials Processing Center	0	0	0%	312	931	34%	3,704	6,858	54%
Materials Science and Engineering	957	2,073	46%	1,081	5,448	20%	730	4,968	15%
Mathematics	310	919	34%	273	1,281	21%	493	2,783	18%
Mechanical Engineering	407	2,192	19%	509	4,513	11%	1,946	8,464	23%
Media Lab.	0	0	0%	0	0	0%	1,178	7,486	16%
Ocean Engineering	250	529	47%	676	1,571	43%	2,978	4,389	68%
Research Lab. of Electronics	1,438	4,775	30%	2,534	7,853	32%	5,479	13,547	40%
Space Systems Lab.	0	0	0%	0	0	0%	241	1,401	17%
Institute Total	**15,707**	**58,126**	**27%**	**19,183**	**163,122**	**12%**	**51,158**	**310,660**	**16%**

The Changing Story of Patriot's Gulf War Performance

Theodore A. Postol and Reuven Pedatzur

In view of the attention given to Professor Theodore Postol's critique of the original claims of Patriot missile performance and the subsequent controversy about freedom of information, the Newsletter asked Professor Postol to submit an article discussing these issues. Professor Postol declined to address the freedom of information controversy, but did submit the following article summarizing his view of the current state of the argument.

As the true story of the Patriot Air Defense System's performance in the Gulf War continues to unfold it is now clear that Patriot was very far from an unqualified technical success. The initial claims made by the U.S. Army and its prime contractor, the Raytheon Corporation, indicated that Patriot's intercept rate was close to 100 percent. Recent reports from investigations of the House Government Operations Committee, the General Accounting Office, and the Congressional Research Service indicate that the intercept rate may instead have been close to zero.

In addition to a possible total failure to intercept Scud warheads in both Israel and Saudi Arabia, Patriot failed completely to fire upon a Scud at Dhahran, which caused the largest death toll of Americans in the Gulf War. Four of its interceptors dove into the streets of Israeli cities and perhaps another five dove into the ground in Saudi Arabia. Some of these impacting interceptors almost certainly caused ground damage comparable to that of the Scuds they were trying to intercept. There are also many news reports and evidence from publicly available videotapes that indicate numerous errors were present in

its software fire-control systems. The exaggerated story of Patriot's success has important implications for the defense policies of the U.S., its friends, and its allies — and as new details of its many failures become public, the need for an impartial technical review of its performance continues to be underscored.

On April 7, 1991, Representative John Conyers, chairman of the Committee on

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Government Operations, opened a hearing on the performance of Patriot in the Gulf War by stating the following preliminary conclusions of his Committee's investigation into Patriot's Gulf War performance:

"The classified assessment [of Patriot's Gulf War performance] the Army has given for the past year to top administration officials and members of Congress is wrong.

"The Army evaluation that backed up that briefing is deeply flawed.

"Subcommittee investigators spent two months examining every report provided by the Army and Raytheon. They found strong evidence of a warhead destroyed by the Patriot in only one case.

"The basic evidence the Army and

Raytheon cited for warhead kills is the absence of ground damage. Ground damage proves the Scud was not intercepted; but the absence of ground damage does not mean it was intercepted. Scuds would land in the desert or in the water, and warhead kills would be claimed. Many of the Scuds were duds. Some had only a little explosive in their warhead. Some had concrete warheads. The Army analysis did not account for these duds.

"We know that in Israel there were thorough, organized searches and that in Saudi Arabia there were not. Shortly after the Scud attacks began, the Saudi Government banned television images of Scuds hitting the ground and banned all reports of ground damage. We know that there are many times fewer warhead kills claimed in Israel than in Saudi Arabia. And, despite the Saudi censorship, there is video evidence of severe ground damage in Saudi Arabia after attacks in which the Army claims the warheads were destroyed.

"The Army's basic evidence to its claims of mission kills is that the Scud landed someplace other than where the Patriot's computers predicted. However,

Patriot's Gulf War Performance
(Postol/Pedatzur, from preceding page)

the tumbling and break-up of the Scuds made the impact points highly unpredictable. That enemy missiles landed where allied forces did not expect is unreliable proof that they were intercepted.

"After reviewing over 140 video tapes of Scud engagements broadcast by television networks, the subcommittee has been unable to find clear video evidence of even one Scud warhead destroyed by Patriots.

"Subcommittee investigators also reviewed the precision infrared films the Israeli military provided to the subcommittee. Again, the films do not show even one Scud hit by a Patriot. In fact, the miss distances are quite large and can be seen dramatically in the infrared films. The Army, however, calls some of these engagements warhead kills. These tapes are still classified.

"There is also video evidence of some half dozen Patriots in both Israel and Saudi Arabia that can be seen crashing into urban areas. In the Army evaluation, these were not reported.

