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Professor of Foreign Literature Noam A. Chomsky *Photo by Dave Green*

Chomsky presents theory of unpredictable behavior

By Richard Foster

Professor Noam Chomsky addressed an audience of 1000 in Kresge Auditorium Wednesday on the topic "Science and Mystery in the Study of Human Language" as part of the Technology and Culture Seminar Series.

Chomsky stated that there are some problems man is not capable of understanding due to the nature of his intelligence, and that human behavior may be one of them. The respondents, Professor of Physics Philip Morrison and Professor of Philosophy Ned Block, took issue with this theory. Morrison denied that human behavior was as unpredictable as Chomsky speculated, and Block contended that all phenomena are physically explainable.

Chomsky distinguished between problems, which are within the realm of science, and "mysteries," which are as poorly understood as when they were originally formulated, by citing the behaviorists' failure to map the causation of human behavior. Led by Skinner, they have attempted to predict responses to an objective set of variables.

According to Chomsky, they have labored under a self-defeating concept of their field by excluding abstract propositions concerning the internal state of the organism. These "intellectual shackles" violate "ordinary scientific practice," he maintained.

Chomsky believes that the human intelligence is "a biologically given system, placing a constraint on the theories that can possibly be formulated; there is no guarantee that it can understand how it itself functions."

This constraint excludes some sciences, the the science of the human mind may be among them. The limitation is necessary, however, so that man can accept complex systems on the basis of scattered evidence.

Chomsky illustrated his point with a Martian spaceman able to understand sciences closed to man, viewing our language, common-sense belief, and modern physics. He will notice that the first two are unconscious, virtually universal, and effortlessly and uniformly acquired, but that the data on them is poor. Physics is less easily acquired and understood by only a few. He would conclude that the first two deal with the structure of the mind while physics does not.

Chomsky next introduced the concept of structure dependence, in which the significance lies not only in the physical object itself, but also in an abstract notion attached to it which is based in the mind. For example, the subject and verb of a sentence. He claimed that there are never structure-dependent errors in learning, even among children.

Even though the notion of structure-dependence is inherent in the mind, it is not simpler than structure independence. There is no mathematics of structure-dependence; it would be far too complicated. The choice of structure-dependence cannot be explained by efficiency, because structure-independence would be equally effective.

A child reflects the abstract and innate properties of mind, which are biologically determined. Whether there are factors underlying this, which will be discovered in the future, was a topic on which Chomsky refused to speculate.

Structure dependence was used to discuss other theories. A system based on conditioned response could never achieve structure-dependence. The empiricists, who treat the mind as "a system of data processing," were accused by Chomsky of refusing to acknowledge "the heavy constraints placed on actual possibilities by the human mind."

Morrison, the first respondent, took issue with Chomsky, arguing that human behavior can be predicted, although not second-by-second. He said that the real issue was content, not symbols, and that through the computer we will be able to understand the mind – "not our mind, a mind."

Block opposed using Chomsky's theories as a working hypothesis. "If the behaviorists are right we will be able to understand the mind; if they are wrong, all we will have done is wasted a lot of time." As a Physicalist, he believes that all phenomena can be explained in physical terms, and stated that just because something was a mystery today did not mean that it could not be solved. He hoped that "someone will do for behavior what Chomsky has done for linguistics."

P/F report released; faculty votes in April

By Mike McNamee

The report of the Ad Hoc Committee on Freshman Pass-Fail was released today (see pages 5 & 6). The faculty will discuss the report in their meeting Wednesday, and will vote on the future of P/F in April.

The committee suggested two major changes in the structure of the current system, recommending a limit on the number of units freshmen will be allowed to take, and proposing that the grade of "F" be replaced by an "internal failure" system. This system, intermediate between a "pass-no record" plan and the "F" grade, would not put permanent grades of F or O on the transcript; they would be used only within the Institute The no-record proposal, which would have removed all record of the student's having taken the course if he failed it, was voted down by the faculty last spring.

The committee, chaired by Professor of Mathematics Arthur Mattuck, was appointed last November to study the pass-fail system as it currently stands, especially as it relates to graduate school admissions. Although the faculty was supposed to make a final decision at the end of the four-year P/F experiment last spring, some questions were raised about problems with medical schools' refusal to accept P/F grades from applicants, and the faculty renewed the experiment for 1972-73 while further study was made.

Faculty opinion on pass-fail, as expressed on the questionnaires sent out by the committee, was mixed; 49% thought that P/F was good, and had turned out well, with 28% disagreeing and 23% "no opinion." Continuation was favored by 54%, although 44% suggested modifications, in "dazzling disarray," according to the report. One such proposal, suggested to *The Tech* by Associate Professor of Humanities Albert Gurney, is that each school or department be allowed to set up the grading system it likes. "Why should literature classes be graded the same way as electrical engineering?" he asked. "It's a lot harder to determine who deserves an A when you don't have problem sets and tests to go on. Such a system would be harder on the machines that compute averages, but it would be better for people."

Failing this, Gurney suggested a "high pass/pass fail" system (this was an alternative studied by the committee and rejected). "I miss giving A's for outstanding work," he said. "I like to reward people who do really well, and there's no provision for this now."

Students favored P/F greatly, most stating that it had allowed them to take more or a greater variety of courses; one-third of the juniors said it had affected their choice of major.

The proposed limit on units that freshmen will be allowed to carry, 60 units in the fall and 63 in the spring, was set to ease the problem of freshmen overloading themselves to acquire a large number of ungraded units. Many faculty members had expressed concern that first-year students were neglecting their core courses and not learning basic skills; as Professor Daniel Kemp, Course 5, said, "It seems like we're spending more and more time on teaching remedial math and physics before we can teach what we want to teach." Kemp added that he was one of many that had "no constructive alternatives," but thought that the matter of core courses should be studied more thoroughly.

The internal fail system was instituted to take pressure off

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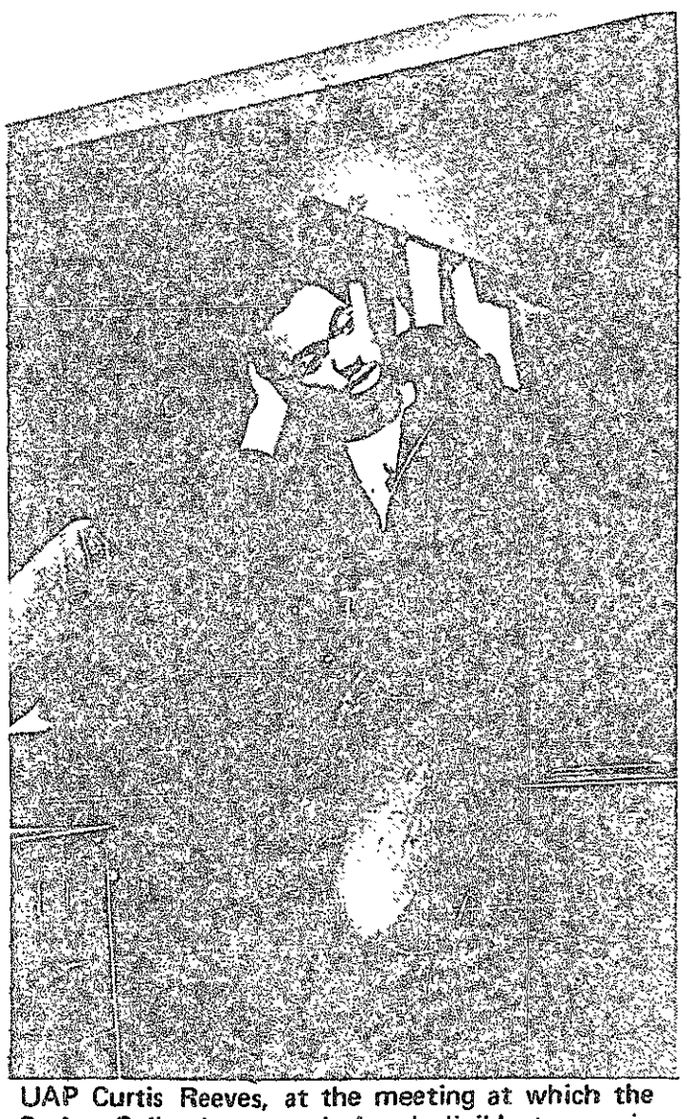