"We now know that the explosions we saw in the sky were not caused by direct impacts but by proximity fuses as the Patriot neared a Scud or a Scud fragment or [flew] by the missile automatically self-destructing after missing a Scud."

The story behind these statements of Conyers is one filled with troubling suggestions that the distorted initial claims about Patriot's high success rate may be the result of numerous active attempts at misrepresentation. In addition, it appears that the effect of these misrepresentations may have been amplified by institutional opportunism.

The initial claims made in March of 1991 about Patriot's success were truly astonishing. Raytheon and the Army claimed that Patriot had successfully

intercepted 45 out of 47 Iraqi Scud missiles, achieving a remarkable intercept rate of 96 percent. However, revelations then surfaced that there was extensive ground damage during the period of Patriot defense in Israel. These revelations raised questions about how such damage could have occurred if the defense had worked so well. In response to adverse publicity from press reports, Raytheon issued statements late in April of 1991 that acknowledged it had undercounted the number of missed

Scuds in Israel by a factor of more than ten, but it clung to claims that the intercept rate in Saudi Arabia was near 90 percent. Raytheon's success rate in Israel was again revised downward in early May when Les Aspin, chairman of the House Armed Services Committee, stated in a speech to the American Association of Aeronautics and Astronautics that 56 percent of Scud warheads may have been missed by Patriot.

The New York Times and *Science Magazine* broke important stories in October and November of 1991 reporting that Israeli Air Force and scientific teams, briefing high level U.S. Government officials in Huntsville, Alabama and Washington, D.C., showed infrared and visible videofilms of Patriot-Scud encounters, all of which demonstrated

that Patriots did not kill a single Scud warhead in any of the 12 engagements that had been recorded. The Israeli team also performed detailed studies of ground damage that were closely coordinated with the video data taken during Scud attacks. The conclusion of their extended analysis was that Patriot did not destroy any of the 17 Scud warheads that were engaged over Israel.

Both the *Times* and *Science* also reported that the Army and Raytheon had taken no radar data of Patriot

> The Patriot is almost certainly the world's most capable air-defense system, and Raytheon's technicians and engineers should not be faulted for the system's poor performance during its first test in combat. It is now clear that U.S. and Israeli intelligence systems failed to provide an adequate characterization of the Iraqi Al-Husayn Scud to Patriot engineers.

intercept attempts in Saudi Arabia, since the U.S. area commander would not allow digital recorders on his units. It was also reported that no data from precision video cameras were collected in Saudi Arabia either. Almost two-thirds of Patriot intercept attempts, 30 out of 47, took place in Saudi Arabia. Without information from data recorders on Patriot fire units, or from external video instruments like those that were manned by Israeli missile test engineers, there is no way that Raytheon or the Army could know that Patriot had achieved a 90 percent intercept rate in Saudi Arabia. Hence, it is now apparent that there was never any evidence to support Raytheon's claim that Patriot's perfor-mance in Saudi Arabia was better

Patriot's Gulf War Performance

(Postol/Pedatzur, from preceding page)

than that in Israel.

The sources of Patriot's high miss rate appear to have been numerous. For example, a highly unusual and stunningly aggressive series of software upgrades were made to Patriot units in combat to address field identified shortcomings in performance. The in-combat upgrades included: software adjustments to raise the interceptor's minimum intercept altitude; changes to the systems battle management functions; software fixes to account for false targets that were being generated by radar reflections off buildings; changes to the Scud ballistics model, which is used to predict the path of incoming Scuds and to calculate optimum intercept points; changes to interceptor guidance parameters that controlled interceptor miss distances; and corrections to a timing error that was discovered in a subprogram that controls the radar's "tracking gate" function. The tracking gate timing error is believed to have caused the failure of a Patriot unit at Dhahran to fire on a Scud that hit a U.S. barracks, killing 28 U.S. troops and wounding another 98. Other problems that were contributing to the high miss rates were due to timing errors in the Patriot's radar fuze and the Patriot radar's inability to identify and track the warhead among sections of disintegrating Scud missiles.

Evidence for these software errors can be seen in videotapes taken by the press during the Gulf War and studied by the author. For example, in videos collected and reviewed by the author there are roughly 25 clear observations of Patriot interceptors missing Scud targets by many hundreds of meters as Patriots detonated in the sky over Saudi Arabia. Since the miss distances observed in all but 2 to 4 intercept attempts are hundreds of meters or more, the misses can be

documented with very high confidence, despite the relatively low space and time resolution of press video. A significant number of the Patriot misses appear to have been due to late launch of interceptors or nonoptimal choices of intercept points. This can be seen in the videos because these Patriots flew trajectories that later placed them so far from target Scuds that it was not possible to achieve intercept points near target Scud warheads. When this occurred, the Patriots detonated at ranges of hundreds or thousands of meters from target Scuds.