UAP Curtis Reeves, at the meeting at which the Spring Collective was declared eligible to run in next week's UA elections. *Photo by Craig W. Reynolds*

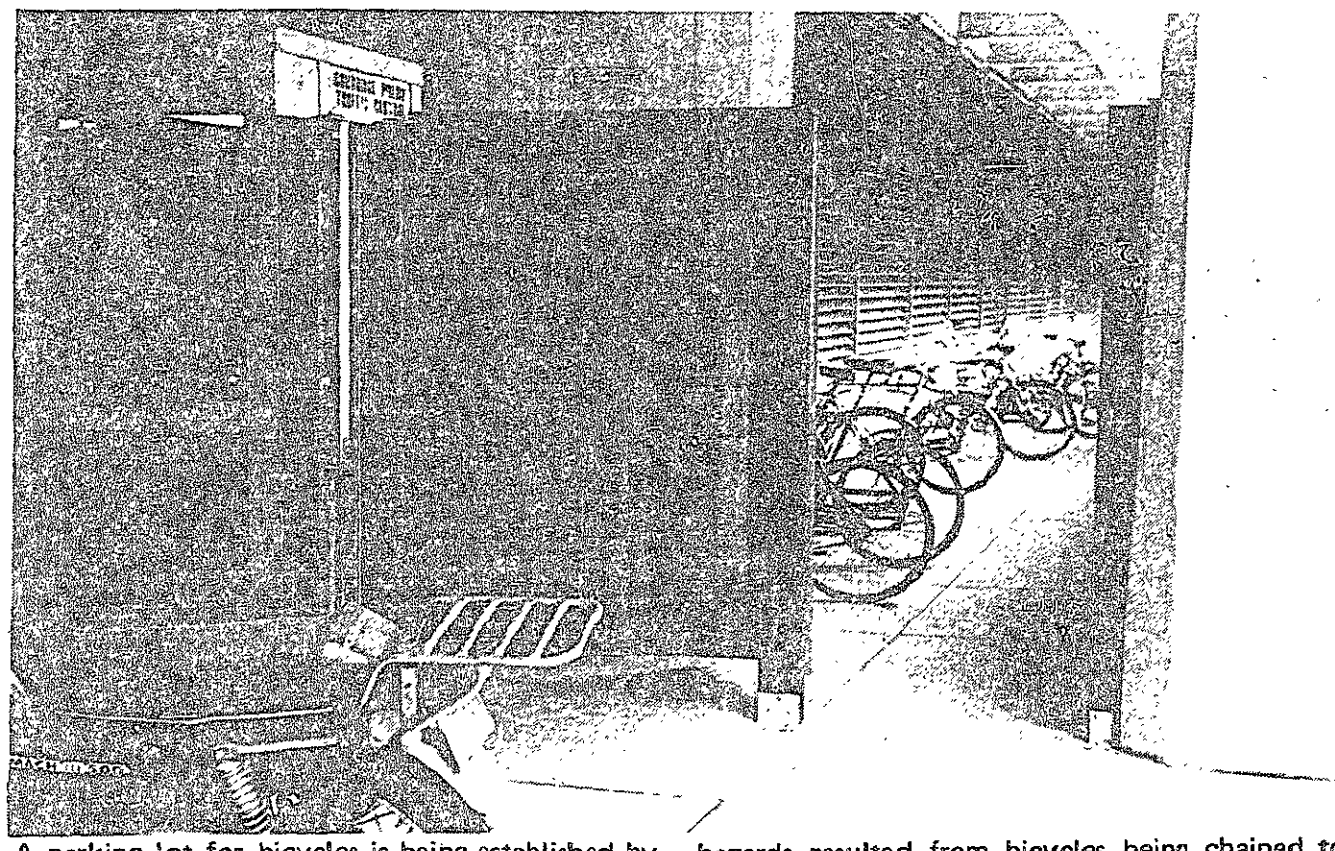
Collective found eligible for ballot

The Spring Collective, a group of ten students who wish to run as a collective for UAP, UAVP and the three Executive Committee positions in next week's Undergraduate Association elections, have been declared eligible to run.

The decision, which reversed the Election Committee's earlier ruling that the Collective is not an undergraduate and therefore was ineligible (see last Tuesday's *Tech*), was made at a meeting of UAP and UAVP candidates with current UAP Curtis Reeves on Wednesday night. Earlier in the day, Reeves had announced that he was taking over the chairmanship of the Election Committee, stating that he felt the members (two freshmen and a sophomore transfer student) "lacked the historical perspective necessary to handle the difficult questions the election was raising." Subsequently, all three members of the committee resigned.

At the meeting, Reeves said that he was amiable to allowing the Collective to run, but had some questions about how the balloting could be done under the current preferential balloting system used. Most of the discussion centered on devising a fair mechanism to allow the Collective to run for both UAP-VP and ExecComm.

It was agreed that the Spring Collective will be listed on the ballot once, as running for UAP and ExecComm. A vote for the Collective will count as one vote for ExecComm and one vote for UAP-VP. The two elections will be considered separately.



A parking lot for bicycles is being established by the Campus Patrol on the portico of Building 13. The lot, which will be fenced and guarded or locked at all times, is being set up in response to growing safety hazards cited by the recent Department of Labor inspection of the MIT campus. The hazards resulted from bicycles being chained to stairways in halls, and in other public places. Student attendents will man the lot, which will operate on a check-in/out system. Students interested in employment should contact the Student Employment Office. *Photo by Dave Green*

Tuition postponment: learn now, pay later

By Tom Birney

The expense of college education has grown at an exponential rate for several decades. American universities are in deeper financial trouble than they have been for generations. In addition, the tuition increases that this condition causes come at a time of diminishing public and parental willingness to assume the costs of higher education.

Clearly, even if universities reduce costs and become more efficient, unless institutional income can keep pace with inflation, educational quality will be lowered. In view of the spiraling costs faced by the students and the financial crunch of the institutions, many universities have been forced to consider new means of financing their operating costs without shifting the burden directly upon current family income.

For this reason much attention has been focused on the new loan schemes at Yale University. The Tuition Postponement Option permits Yale students to defer part of the cost of education until after the student leaves Yale. In exchange, each participant pays a percentage of his annual income each year for a period up to 35 years. The objective of this is to allow the students to pay for their education when they can best afford it. A key feature of the plan is that it spreads the burden of repayment on all participating students so that the costs of education are shared in a way that does not penalize those who elect lower paying careers. In addition the payment burden will rise or fall as a participants' income rises or falls over the course of the payment term. Students will not pay back the cost of their own loan, but an amount somewhere between 50% and 150% of his own loan, depending on his income relative to the other members of his class.

Under the Yale plan, each student may defer payment of up to $1150 a year until after he graduates. Upon graduation he begins paying .4% of his adjusted yearly income for each $1000 he has deferred. This rate continues until the graduating class has repaid Yale the full amount postponed by the class as a whole, plus interest. An individual's obligation ends when his class has paid back its debt.

In short, the objective of the Yale plan is to allow students to charge their education against future earnings.

This is accomplished by conventional loan programs, but Yale feels their plan is an improvement for two reasons. First, repayment is based on actual earning power. In addition, by extending the repayment period students are capable of financing a larger portion of their education through loans without requiring large payments. Second, under the Tuition Postponement Option most of the risk is transferred to the university.

In many ways, the Yale plan is not very different from the "Technology Loan Fund" recently created by MIT, and a

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Report sets course limits, recommends internal fail

Continued from page 1)

the student by protecting him "against a purely mechanical interpretation of the transcript." It was also felt that this would help stop the growing tendency of giving P or I to students for marginal work so that F's would not appear on the transcript to hurt the student later. With the internal fail system, F would not appear on the transcript, and the committee felt that this would encourage faculty to tighten up their grading.

The medical school problem, which was the main concern of the faculty last spring, is mentioned only in connection with the general problem of evaluating performance under a P/F system; the committee stated that it supported the current policy of "requiring the faculty to identify outstanding work, report it to the student in terse, concrete terms, and keep a record on file to be made available at the student's request."