A significant number of large Patriot misses also occurred in the wake of Scud warheads, often hundreds of meters or more behind the warhead. It appears that in these cases the Patriots flew by the relatively stealthy Scud warhead and instead homed on pieces of debris in the wake behind the target.

Videos also show evidence of a timing or acquisition problem between the Patriot fire units and interceptors. This is indicated by the occasional detonation of interceptors at very low altitude very shortly after launch (about 3.5 and 4 seconds after launch, having travelled distances of only .7 to .9 kilometers). It is possible that these interceptors self destructed early in flight because they failed to receive guidance information

through radio links from the Patriot radar or otherwise malfunctioned. Some Patriots can occasionally be observed detonating at high altitudes when no Scud target could be observed. This may have been due to Patriot's engaging false targets that were the result of software mishandling of ground clutter observed by fire unit radars. There is one clear example of a successful intercept of a target over Riyadh, but it is not clear whether the target was a Scud warhead or a large piece of tankage. There is clear evidence that interceptors

> The reasons behind the Army's and Raytheon's misstatements about Patriot's performance are, no doubt, complicated — but they deserve the serious attention of concerned Americans, the Congress, and potential users of the Patriot system. It is possible, for example, that Raytheon has taken advantage of the misperception of Patriot's success by using the U.S. Congress as a lever against the Army.

dove into the ground in Saudi Arabia. There is also evidence in one, and possibly two, video records taken in Saudi Arabia that interceptors also suffered rocket motor failures and then fell to the ground.

The Patriot is almost certainly the world's most capable air-defense system, and Raytheon's technicians and engineers should not be faulted for the system's poor performance during its first test in combat. It is now clear that U.S. and Israeli intelligence systems failed to provide an adequate characterization of the Iraqi Al-Husayn Scud to Patriot engineers. The unexpected high-altitude breakup of Iraqi Scuds also greatly complicated intercept

Patriot's Gulf War Performance

(Postol/Pedatzur, from preceding page)

operations. The unforeseen rapid deployment of Patriot units from Europe to Israel likewise presented engineers with overwhelming problems. And the pressures put on technicians by the perceived political need to deploy missile defenses in Israel and Saudi Arabia must have been enormous. In spite of these difficulties, many of the software upgrades were done in stunningly short periods of time, sometimes in matters of days, and often without the benefit of recorded data from Patriot fire units. In addition, all of the upgrades were done under time pressures that precluded any detailed testing, validation, or certification of the software changes. The technicians and engineers who worked under these most trying conditions deserve the highest praise and recognition.

The reasons behind the Army's and Raytheon's misstatements about Patriot's performance are, no doubt, complicated — but they deserve the serious attention of concerned Americans, the Congress, and potential users of the Patriot system. It is possible, for example, that Raytheon has taken advantage of the misperception of Patriot's success by using the U.S. Congress as a lever against the Army. Reports have surfaced of conflicts between Raytheon and the Army over the needs for and costs of system upgrades. The Army's assistant secretary for Research, Development and Acquisition, for example, sharply criticized Raytheon in testimony before the Congress for its aggressive lobbying tactics that were undermining Army efforts to systematically evaluate and establish its own air-defense and theater missile defense options. There also have been tremendous differences between the Army's estimates of the costs of upgrades and those of Raytheon.

It is also possible that the media impressions of an unqualified success created pressures to rush ahead with purchases of Patriot within foreign governments. The Turkish government, for example, is seeking to acquire ten Patriot units, a purchase which constitutes 160 percent of Turkey's anticipated U.S. military assistance for 1992 and ten percent of its total planned defense modernization program. Statements made by Turkish officials indicate they have serious concerns about tactical ballistic missile attacks from their missile-armed neighbors — Iraq, Iran, and Syria.

The U.S. — and its friends and allies who depend upon the U.S. for military support — deserve to know the whole truth, and nothing but the truth, about the performance of weapon systems like the Patriot. In the next five to ten years the U.S. defense budget may shrink by a factor as large as a third or a half. Vigorous analysis and debate will be required to assure that this significantly smaller budget is well spent. The cost of not doing so will be in terms ♣ lost opportunities to spend these dollars on more effective military systems.

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Faculty in Residence Openings Anticipated

The MIT Faculty in Residence (Housemasters) anticipate openings in McCormick Hall and Random Hall beginning in the fall of 1992. There will also be an opening for Associate Faculty in Residence at Green Hall.

Faculty in Residence are normally married couples, of whom at least one must be a member of the MIT faculty (tenured, except for Associate positions). Their primary concern is with the quality of life in the House where they live, and life in the Houses generally for both graduate and undergraduate students at MIT.