Kemp, who teaches organic chemistry, saw another medical school problem arising: "When you get many students in a school who are there mainly for preprofessional courses, you begin to get an attitude that the college is just a way-station. Many prestigious institutions are beginning to find this out; they are attracting students whose major concern is what big-name professional school they can go to from there." The lack of concern about the MIT degree is degrading to the Institute, according to Kemp; he sees the major problems with this in biology and chemistry.

Several faculty members expressed concern to *The Tech* that were not mentioned or mentioned only shortly in the Mattuck committee report. Gurney stated that P/F was especially hard on the humanities curricula: "It stands to reason that MIT students are going to pay more attention to their technical courses than to humanities; P/F encourages this tendency. The pressure to do well in science is still there, but what pressure is there in literature?"

Other faculty members commented on the positive aspects of pass-fail; Associate Professor Alvin Drake, who served as housemaster of East Campus while P/F was starting, said, "Upperclassmen were coming to me and asking what was wrong with the freshmen – they seemed to have more free time, were happier and were making the 'MIT adjustment' more easily." Drake said that he felt P/F was a good mechanism for first-year students to adjust, although it had some problems.

Students to assess Vietnam war issues

Over 1100 MIT undergraduate and graduate students will be asked to complete questionnaires in order to obtain data for a research project aimed at assessing student opinion and retrospection on the Vietnam War.

The Vietnam Assessment Study Group, a student research project sponsored by the Undergraduate Research Opportunities Program, is surveying one-sixth of the total student body on such issues as the January 27 Vietnam settlement, media coverage of the war, and the influence of the anti-war movement in bringing the war to a settlement.

James Short '73, one of the three project coordinators, explained that the survey is being done now because "it is a good time for retrospection." Short added that there has been sufficient time since the January 27 settlement in Paris for people to look back over the lengthy conflict, and consider the various aspects of US involvement in Southeast Asia.

The 1100 two-page questionnaires were sent out to students on and off campus on Wednesday. Mail to fraternities and both undergraduate and graduate dormitories was sent interdepartmental, while all mail to students living-off campus was sent through US Postal Service.

Short commented that envelopes were included into the mailing packets for return of completed questionnaires, but those return envelopes were, for the most part, marked "interdepartmental." He advised students in the sample to complete the questionnaires and return them through Institute mail.

The Study Group expects to have the majority of the completed questionnaires back by the end of the month, and will then prepare a report of conclusions based on computer-aided statistical analyses.

Engineering outlook good

"Pick a number between one and twenty-five, and at MIT you've found your career – for at least four years."

It was to avoid that type of course and career selection that approximately fifty first and second year students gathered in Room 9-150 last week to question representatives from MIT's five schools, the Dean's office, and the Placement Office, on career and academic decisions.

Freshmen and undesignated sophomores will soon be encouraged to choose departments, and those who attended the Freshman Advisory Council's Career/Course discussion heard caveats from a number of academic and career "counselors." Present were Dean for Student Affairs Carola Eisenberg, deans from the MIT graduate school and the deans or their representatives from the schools of Engineering, Architecture, Humanities and Social Sciences, Management, and Science.

Eisenberg opened the session by explaining how the decision-making process works, and what factors influence academic decisions. She identified four primary factors – sociological, cultural, family, and individual factors.

The Dean for Student Affairs told the students that all of them would be making choices between two different types of careers, or job areas, in the near future – "people oriented and thing oriented professions."

She cautioned against deciding too soon on a departmental major or a long-range career plan, but also warned about being undesignated sophomores who drift too much, after taking too many different courses.

Dean of the MIT Graduate School, Irwin Sizer, stated that as many as 75% of all graduate students at MIT did their undergraduate work here also.

He added that the Dean's office can provide students with assistance in regard to graduate school, but reiterated Eisenberg's earlier advice that it is unwise to begin specializing at such an early date.

Sizer told the audience, "don't zoom in too fast, and do not narrow down your options too rapidly. Find out what's really going on . . . The approach to knowledge goes very deep at MIT."

Careers

For long-range planning and career goals, Robert Weatherall, from the MIT Placement Office, advised the assembled students on present job opportunities in various professions.

Weatherall's advice for students who will be choosing careers is, first of all, that "the work be fun." He and others on the career/course panel agreed that the most important aspect of settling down in a particular profession is that one should get along with others in the field, and should find the work enjoyable.

On actual employment predictions, Weatherall, gauging his sights on the time many of the students present at the session will be in the job market, said that engineering is now and will continue to be a short supply field.

He said that employment problems in science and engineering have been exaggerated in the past, and outlined the downward trend in engineering degrees conferred from the post-World War Two years to 1972.

Weatherall did, however, warn that the job supply for engineers with Ph.D's is slightly tighter due to a decline in enrollment at colleges and universities which has resulted in fewer academic and research positions available.

Though the job market in general is better now for MIT students than it has been in the past, women and minority students are in the best shape with respect to employment possibilities, according to the Placement Officer.

Weatherall explained that the Placement Office is now receiving a noticeable increase in the number of inquiries for women and black MIT graduates. "It's almost embarrassing," he noted, "the number of requests for graduates that specify blacks and then women."

MIT considers plan for tuition deferment

(Continued from page 2)

similar fund created earlier by Harvard. In each, the student's payments increase each year as his income increases and the size of his payment is in some way correlated to his income. However there are several differences between the MIT and Yale programs. In Yale's program, the student's payments will be much smaller in the years immediately after graduation than they are at MIT, but will normally continue for a longer period (probably 20 to 22 years) instead of about ten years, as is the case in the MIT plan.

In order to qualify for most loans, including MIT's, the student must prove to the college's satisfaction that he is in "need." The Yale Tuition Postponement Option is offered to any student who wants it.

However, the most notable difference is that in the Yale plan a low-income student is not required to pay the same amount for his loan as a high-income borrower.

Chancellor Paul Gray reports that MIT has examined the Yale plan in detail as a possible aid for students in dealing with the planned tuition increase. Aside from the philosophy of aid put forth by the Yale plan, the major obstacle to implementation seems to be the high cost of initiating such a system on a large scale. Yale has estimated that the Postponement Option will require an investment of from $30 to $50 million over the next five years.

NOTES

* The Physics Department will hold an Open House for freshmen and sophmores interested in learning more about the opportunities in physics for a major and/or a career on Monday, March 19 from 7:30 to 9:30 pm in the Student Center Mezzanine Lounge. Department faculty and students will be on hand to chat with students and answer questions about course requirements and options for physics majors, career opportunities, etc. Refreshments!

* Gary Wood, the MIT student arrested last fall for draft resistance, will be tried on Monday, March 19 in Concord, New Hampshire. Students interested in attending the trial should contact Wood.

* Nominations for the Goodwin Medalist are now being accepted by the Dean of the Graduate School. Submit the names of any candidates to Dean Irwin W. Sizer, Room 3-134, *before Monday, April 2, 1973.* Nominations may be made by any student or faculty member and submitted through the head of the nominee's department the Undergraduate Association, or the Graduate Student Council. The Goodwin Medal is awarded in recognition of effective teaching by a graduate student who is either a Teaching Assistant or an Instructor. Further information may be obtained by calling x3-4869.

* George Rathjens will discuss Satellite communications in India with the Study Group on Social Values and Technical Transfers in the Third World, on March 22 (Thursday) at 7:30 pm in the Jackson Room, 10-280. Foreign Students in particular are welcome.

* The Harvard School of Public Health has recently announced a new program in *Health Policy and Management.* Dr. Joel Kleinman of the Harvard School of Public Health will discuss this program with MIT students on Wednesday, March 21 at 4 pm in Room 8-205. All interested students are invited to attend.

* A video tape of the recent Course/Career program conducted by Dean Eisenberg, the Deans of the Schools, et al, is available. Contact Linda in 7-103, x3-6771 for details.

* Freshman Evaluation Forms are due in Friday, March 23. Instructors' deadline is Monday, April 2.

* Students interested in working on HoToGAMIT-5 are invited to attend a meeting Monday, March 19 at 7:30 pm in the TCA office (W20-450). If you want to help and can't make the meeting, or would just like to make suggestions or comments on the book, call Paul Giguere (536-7865) or Richard Buck (dl 9402). Grad students especially needed. Copies of HoToGAMIT-4 are on sale at TCA for $1.