If you think you may be interested in pursuing the possibility of the Faculty Resident position, please contact Dean Arthur Smith (3-6776) or Associate Dean for Residence and Campus Activities James Tewhey (3-4051). For further information about the Houses where there will be openings, please feel free to call on the current Faculty Residents. They are: Random Hall: Irwin and Gloria Pless, 225-9608; McCormick Hall: Graham and Jan Walker, 225-8106; Green Hall: Alison Hubel and Gregory Brown, 225-7496.

Finally, any of the current Faculty Residents will be pleased to discuss with you the organization and support services for the Institute Houses and their role within it (names and telephone numbers are listed in the *MIT Faculty and Staff Directory* alongside the House entries). We look forward to hearing from you.

♣

The Baker House/East Campus House Harassment Survey
II. Ethnic and Racial Harassment
Will Watson and Kenneth Oye

Five years ago, the MIT Minority Student Issues Group issued a report on "The Racial Climate on the MIT Campus." This analysis of the racial climate at MIT drew on a 1984 Quality of Student Life Survey and a 1985 Black Alumni survey. How has the racial climate at MIT changed in the intervening years? The 1991 survey of residents of Baker House and East Campus House provides some information on the nature and extent of racial and ethnic harassment at MIT. (See the February 1992 issue of *The MIT Faculty Newsletter* for an account of the survey and of its findings on sexual harassment.)

The good news is that there are fairly strong community norms that define acceptable and unacceptable behavior, norms that cut across ethnic and racial lines. The bad news is that underrepresented minorities are encountering unacceptably high levels of harassment by peers despite community norms. There are no significant differences across groups in definitions of racial and ethnic harassment. There are striking differences across groups in perceptions of the seriousness of racial and ethnic harassment at MIT and in personal experiences of racial and ethnic harassment at MIT. Unfortunately, there appears to be a substantial gap between ideals and behavior. Finally, there is one other bit of good news here. We find less racial and ethnic harassment by faculty and others in positions of authority than did the 1986 Racial Climate Report.

Before describing and discussing these findings in greater detail, we would like to issue a caveat. Our confidence in our findings on ethnic and racial harassment

is lower than our confidence in our findings on sexual harassment. First, although we have no reason to believe that there was substantial variation in response rate across ethnic and racial groups, we have no official census of the racial and ethnic composition of the houses. As the two pie charts show, the racial and ethnic composition of Baker and East Campus survey respondents

closely approximates the racial and ethnic composition of the overall MIT undergraduate student body. But in the absence of hard information on the ethnicity and race of the populations of the two houses, we cannot be certain that the response rate for any specific ethnic or racial group was above or below the 50 percent response rate for the survey as a whole. Therefore, it is difficult to project the effects of selection biases on reports of the incidence of harassment. Second, the numbers of underrepresented minorities at MIT and in Baker and East Campus Houses are low. As a consequence, the numbers of Hispanic and Afro American students responding

to the survey are also low. The following discussion of the experiences of racial and ethnic harassment by under-represented minorities is based on a small *n*. Findings broken out by race/ethnicity, and especially findings broken out by gender and race/ethnicity, should be viewed with caution.

Definitions and Attitudes

The uniformity of definitions of ethnic

and racial harassment across groups is striking. Not surprisingly, physical intimidation or assault on the basis of ethnicity or race are viewed by almost all respondents as intolerable. But does "unwanted teasing, jokes, remarks, or questions on ethnicity or race" by a peer comprise harassment? Knowing the ethnicity or race of an MIT student provides essentially no information on how a student will respond. Sixty-one percent of Whites, 66 percent of Asian/Asian Americans, 58 percent of Hispanics, 64 percent of Afro Americans, and 67 percent of others responding view unwanted teasing as harassment.
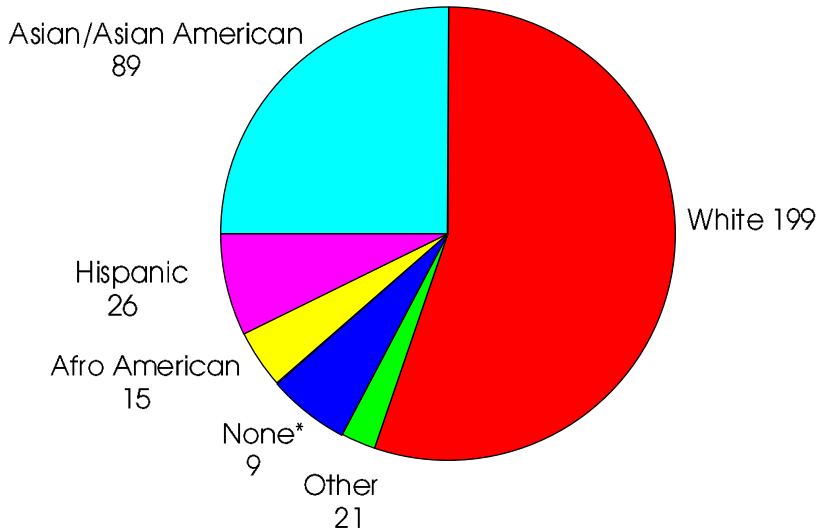
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**The Baker House/
East Campus House
Harassment Survey**