Passing comment on pass/fail

By Lee Giguere

Next week, the Faculty will be asked to vote on the "permanent" disposition of Freshman Pass-Fail. The substantive outcome of that meeting, the form it sets for the freshman year at MIT, may well seem the most important issue – in the short run. But the most significant effect of next week's meeting will be the attitude towards education and educational experimentation and innovation that the Faculty carry with them as they walk out the doors of 10-250.

Pass-Fail was born five years ago in an atmosphere very different from that about the Institute at this time. Student concern with education – not merely their own "education" or training, but the nature and scope of education at MIT in general – was at a peak. Freshman Pass-Fail was only one of a number of innovations that can be seen to have come out of those years – the last two years of the sixties and the first of the seventies. Some of the programs that sprang up then, USSP (now FPY), ESG, Urban Action, the Senior Pass-Fail option, and of course, Freshman Pass-Fail itself, are still with us; others, most notably the student-taught course program, as well as a heightened student interest in tenure and Institute-wide curriculum planning, have either disappeared entirely or assumed a very low profile.

Placed in this context of what seems to be a declining interest in educational reform (in spite of the Institute's establishment of an educational research division), the report of the Freshman Pass-Fail Grading Committee takes on a new importance.

What did the committee do?

When the committee began meeting some three months ago, there was some talk among its members that the committee might largely limit itself to polling the faculty and reporting back those findings at a Faculty meeting. (One can sense here an awareness of the limited constituency that attends Faculty Meetings; if the entire faculty were present and actively participating this sort of "opinion sampling" would seem of little value.) Charged, among other things, to "Conduct a faculty-wide survey of opinion on pass-fail grading for freshmen," the committee would have had some grounds for doing little more than serving as a conduit for faculty opinion.

However, very early on the committee evinced a concern for wider issues. (Perhaps prompted in part by its sense of a growing dissatisfaction among the faculty with Pass-Fail.) Their questionnaire itself, for example, suggested that a mere review of the program *viz-a-viz* pre-med students would not be the sole result of the committee's work. Instead, "modifications" in the whole of the program were apparently being considered.

In fact, of course, that is just what happened. The committee's major recommendations (reprinted along with the complete report, elsewhere in this issue) touched on areas that had little to do with the "medical school question."

The spirit of pass-fail

What the committee finally did, then, was to undertake a brief, but sweeping, review of Freshman Pass-Fail. In the words of Professor Arthur Mattuck, the committee's chairman, it took "a quick look at pass-fail again." But even more important was the committee's response to its own evaluation of Pass-Fail. As was mentioned early, the possibility existed that the committee would do little more than spit back its findings, undigested as it were. Yet what the evaluation of Pass-Fail produced was not a mere yes or no statement on the status quo, or even a few fine adjustments in last year's provisions for providing pre-med students with the sort of information, "terse, concrete" evaluations, that they needed. (As it was, the arrangements for pre-meds appeared, by all accounts, quite adequate. See *The Tech*, February 27.)

The specific recommendations of Mattuck's Freshman Pass-Fail Grading Committee stand as the creative response of that group of people to the Pass-Fail program, and to MIT's educational program. The whole tone of their report indicates, to this writer at least, that the committee itself sought to provide a "terse, concrete" evaluation of Pass-Fail, avoiding philosophy in favor of pragmatic proposals.

In a context of an apparent decline of concern for the "MIT education" in general throughout the Institute, the report seems a striking re-affirmation of that spirit. And it is a clear re-affirmation of the "spirit of Pass-Fail" as well.

No other phrase was so bandied about last year during the Faculty's discussions of Pass-Fail as was "the spirit of Pass-Fail." From Chancellor Paul Gray (who was deeply involved in the original institution of Freshman Pass-Fail five years ago) on down, it was the "spirit of Pass-Fail" that speakers rose to defend, and it was the apparent conflict of this nebulous concept (for it seemed that no two persons saw it in quite the same way) with the needs of pre-med students for concrete evaluations of their freshman work that precipitated last year's crisis.

The spirit of Pass-Fail (as opposed to some of the more pragmatic purposes for its institution, which include a concern for easing the adjustment of freshmen to the MIT environment) is really a pair of ideals: first, that the quality of education hinges on the quality of communication between the student and teacher, and second, that students should be encouraged to pursue their intellectual interests as intensely and satisfyingly as possible. These are principles of education that are not specific to any one system of grading or teaching, but together they are the essense of that indefinable "spirit of Pass-Fail." Given these assumptions, all else is merely a matter of praxis.

Pass-Fail, then, is predicated on the assumption (or belief, or conclusion) that formal letter grades, transmitted as they are not only to the student but to society in general (or at least to those segments of society that matter) stand in the way of the implementation of these goals. Because grades impose the specific hierarchy of evaluator and subject upon teacher and student respectively, and because grades are used, not simply to transmit evaluations to the student, but to transmit that information to society in general, their use, their very existence in fact, is seen by some as inimical to education itself. Of course, for others grades are seen as the keystone of this system, providing a concrete communication link and tie with the "real world" that might otherwise be missing in education. To these people, pass-fail is not seen as conducive to education at all. To continue the debate here would entail an endless, and no doubt confusing, diversion into philosophy, psychology, sociology and social thought in general.

MIT, by establishing Pass-Fail, gives *de facto* acceptance to its value as an educational tool, and this writer, as well, assumes that pass-fail grading is in inherent consonance with the "spirit of Pass-Fail."

Praxis

1. Continue use of the single passing grade P.

At first glance, this recommendation appears to be little more than an affirmation of the status quo. At the present, freshmen receive either a P (pass) or F (fail); no other grades are currently recorded for first year students (with the exception of I, etc., which are not actually "grades" as such). But the committee examines as well the alternatives to a single passing grade: a variety of honors-high pass-pass-low pass combinations. Their comment is: "Either of the popular two-level alternatives really means a return to letter grades." Once a place is given in the system to levels of passing, they note, it becomes a system of discrete grades, essentially equivalent to a letter-grading system. Such a change would destroy Pass-Fail by re-introducing one of the very things it was meant to eliminate: the imposition on all freshmen of a somewhat arbitrary (in terms of grade distribution) hierarchial grading system.

2. Continue the present policy of requiring faculty to identify outstanding work, report it to the student in terse, concrete terms, and keep a record on file to be made available at the student's request.

On the surface, the first two recommendations seem to be in direct opposition with each other. Nothing is more terse and concrete than letter grades. But the crucial distinction is that one of the goals of Pass-Fail is not to eliminate critical evaluations of student work, but to emphasize that such evaluations are part of learning itself, and properly exist only as part of the relationship between the student and his teacher; such evaluations should not be available to society in general. It is the "spirit of Pass-Fail" that students get as much feedback as is possible about their work; clearly, the program, when instituted, did not mean to eliminate grades as one way of evaluating scholarly work, but to emphasize that grades were *only one* of the many forms of evaluation. The freshman evaluations forms, combined with increased student-faculty contact, were meant, primarily, as means of achieving a higher level of feedback. The "spirit of Pass-Fail" dictates that feedback be just that, a response to the student himself about his own progress. By eliminating letter grades for freshmen, Pass-Fail removed the public aspect of grades from the system, de-emphasizing their judgemental aspects, while re-emphasizing their evaluative nature.

3. We recommend that freshmen be allowed to register for and receive at most 60 units in the fall term and 63 units in the spring term. In principle, no exceptions should be permitted, but petitions to circumvent purely technical technical difficulties may be submitted to the CAP.

No doubt some view Pass-Fail in the context of a general slackening of academic standards. It certainly need not be, however, and this recommendation serves as one statement of the Freshman Pass-Fail Grading Committee's own commitment to preserving MIT's high standards. This recommendation also represents one of the ways in which the committee chose to act creatively, seeking to improve Pass-Fail rather than just review it as it stands. Admitting that the exact limit chosen is purely technical detail (within certain bounds), the recommendation stands as an affirmation of the importance of doing excellent, intensive academic work.

4. Internal fail. We recommend that, starting next term, freshman grades of F or O be recorded only for use within the Institute. The following statement should be put on transcripts: "By vote of the Faculty, no grades of F or O are permanently recorded in the freshman year."