(Watson/Oye, from preceding page)

Survey Respondents

Asian/Asian American
89

Hispanic
26

Afro American
15

None*
9

Other
21

White 199

*Race/Ethnicity not reported

was an extensive problem at MIT. By contrast, 57 percent of Blacks, 54 percent of Hispanics, and 52 percent of Others thought that racial or ethnic harassment and discrimination are an extensive problem at MIT. Despite common definitions of what comprises racial and ethnic harassment, perceptions of the racial and ethnic climate at MIT vary markedly across groups.

Incidents and Experiences

One might expect that perceptions of the overall racial and ethnic climate at MIT are shaped by individual experiences of members of each racial or ethnic group. That does seem to be largely the case, with one notable exception discussed below. Twenty

Of course, students disagree over whether teasing is harassment. But the disagreements exist **within** groups, not **across** groups. By contrast, "unwanted teasing, jokes, remarks, or questions of a sexual nature" were viewed as harassment by 51 percent of women and only 31 percent of men. The problem of defining acceptable behavior seems to be distinctly less divisive on issues of race and ethnicity than on issues of gender.
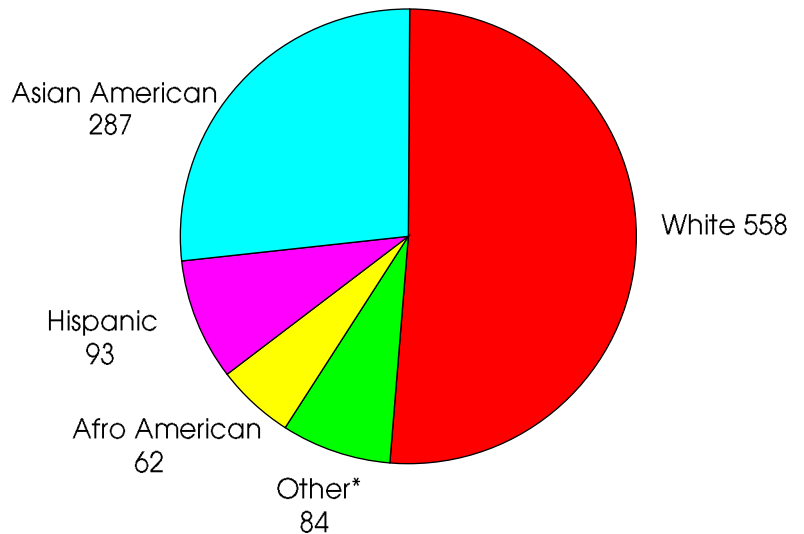
Yet common values are not matched by common perceptions of the incidence of harassment at MIT. We asked, "Is racial or ethnic harassment and/or discrimination an extensive problem at MIT?" There was a clear divergence of views across racial and ethnic groups on this question. Twenty-four percent of the Asian/Asian Americans and 35 percent of the Whites agreed that racial/ethnic harassment and/or discrimination

MIT Class of '94

Asian American
287

Hispanic
93

Afro American
62

Other*
84

White 558

*Int'l & Native American

percent of Whites reported encounters with "unwanted teasing, jokes, remarks, or questions on ethnicity or race." By

The Baker House/ East Campus House Harassment Survey

(Watson/Oye, from preceding page)

contrast, 47 percent of Afro Americans, 57 percent of Hispanics, 42 percent of Asian/Asian Americans, and 40 percent of the Others reported unwanted teasing on the basis of race or ethnicity. Three percent of Whites reported "physical intimidation on the basis of ethnicity or race." By contrast, 14 percent of Afro Americans, 15 percent of Hispanics, 9 percent of Asian/Asian Americans and 5 percent of Others reported ethnic or racial physical intimidation. One would expect individuals to form their views on the extent of racial and ethnic harassment at MIT on the basis of individual experiences. It would be difficult to think otherwise.

And yet that is exactly what many Asian and Asian American students at MIT have apparently done. The percentage of Asian and Asian American students reporting encounters with racial harassment and discrimination does not differ substantially from the percentages of Blacks, Hispanics, and Others reporting incidents. Yet only 24 percent of Asian and Asian American students believe that racial and ethnic harassment is an extensive problem at MIT — far lower than any other group, including Whites. If Asians and Asian Americans have experienced many incidents of racial harassment and discrimination at MIT, why do they not see it as an extensive problem here?