Here, the committee's recommendations can be fitted into a pattern of the general slackening of academic standards at the Institute. But the intent of the committee is just the opposite: "We believe some faculty now pass or give I to students whose work is unsatisfactory because they do not wish to endanger unnecessarily the student's later chances for graduate school or employment. This abridgement of reasonable passing standards should prove unnecessary under this proposed change." What the committee does forsee, then, is a tightening up of standards.

At the same time, the introduction of an "internal fail" system serves to emphasize the personal nature of the relationship between student and teacher. A faculty member's judgment that a student has not attained certain standards no longer carries with it the long term stigma of an F on the student's record. Internal fail recognizes the essentially experimental nature of education itself, and that learning must involve mistakes, in other words failures, as well as successes. It emphasizes a view that the university's role is to certify what a student knows, not assert what he does not know.

And also, the "internal failure" brings the *de jure* structure of grading more closely in line with the *de facto* system of registration procedures, particularly MIT's later-term drop date. For most students F's are easily avoidable once the bureaucracy of learning has been mastered. Viewing the freshman year as a period of adjustment to the MIT environment would almost demand that the inexperience of first year students with regard to "dropping" should be compensated for.

A permanent solution?

When the MIT Commission entitled their report "Creative Renewal in a Time of Crisis," they rather off-handedly revealed one of the keys to understanding a great deal of what has gone on at MIT in the last few years. It is very hard to name a single change that has taken place at MIT during its recent history that wasn't precipitated by a crisis of some sort. Educational crises, political crises or financial crises seem to be behind most of the dramatic events of the last few years; Pass-Fail falls into this category, as does the divestment of the Draper Labs, the current vigor of the interest shown by MIT's top administrators in budget planning and their desire to rationalize the process and make it more understandable, and the creation of the MIT Commission itself. Certainly, this sort of pattern should not be surprising; very few people will eagerly change a system that seems to be working well. The power of the don't-rock-the-boat syndrome very great, and it's not very startling that MIT should be influenced by it.

For the past year, Freshman Pass-Fail has been under close scrutiny, in no small measure because of the crisis precipitated by the demands of medical schools for more information about the work done in their freshman year by applicants from MIT. In part then, this most recent report and set of recommendations is an example of "creative renewal in a time of crisis." But the Freshman Pass-Fail Grading Committee did more than just try to resolve the conflicts that precipitated last year's crisis over Pass-Fail. Their response showed a willingness to go beyond the question at hand and to attempt to give Pass-Fail a comprehensive, although quick, review.

The important question now, however, is whether such willingness to subject past decisions to continuing review will persist. In the absence of conflicts over education, a likely possibility as MIT enters what now appears to be a decade of quietism, will education innovation continue at the Institute?

Wednesday's decision on Pass-Fail is very likely to take on an aura of finality, in spite of Faculty Chairman Hartley Rogers' suggestion last year that, in fact, no decision of the Faculty is ever really permanent. That's the way things are at MIT these days. But that's not the way things should be.

Whatever solution is adopted Wednesday should not be viewed as permanent. Instead, present arrangements should be seen for what they are: adaptations to current circumstances. Freshman Pass-Fail is at best a temporary solution. In ten years – a long time for individuals but a short span in the life of an institution – circumstances will probably have changed. Of course, it is still possible to wait until the next crisis before responding. But why wait? Wouldn't MIT be a better institution if creative renewal became, not only a response to crisis, but a daily event?

A program to institutionalize change would be a futile proposal. But sensitivity to change and a consciousness of its inevitability are possible. Pass-Fail, then, should not be viewed as a completed artifact – for such things only come of dead civilizations – but a living, changing system. No solution is permanent, and this one won't be either. The goal is not to avoid either crisis or change, but to balance between continual agonizing over the shape of the status quo and a passive, and unreflective, acceptance of it.

(See report on page 5)

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David Tenenbaum '74; *Chairman*
Paul Schindler '74; *Editor-in-Chief*
Jack Van Woerkom '75; *Business Manager*
Storm Kauffman '75; *Managing Editor*

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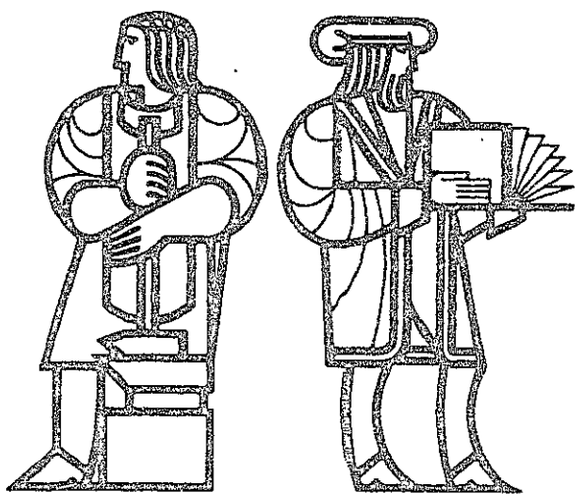

REPORT OF THE PASS/FAIL COMMITTEE

Special Supplement to *The Tech*
March 16, 1972

Once again freshman pass/fail is before the faculty for action, and our ad hoc committee is making recommendations. A brief history is at the end of this report for those who need or want it. During the four months of our existence, we investigated how "hidden grades" for medical school were working out, consulted with departments about pass/fail, and most importantly, sent questionnaires about pass/fail to all the faculty and a sample of students. We begin with a brief summary of the highlights of these.

Present attitudes: students

The response rate from a sample of 250 freshmen and 250 juniors was 65% and 52% respectively. A few late questionnaires were not tabulated.

About 1/3 of the *juniors* felt that pass/fail had influenced their choice of major, for instance by allowing them to explore, experiment, and learn what they did and didn't like. Details by department can be seen at the end of the report, and we suggest faculty look at them. Juniors did not feel that pass/fail had any significant effect on how well prepared they were for upperclass courses.

In a series of questions, *freshmen* voted strongly in favor of the hidden grade policy, though many felt it could be handled better – for instance by more timely announcements.

In another series of twelve questions, both groups were asked to compare what they did under pass/fail to what they thought they would have done under letter grades. There are no surprises in the results, which generally bear out the folk view of pass/fail: it encourages freshmen to take more subjects, follow their interests, work less hard overall in their core subjects, spend more time in recreational activities, and contributes to a generally more relaxed atmosphere. These are only tendencies: many students felt pass/fail made no difference in their behavior.

Present attitudes: faculty

All faculty and freshman advisors received the questionnaire, and over 500 returned it. For the school of engineering, the response rate was somewhat higher than the mean; for the school of humanities and social science, somewhat lower. The depth of feeling in many cases was remarkable – a third of the responses had extended comments, sometimes running to a page or more. Throughout, faculty in the school of science tended to adopt the centrist position; those in engineering tended to want some letter-grading, those in the other schools tended to support pass/fail. There was little difference in the attitudes of other groups (length at the Institute, extent of contact with freshmen).

How do you feel about pass/fail?

Good or basically good	49%
Bad or disappointing	28%
On the fence, or no opinion	23%

The reasons most often cited were: on the one hand, reduction of anxiety, easing of passage to MIT, more freedom to explore; on the other, students work less hard and aren't adequately evaluated.

Do you favor continuation of pass/fail?

Keep as is	10%
With modifications	44%
Abolish	18%
No opinion or no response	28%

What modifications?

Here the faculty was in dazzling disarray. Some were content to check off options, but a good number of questionnaires presented opinions in the form of neat packages, or proposed yet new schemes. It seems most sensible to present at this point our own recommendations, indicating what support they have on the questionnaires. At the end, we comment on some of the rejected proposals.

Continue to use a single passing grade

1. Continue use of the single passing grade P.

The questionnaires suggested alternatives and all were nibbled at.

What should be the passing grades?

	Fac.	Jun.	Fr.
Pass only	31	57	54
Pass/low pass	5	4	6
High pass/pass	10	12	20
Honors/pass	17	13	9
Letter grades	23	7	5
Other	2	3	2
No opinion, no response	12	4	4
	100%	100%	100%

Because so many upperclass students get A or B, the Institute now is substantially on a two-level grading system. Either of the popular two-level alternatives really means a return to letter grades. Though the "honors" grade might be initially restricted to say 10% of the students, we remind the faculty that A used to be an honor grade too; inflation of the "honors" seems inevitable.