We have raised this result with Asian and Asian American, Afro American, Hispanic, and White students. An Afro American student suggested that there may well be differences in sensitivity to teasing. Asian American students may feel that they are fully accepted by the MIT community while Afro American, Puerto Rican, and Chicano students do

not. As he put it, "If you feel like you belong, then you can blow off racist remarks and teasing. If you do not feel like you belong, then you want to blow away the racists. Not that you do. So you get more angry and you lose your confidence." A Korean immigrant offered another explanation. He said that he was raised to expect and to

endure racial teasing and jokes. In his words, "...immigrants expect that stuff — it is inevitable. You cannot eliminate it." But he added that Asian Americans would be less willing to accept abuse than immigrants. Others thought that the toll taken by racist remarks and comments on Asian Americans was greater than the survey results seem to suggest. In this view, if you simply accept racial teasing you may subconsciously turn the anger and the doubts against yourself without making a connection to issues of race.

If experiences of harassment vary markedly across groups, what of the consequences of experiences on our students? We asked students to evaluate the effects of their experiences with

harassment. Here again, responses vary across racial and ethnic groups and even more markedly across gender.

Was the experience personally upsetting to you? Twenty-five percent of black men and 32 percent of hispanic men reported incidents that they found upsetting or very upsetting. By contrast, 6 percent of Asian and Asian American

> **Twenty-four percent of the Asian/Asian Americans and 35 percent of the Whites agreed that racial/ethnic harassment and/or discrimination was an extensive problem at MIT. By contrast, 57 percent of Blacks, 54 percent of Hispanics, and 52 percent of Others thought that racial or ethnic harassment and discrimination are an extensive problem at MIT.**

men and 6 percent of White men reported incidents that were upsetting or very upsetting. Women reported incidents of sexual as well as racial/ethnic harassment. What effects did these incidents have on them? Forty percent of Asian and Asian American women, 70 percent of Hispanic women, 49 percent of White Women reported incidents that they found upsetting or very upsetting. Fourteen percent of our small sample of Black women reported incidents that they found upsetting or very upsetting.

Did the experience interfere unreasonably with your educational or work performance? Two percent of White men, 4 percent of Asian/Asian *(Continued on next page)*

The Baker House/
East Campus House
Harassment Survey

(Watson/Oye, from preceding page)

American men, 6 percent of Hispanic men and 13 percent of Black men reported incidents that interfered seriously with their education or work. The effects of all forms of harassment on women appear to have been more serious. Fifty percent of Hispanic women, 27 percent of White women, 14 percent of Asian/Asian American women and no Black women reported incidents that interfered seriously with their education or work. Of course, not all problems in the classroom or laboratory are products of racial or sexual harassment. Nonetheless, the survey results suggest that experiences of peer to peer harassment may well adversely affect the academic performance of significant numbers of students at MIT.

What information does the survey yield on relations between faculty and underrepresented minorities? The 1986 Racial Climate Report included many examples of what it termed negative encounters with faculty members. According to the Report, the 1985 Black Alumni Survey found that "55 percent of respondents communicated generally negative perceptions of the personal and academic support provided by MIT faculty members...and some 15 percent voluntarily mentioned specific racial incidents involving MIT faculty members." The Baker House/East Campus survey asked students if they had encountered unwanted teasing, jokes, remarks, or questions on ethnicity or race from persons in positions of authority, such as TAs, tutors, or faculty members. Two percent of Whites, 7 percent of Asian/Asian Americans, 7 percent of Blacks, 4 percent of Hispanics, and 0 percent of Others reported such problems. These differences between

the findings of the Baker East Campus Survey and the 1986 Racial Climate Report may be due to differences in research protocols (the Black Alumni survey relied on telephone interviews while the Baker/East Campus Survey relied on an anonymous questionnaire), to differences in the wording of items, or

to improvement in the racial climate at MIT.

The Baker House and East Campus Survey indicates that racial and ethnic minorities suffer disproportionately from the effects of racial and ethnic hostility. The results also indicate that racial and ethnic hostility run in all directions. Consider the raw numbers of respondents reporting the most serious forms of racial and ethnic harassment. Twenty respondents reported that they had been physically intimidated on the basis of ethnicity or race and 7 respondents reported that they had been assaulted or threatened with assault on ethnic or racial grounds. It should be noted that of the 20 who said that they had been physically intimidated, 7 were Asian or Asian American, 6 were White, 4 were

Hispanic, 2 were Black and 1 was Other. As for the 7 assaults or attempted assaults, 4 were directed at Whites and 3 at Asians or Asian Americans. Racial and ethnic harassment is a matter of concern for all at MIT.