In the end there is no way to escape the value judgment: we feel that the good outweighs the bad with pass/fail, and think that any return to a two-level grading system will mean the end of the good without enough compensating advantages. We believe that our last two recommendations will help correct some of the present difficulties with pass/fail, so that the more drastic action of returning to a multi-level passing grade is not needed.

Freshman evaluations

These forms are filled out twice a semester by student and instructor, and were initially intended both to substitute for grades and to give a more meaningful evaluation than grades could. They are not used as much as they were in the beginning, and the quality seems to be declining. A somewhat subjective study of a sample this fall rated about half the comments as of "poor quality" – too short, unresponsive, containing only grade-like information, etc.

The reasons are plain enough. Mass lecture-recitation subjects, often unattended by many, don't give much chance for the meaningful contact which could lead to good evaluations. For the self-paced subjects, the exam record is often considered adequate as an indication of progress, both by student and instructor. In other large subjects, grades are kept because of the upperclassmen in them, and this often leads to grade-like evaluations.

Look on the brighter side: half the comments are good, useful to students, their instructors, and the advisers. If the others are routine, they at least do no harm. For now, the FAC should be encouraged to experiment with the format of the evaluations. Instructors should let the freshmen know in advance just what type of comments they will be able to provide, and what type they hope to receive from the students. Even if the evaluation is perfunctory, good students will still be guaranteed an indication of where they stand if our next recommendation is adopted.

2. Continue the present policy of requiring faculty to identify outstanding work, report it to the student in terse, concrete terms, and keep a record on file to be made available at the student's request.

The response on the questionnaire to the alternatives to this policy was:

	Fac.	Adv.	Jun.	Fr.
Present Policy	38	50	52	73
Keep no hidden grades and warn applicants for admission	38	35	39	18
Other	6	5	4	5
No Opinion	18	10	5	4
	100%	100%	100%	100%

Continue to identify outstanding work

Of freshmen who had an opinion, 4/5 found the present practice was "good" or "OK." Only 10% reported that it had dampened their liking for pass/fail (over 3/4 said it had either increased their liking for pass/fail, or had no effect on it).

We believe that identification of outstanding performance is a valuable ingredient of a pass/fail system. The policy meets two needs.

First, it is a guarantee of feedback to the student doing outstanding work, serving as a calibration of the student's own standards. The evaluation forms have proved unreliable in this matter, so we feel the faculty should be required to make special provisions for it.

Second, the identification is kept on record in department files, and is available to students who want to improve their chances for admission to a post-graduate program such as medicine. Students who feel they will need an outstanding record in some first-year subjects can work for it; the others can ignore it without penalty. The record maintains a low profile, appearing only on the evaluation form and in the department office.

Experience and evidence

In the questionnaire, 17% of the freshmen report that medical school is at least a possibility, 10% are considering law school. Moreover, this past winter, the offices of courses 3, 5, 7, 8, and 18 each received over 30 requests from seniors to report their performance in first-year subjects, almost exclusively for certain medical schools. A follow-up from last year's applicants shows that the information provided this way is satisfactory.

Failure to provide grades or terse evaluations on request can be detrimental to a student's medical school application. Some medical schools translate a "pass" into a letter grade, either B or C. (For further details, see the May 1972 report of the ad hoc committee investigating this to the chairman of the faculty.)

Our conclusion from this – and it is shared by the premedical advising staff we have consulted – is that there will be in the visible future a hard core of some 50-odd students each year who will be hurt if they do not have these grades available. Many faculty apparently object in principle to this policy, but the students seem to have a more pragmatic view of it. Under the circumstances, we feel that student opinion should be the deciding factor.

Current operation

In those subjects which contain large fractions of upperclass students (3.091, 5.41, 5.43, 5.60, 7.01, 18.03), grades are determined for all students, so "outstanding" is probably equivalent to an A. Physics, calculus, and humanities on the other hand are ungraded, so the judgment of outstanding work can be made as the instructor chooses.

Records of outstanding performance in mathematics and physics are kept in the central offices. For the other departments, they are in the individual professor's files. Since grades are particularly requested in the course 3, 5, and 7 subjects listed above, it would be a convenience and guarantee to the student if these were also kept centrally.

(Continued on next page)

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3. *We recommend that freshmen be allowed to register for and receive at most 60 units in the fall term and 63 units in the spring term. In principle, no exceptions should be permitted, but petitions to circumvent purely technical difficulties may be submitted to the CAP.*

Should there be a limit on credits?

	Fac.	Adv.	Jun.	Fr.
57 Units	27	25	6	6
63 Units	7	15	11	5
69 Units	4	5	7	6
No limit	30	33	68	77
other	4	9	2	2
no opinion/ no response	28	14	6	4
	100%	100%	100%	100%

Our recommendation stems from two concerns. We feel that under pass/fail some students are spreading themselves too thin, while a few are out simply to pile up ungraded units. We agree that an important purpose of pass/fail is to encourage exploration, but there need to be some brakes on the situation. When a student initially registers for a heavy overload, cannot keep up with the work, and ends up with a lot of drops, the exploration doesn't amount to much because the subjects haven't been given a fair chance. Advisors should not be held responsible for preventing overloads; their role is to counsel, not to control. Some feel that limiting the number of units is heavy-handed, but it has the virtues of simplicity and it gets the message across clearly.

Our second concern is that an internal fail system (the last recommendation) may result in a still greater tendency to overload than at present, since any failure will no longer appear on the transcript. Of course some students may be deterred by the fact that more F's may now be given, but certainly not all students will be.

A credit limit for freshmen: 60 in the fall, 63 in the spring

Why these limits?

A typical maximum first-semester program would be

math+physics+hum	33
Chem/bio or 12 unit elective	12
elective (9 unit)	9
seminar	6
	60 units

The spring program would allow a 12-unit elective instead of a 9-unit elective. We think these are realistic upper bounds, if the student is to do justice to the separate subjects.

Departments which now teach popular 12-unit electives might wish to create special scaled-down 9-unit versions more suitable for freshmen in the fall.

Units accumulated as advanced placement, advanced standing (if taken before the year starts) or during IAP would not be included in these limits. Even if a freshman receives no units for any of these, up to 123 units is still permitted in the first year, creating therefore no obstacles to a three-year bachelor's degree. Unlimited units as a listener would be allowed; of course, these don't count towards a degree and one cannot then later take an advanced standing examination in that subject.

Exceptions

We do not envision exceptions, save on technical grounds. As an example, many students now take part of 18.02 in the fall and the rest in the spring; procedures for crediting units should be formulated. There might be some unit allowance for students who enter knowing a substantial portion of a subject but unable to receive advanced placement for it. The CAP can work these things out, in consultation with the departments.

Relevant data and background

This spring, in a sample of 100 freshmen, 44% had registered for more than 63 units. Even allowing for some ambiguity in allotting units to calculus, well over 1/3 would be overloaded according to the proposed limits. By the end of five weeks, only two overloaded students had canceled any subject and even they remained overloaded. Of course these figures are only suggestive: we do not know how much of the overloading is sincere and how much is just sloppy registration.

In your freshman year, did you register for more units under pass/fail than you would have under letter grades?

	Freshmen		Juniors	
	Fall	Spring	Fall	Spring
No, or unsure	60	44	71	48
Somewhat more	34	37	24	32
A lot more	6	19	5	20
	100%	100%	100%	100%

When pass/fail was adopted five years ago, a 54-unit limit was imposed the first fall, and raised to 57 for the next two semesters. That first spring, 77 students carried overloads: 46 petitioned and 31 failed to. The petitions pleaded a variety of reasons; no reasonable criteria for judging petitions could be found and no successful method for screening out overloads was developed. So all overloads were accepted and all petitions but one allowed. The limit was removed the next spring.

The present proposal allows, we think for more realistic limits and assumes no exceptions.

This overall policy of no exceptions may seem rigid, but we feel that any exceptions on non-technical grounds would be in conflict with the broader view of educational objectives which seems to us to underlie the suggestion of a limit. Attempting to adapt the limit to individual circumstances would not only serve to distort its meaning and weaken its purpose. Students would be only too adept at learning and exploiting all the possible grounds for exceptions. Let the limits stand as a clear expression of faculty values, and encourage freshmen instead to channel their extra energies into non-credit activities.

4. *Internal fail. We recommend that, starting next term, freshman grades of F or O be recorded only for use within the Institute. The following statement should be put on transcripts: "By vote of the faculty, no grades of F or O are permanently recorded in the freshman year."*

The F or O would appear on grade summary sheets and individual grade reports, but not on transcripts of the permanent record.

What should be the form taken by failing grades?

	Fac.	Jun.	Fr.
Fail	28	17	31
Internal Fail	11	15	19
No record	23	55	44
Other, no response	38	13	6
	100%	100%	100%

A large majority of students and a substantial number of faculty favor some method of denoting unsatisfactory performance other than the present, permanent grade of F. Since the "no record" proposal was defeated last spring, it seems appropriate to present the intermediate option of internal fail for consideration now.

Given the transitional nature of the freshman year, the possibility of avoiding F's by utilizing the late drop date, the range of standards for F and I and other variables of our educational system, an F does not have a unique, easily interpreted meaning. A sophisticated reader of the transcript would surely discount F's in the freshman year if the later record were good. The present proposal protects the student against a purely mechanical interpretation of the transcript.

Furthermore, we believe some faculty now pass or give I to students whose work is unsatisfactory because they do not wish to endanger unnecessarily the student's later chances for graduate school or employment. This abridgment of reasonable passing standards should prove unnecessary under this proposed change.

The proposal requires few administrative changes since internal records would be kept as at present. End-of-term summaries and grade reports would appear as they now do.

Freshman grades of O or F recorded only for use within the Institute

5. *Other proposals*

Various proposals have been made for mixing pass/fail grades with regular grades in various combinations, or allowing pass/fail for only one semester, or allowing students to choose each semester which type of grading they want. Some individuals have made detailed proposals to the committee.

Of these, the only one which received any substantial support was one to limit pass/fail to the first semester. The vote was

	Fac.	Jun.	Fr.
Two semesters of p/f	44	64	75
One semester only	20	24	18
Abolish p/f	18	4	3
Other	4	8	3
No opinion, no response	14	--	1
	100%	100%	100%

If we suppose that many of those who wish to abolish pass/fail would at least prefer only one semester of it, there is support for pass/fail just the first semester. Presumably one semester is enough to provide the equalizing of high school backgrounds, and the easing of the transition to MIT.

On the other hand, we feel that much of the exploration made possible by pass/fail actually occurs in the second semester, not the first. The fall term is more stereotyped, whereas in the spring the students have a few prerequisites under their belts and thus a much wider range of subjects to choose from. Nor would grades the second semester significantly help the medical school applicants: those medical schools which ask for freshman grades want both semesters. Students cannot be asked to postpone essential courses just so they can take them under letter-grading.

For these reasons, we do not recommend only one semester of pass/fail.

As to the merits of the other proposals:

1. We feel that pass/fail and letter grades do not mix well. Students inevitably will put their efforts into the letter-graded courses. Premedical students presumably do this now because of their desire to excel in subjects regarded as important for medical school admission, but they are still a small minority.

2. To allow students to elect to be letter-graded in a particular semester seems democratic enough, but would probably kill pass/fail. The A students would choose letter-grading, leaving the others in the awkward position of seeming to have withdrawn from competition.

A frequent proposal was to not limit units, but to letter-grade all above a certain number. This was typical of a number of proposals which seemed likely to result in great difficulties if implemented.

Should freshmen be allowed to choose letter-grading for some or all of their subjects?

	Fac.	Jun.	Fr.
Neither Semester	49	57	59
Both semesters, 1 or 2 subjects	9	9	13
Both semesters, *all* subjects or none	7	9	7
Second semester, 1 or 2 subjects	2	7	13
Second semester, all or none	3	5	3
Other, no opinion	30	13	5
	100%	100%	100%

Conclusion

We realize that neither the imposition of limits nor the use of internal fail responds to all grading and broader educational issues that have been raised by the CAP and others. On the other hand, the freshman year is a special one, and would probably remain so even if, for example, upperclass grading were modified. So it makes sense to consider pass/fail by itself. We view our last two suggestions as constructive changes to pass/fail at this time. We think the Freshman Advisory Council and CAP are well set up to monitor both of these changes, and do not feel the need for yet another pass/fail committee, issuing yet another report.

History

Pass/fail for freshmen was started five years ago, with a committee to monitor it and report after four years. Last year the committee did so, recommending continuance of P, and No record instead of F. The faculty voted to expand pass/fail for one year, and an ad hoc committee was formed to report on the effect of pass/fail on medical school admissions. It recommended the present policy of identifying outstanding work, which the faculty adopted for a year, asking for a second committee (ours) to observe pass/fail during the year and make recommendations. Subsequently, the No record proposal was voted down.

Supplementary data

The tabulated results of the questionnaires, including a number of correlations that were run, can be inspected on the bulletin board outside 2-108. Faculty can obtain a copy by calling x3-4977. In addition to the selection of data given in the report, departments may be interested in the following response on the juniors' questionnaire:

Did pass/fail in your freshman year influence your choice of major department in any way? (Actual numbers shown.)

ENGINEERING

Course	1	2	3	6	10	16	tot
yes	6	4	1	7	1	0	19
no	4	0	1	14	1	2	22

SCIENCE

Course	5	7	8	12	18	tot
yes	3	3	1	1	4	12
no	4	17	9	1	15	46

OTHER

Course	4	9	11	13	14	15	17	21	tot
yes	4	0	0	0	0	3	2	2	11
no	4	0	3	1	0	3	1	1	13

Members of the Committee
Peter Büttner
Michael Cedars
Sandra Cohen
Matthew Farber
Robert Hulsizer
Arthur Kaledin
Arthur C. Smith
Emily Wick
Arthur Mattuck, Chairman

Course II seeks improved image

By David Olive
and Richard Parker

"It remains one of our most difficult and frustrating tasks to inform freshmen – and by inference the lay public – of what mechanical engineering as a profession is really all about and of the multitude of exciting things that mechanical engineers do . . . "

This concern, about a misunderstanding of the field of mechanical engineering, was expressed by Ascher Shapiro, Chairman of the MIT ME Department, in the department's 1971-72 annual report.

MIT has been rated by the American Council of Education surveys as having the best mechanical engineering department in the country, an evaluation which was reflected in interviews with the faculty, students and administration in Course II.

Shapiro explained that "at MIT, we try to provide the groundwork for a career as a professional. We do not try to compete with industry, for their are times when on-the-job training is far more important than classroom learning. Nevertheless, we give the student the strongest possible background."

The departmental requirements have been developed to give each student in the department a firm understanding of the concepts needed for advanced work in the field and, at the same time, to expose the student to the many disciplines in mechanical engineering.

The faculty of the department concern about undergraduate members of the department is reflected in the high emphasis on undergraduate research, the frequent undergraduate seminars (which are open to the entire school and do not require an ME background), and department get-togethers. For example, the mechanical engineering department recently sponsored a dinner for faculty and undergraduates in the West Lounge of the Student Center to discuss distribution of grades and desirability of final exams.

The involvement of undergraduates in the department is high and the only complaint that was voiced from those interviewed centered on a lack of funds. One undergraduate stated that the research opportunities were available. However, if you want to be paid you will be told that "the department is poor."

This problem is discussed in the beginning of the recent annual report: "the stringencies associated with successive budget cuts and with the massive efforts to obtain funding for directions of effort have made the past year a strenuous one for the entire community of individuals within the department."

When asked about the diversity of research within the department, Shapiro divided it into thirteen primary areas: biomaterials, mechanics, materials, materials processing and surface laboratories, fibers and polymers, thermodynamics, heat transfer, fluid mechanics, gas turbine and Sloan and Combustion laboratories, design, systems and controls, center for sensory aids evaluation and development, and the computer facility. He noted that at present, students are involved in many of the research areas.

Prospective students should also note that "the employment opportunities for engineers throughout the country remain gloomy, [however] our graduates seem not to have suffered too badly. The number of offers received may be less and the salaries not as high, but nevertheless our graduates get jobs and good ones."