There is no consolation in this for any racial or ethnic group. Racial bias and

> **The percentage of Asian and Asian American students reporting encounters with racial harassment and discrimination does not differ substantially from the percentages of Blacks, Hispanics, and Others reporting incidents. Yet only 24 percent of Asian and Asian American students believe that racial and ethnic harassment is an extensive problem at MIT — far lower than any other group, including Whites.**

discrimination should have no place in our community or any community. As Rodney King asked, "Can we all get along? We can do better than this."

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Letters

To The Faculty Newsletter:

I write concerning Provost Wrighton's letter to the *Newsletter* (March 1992) concerning the MacVicar Faculty Fellows. Some people, including me, had objected to all six Fellows being white, male, and from the Schools of Engineering and Science. I'm afraid Provost Wrighton's response to these objections skirts a very fundamental issue concerning MIT's status as a community.

Provost Wrighton writes that "the objective [of the MacVicar Fellowships] was not to achieve a group representative of our demographics, but to honor the very best undergraduate educators among the nominees." But if the objective is not to have a representative group, then what kind of a community are we at MIT? How are we to take seriously the administration's many statements about encouraging the increased representation of women and minorities on MIT's faculty? If the administration wants people to take these statements as more than lip service, it must make every effort precisely to make a group like the MacVicar Fellows representative. If, in fact, there weren't any appropriate nominees except white men from the Schools of Engineering and Science, one looks for them, as one would in an affirmative action search. The function of affirmative action is to correct for institutional blind spots in a search; to really give women and minorities an equal chance, and thereby work toward a true meritocracy. I assure Provost Wrighton that there are a lot of folks out there qualified to be MacVicar Fellows.

I share Provost Wrighton's hope that the results will be different next year. But these hopes will be disappointed unless there is a serious effort by the administration to correct this year's not-so-benign neglect.

Louis Kampf
Professor of Literature

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International Fulbright Grants Available

The International Scholars Office would like to inform the faculty of the 1993-94 Fulbright Scholar Program, which offers about 1000 awards to faculty and professionals for research and lecturing in various fields in more than 120 countries. The Fulbright Scholar Program was established in 1947, and approximately fifteen foreign nationals are hosted at MIT every year. The opportunities mentioned here are for United States citizens with a Ph.D. or terminal degree in the discipline concerned. In some cases, proficiency in a foreign language is also required.

For details, visit the International Scholars Office in Room 4-105 and consult the reference booklet entitled *Fulbright Scholar Program*. This booklet has information on each award, eligibility requirements, and application deadlines, with separate indexes for individual disciplines, specific countries, and regional programs. Brochures and a sample application form are also available for reference. Application deadlines are as follows: June 15, 1992 for Australia, South Asia, and the Indo-American Fellowship Program; August 1, 1992 for Africa, Northeast and Southeast Asia, Western, Central and Eastern Europe, Territories of the former USSR, Latin America, the Caribbean, Middle East, North Africa, and Canada; and later for some programs related to education administrators, German Studies, and NATO grants.
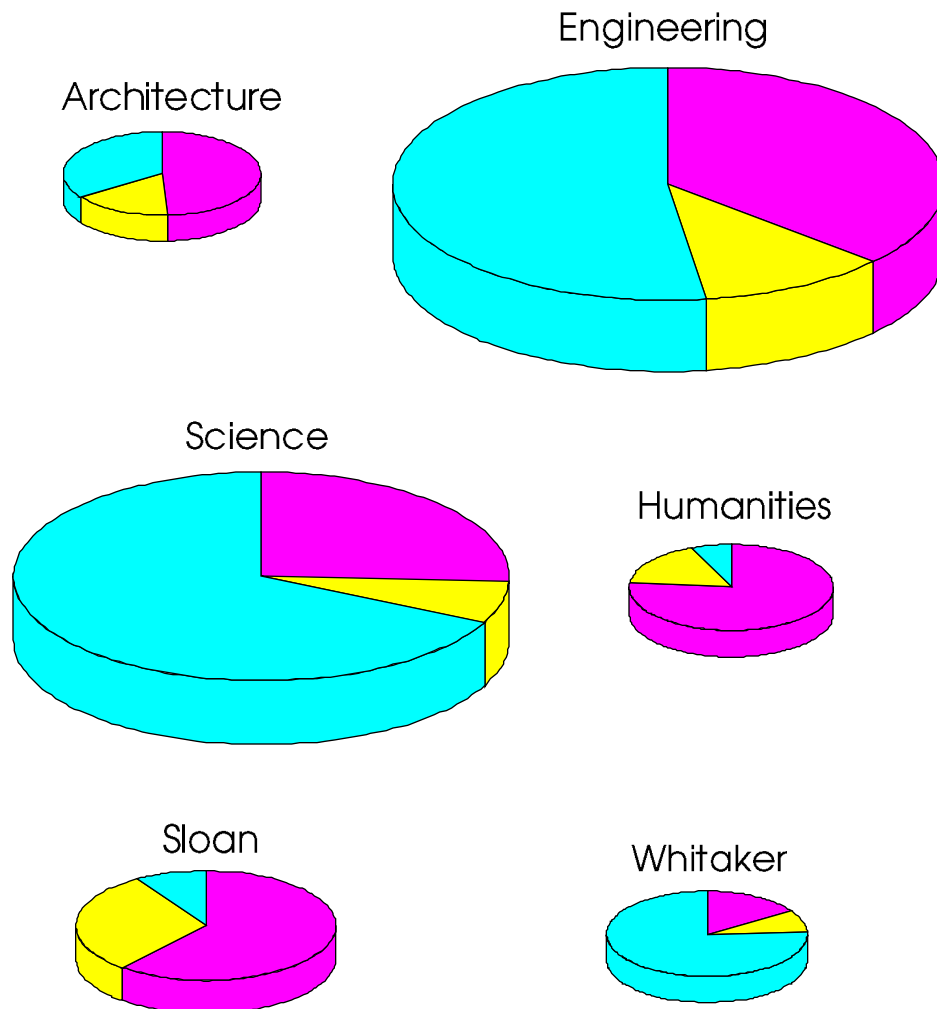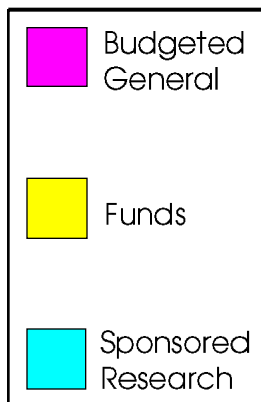
Further information is available through the Council for International Exchange of Scholars (CIES), 3007 Tilden Street, N.W., Suite 5M, Washington, DC, 20008-3009, telephone: (202) 686-7866.