Within the department there is a strong emphasis on quality teaching. Each year ME's national student honorary fraternity, Pi Tau Sigma, conducts a survey of students taking courses in mechanical engineering. The survey is similar to the Institute-wide course evaluations; however, because the students have the department's cooperation they are able to go into classrooms and take class time to conduct the survey. This gives them a return rate near 100%. All courses and professors are evaluated and the final ratings, including individual comments, are presented to the chairman of the department. The material is then shown to the faculty members. Each faculty member receives his personal ratings and his ratings relative to the other members of the department.

"For example," explained Shapiro, "if I told you a professor's over-all teaching was rated, by his students, to be a 3.3 on a scale of four you might think that it was pretty good. But if you look at this (a chart showing how all of the professors in the department did on that question) you will see that a 3.3 is in the lower fifty per cent." Shapiro stated that the scores and relative standings of the professors is important both in terms of making someone a better teacher and in terms of promotion within the department.

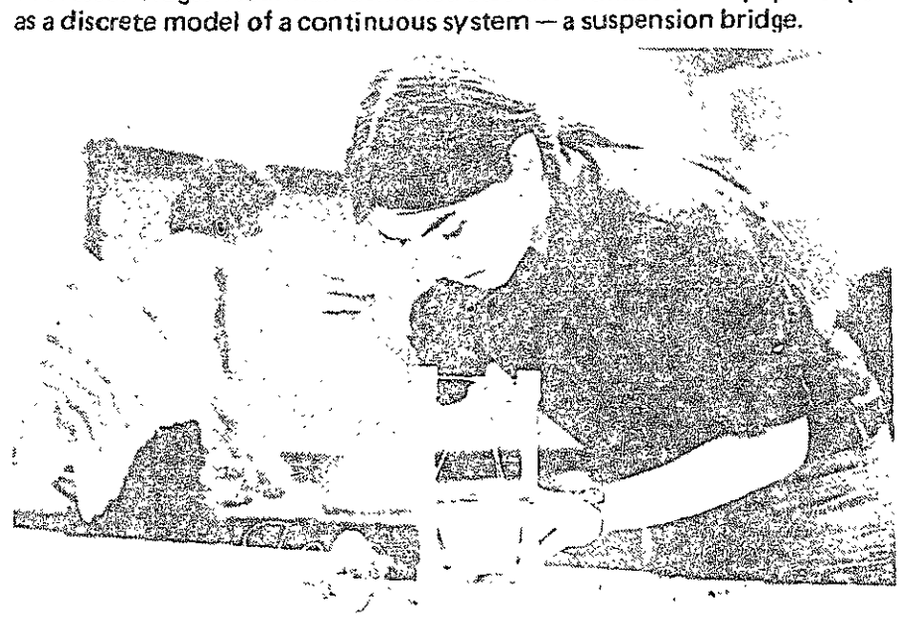
One drawback to this system is that the results are not shown to the students. Though there are pros and cons to doing so, and optimally the students should know how their peers feel about various courses and professors.

There is a strong attempt on the part of the department to make the courses interesting. During IAP the members of Course II gave a course in automotive mechanics, students in 2.67 (Urban Laboratory in Mechanical Engineering) last year designed a "people-mover" to connect the new UMass campus with the MBTA stop. In 2.70 (Engineering Synthesis and Design) students designed, built, and raced mouse-trap powered vehicles. The winner was the only woman registered for the course and she competed in the national LeMouse 500 in Chicago.

Other courses examined ways of improving household trash disposals (2.73), the physiological role of clothing (2.915T), and the fields of pollution and consumer protection (2.672). While interviewing Prof. Roger Kaufman, we got to play with one of the toys used in 2.101, Computer Models of Physical and Engineering Systems I.

The courses seem interesting; the professors are concerned. The department's national reputation is excellent and MIT students do not have trouble getting jobs or getting into graduate school. There is no advantage or disadvantage when applying to MIT's graduate school as an MIT undergraduate; 48 of the 213 graduate students presently enrolled are MIT graduates.

Professor Roger Kaufman demonstrates the utilization of paper clips as a discrete model of a continuous system – a suspension bridge.



Pat Callahan '75 prepares her entry for this year's 2.70 race, a Water-Waiter. Object: Carry a half-filled cup of water a distance of eight feet as rapidly as possible with minimal spillage. Tentative winner of the contest held yesterday is George Lechter '75 with a time of about 2.5 seconds and no spillage. *Photos by Craig W. Reynolds*

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REWARD for MIT Class Ring, '74, lost in Dupont on 2/27. No questions asked. Call T. Wolff, 782-3520 evenings.

ROOMMATE WANTED. Share large 4 bedroom apartment near Central Square with 4 MIT students. Rent $61 per month. Contact Tom, Mark, John or Steve at 492-1398.

All of the MIT crews have been practicing out on the river in preparation for their upcoming spring meets. The varsity heavies' first match is with Columbia on April 14, and the varsity lights meet Marist College on April 7.

Photo by Dave Green

SPORTS

Gymnasts finish season

The MIT gymnastics team is putting this season behind them and is starting to work for next year. The only way to describe this season is disappointing. After having great expectations a year ago at this time, the team did not improve as much as it had hoped. The personal problems that arise every year seemed to be just a little more frequent and bothersome this year. But the gymnasts are trying to forget them and look ahead to a good next season.

The first step toward this goal was the election of co-captains for next year. Larry Bell '74 and John Austin '74, the two highest scorers on the team, were elected co-captains this week. These two gymnasts combined for more than half the points the team scored this year. Along with them, four other juniors formed the backbone of the team this year, and will do the same next season: Neil Davies on vaulting and high bar, Jarvis Middleton on rings, Andy Rubel on parallel bars, and Bob Barrett on floor exercise.

Three team members finished up their careers, and will have to be replaced. Dave Millman '72 has finished his two years of battling Middleton for the top spot on rings. The other two people leaving are the two top men on pommel horse, and as pommel horse was the lowest scoring event this year, it may be a very painful spot next year. Seniors Paul Bayer and Dennis Dubro have finished their four years of horsing around.

So it's probably with a sigh of relief that coach Bob Lilly views the end of this season. And with some spirit showing up in the post-season workouts (the gymnasts never quit), he can have hope for next year.

Wrestlers 3rd in N.E.
3 MIT men take 2nds

The MIT varsity wrestling team placed third behind Springfield College and the Coast Guard Academy in the New England Wrestling Championship February 23 and 24.

Although there were no individual champions, the grapplers showed their strength with three runner-up, three third place, and two sixth place finishers. Senior co-captain Dave Kuentz led the way with a second place at 158, along with Rich Hartman '74 at 142 and Jack Mosinger '75 at 118 pounds.

The third place winners were co-captain Jon Becklund '73 at 126, Ed Hanley '74 at 134, and Loren Dessonville '75 at 167. Dave Selbot '73 and Erland van Lidth de Jeude '76 placed sixth at 177 pounds and heavyweight, respectively.

In the Junior Varsity-Freshman tournament, junior Fred Linderman was second at 177, Joe Tavormina '76 third at 167 and Al Knosp '75 placed fourth at 118.

At the post season banquet at Coach Chassey's home last week, Dave Sebolt received the award for the most falls during the season, and Ed Hanley and Rich Hartman were elected co-captains for the '73-'74 season.

The wrestlers finished the year with 12 wins and six losses, making this the third best season in Chassey's eleven year MIT coaching career.

IM referee clinics

Soccer Referees' Clinics

There will be two clinics on Thursday, March 22, and Wednesday, April 4, at 7:30 pm in the Conference Room (W32-137 – second floor of Dupont).

All teams are responsible for sending one referee to one of the clinics. He will be used only if necessary. Failure to comply will incur a $10 fine. The pay scale will be explained at the clinic.

Softball Umpires' Clinic

There will be two Intramural Softball Umpires' Clinics on Sunday, March 18, and Tuesday, March 20, at 7:30 pm in the Varsity Club Lounge in Dupont.

All teams are responsible for sending one umpire to one of the clinics. He will be used only if necessary. Failure to comply will incur a $10 fine. The pay scale will be explained at the clinic.

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