M.I.T. Numbers
Academic School Budgets By Source
FY 1990 ($000)

	Budgeted Base General	Funds*	Sponsored Research Expenditures	TOTAL	Percent of TOTAL
Architecture	11,799	3,906	8,170	23,875	5.40%
Engineering	67,609	20,262	95,550	183,421	41.20%
Science	38,810	9,355	100,650	148,815	33.40%
Humanities	19,344	4,149	1,600	25,093	5.60%
Sloan	24,464	11,857	3,530	39,851	8.90%
Whitaker	3,950	2,050	18,600	24,600	5.50%
TOTAL	**165,976**	**51,579**	**228,100**	**445,655**	**100.00%**

*Funds include income from endowment, unrestricted gifts, professorships, and fellowships.

Legend:
- Budgeted General
- Funds
- Sponsored Research

Architecture

Engineering

Science

Humanities

Sloan

Whitaker

Source: *MIT Factbook,* June 1991

Who Gets to Write the Editorial?

The MIT Faculty Newsletter is managed by a volunteer Editorial Board (currently 17 members). Individual issues of the *Newsletter* are the responsibility of 3-5 member subsets of this Board, called Editorial Committees. The task of each Editorial Committee is to choose a theme or themes for its issue, solicit input if necessary, interact with colleagues during the editorial process, and write the editorial. It is our practice to have one member of each Editorial Committee serve as chair of the subsequent committee to ensure continuity. Thus, each Board member will serve on one or two issues per year. The actual mechanics of production are the responsibility of the Managing Editor, who also serves as assistant to the faculty in all phases of *Newsletter* operation.

Meetings are held to a minimum; there are two meetings of the Editorial Board per year to discuss overall *Newsletter* policy. The individual Editorial Committees work within the bounds of this policy. The Editorial Committee for a single issue generally meets 3 or 4 times, usually over lunch.

A large Editorial Board ensures representation of many points of view and an equitably shared burden. If you would like to join the Editorial Board for the 92/93 academic year, please indicate your interest by any of the methods listed below: 1) Leave an E-Mail message at FNL@ZEISS.MIT.EDU; 2) Send a FAX message to 617-253-0458; 3) Contact David Lewis, the managing editor, at X3-7303; 4) Fill in the coupon below; or 5) Contact any of the current Board members (listed on page 2).

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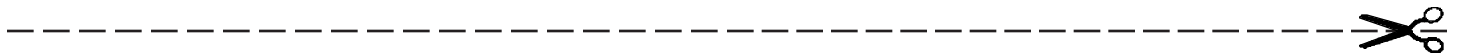
I would like to discuss the possibility of joining the Editorial Board for the academic year '92-'93. Please have someone on the Board contact me.

Name_____ Department_____

Address_____ Phone_____

Mail to: *The MIT Faculty Newsletter,* **38-160.**

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