

CSC Constitution Investigated Over Potential Discrimination

By Kevin R. Lang
NEWS EDITOR

The Association of Student Activities will ask the Chinese Students Club to remove a provision from their constitution which requires the president, vice president, and cultural director to be "active members of Chinese origin."

The CSC recently amended their constitution to state that the three officers must be of Chinese origin. CSC Vice President Lilian E. Chau '03 said that the group's constitution formerly required a majority of the officers to be of Chinese origin, and that the amendment actually intended to reduce the restrictions placed on officers.

"I would guess that it's been there for a while," Chau said. "We weren't actually aware that all these officers had to be of Chinese origin."

CSC President Jimmy C. Chang '02 estimated that the provision which required the entire cabinet to be of Chinese origin had been part of the group's constitution for

five or six years. He noted that the ASA approves their constitution every year as part of ASA recognition.

Chau said that the CSC executive board discovered the constitutional provision and decided to let the full membership vote on the amendment. She said the group considered removing the provision entirely but wondered what might become of the club if the officers were not Chinese.

ASA acting on MIT policy

The ASA received a student complaint after the amendment was announced. Assistant Dean for Student Activities Tracy F. Purinton then heard about the amendment through ASA President Alvar Saenz Otero G via the group's executive mailing list.

The ASA constitution does not specifically forbid such an ethnic requirement for officers. However, under MIT's non-discrimination policy, no such restriction can exist in any form.

"I think that's in violation of MIT's non-discrimination policy,"

Purinton said. "I don't think that's in line with the educational mission of the Institute."

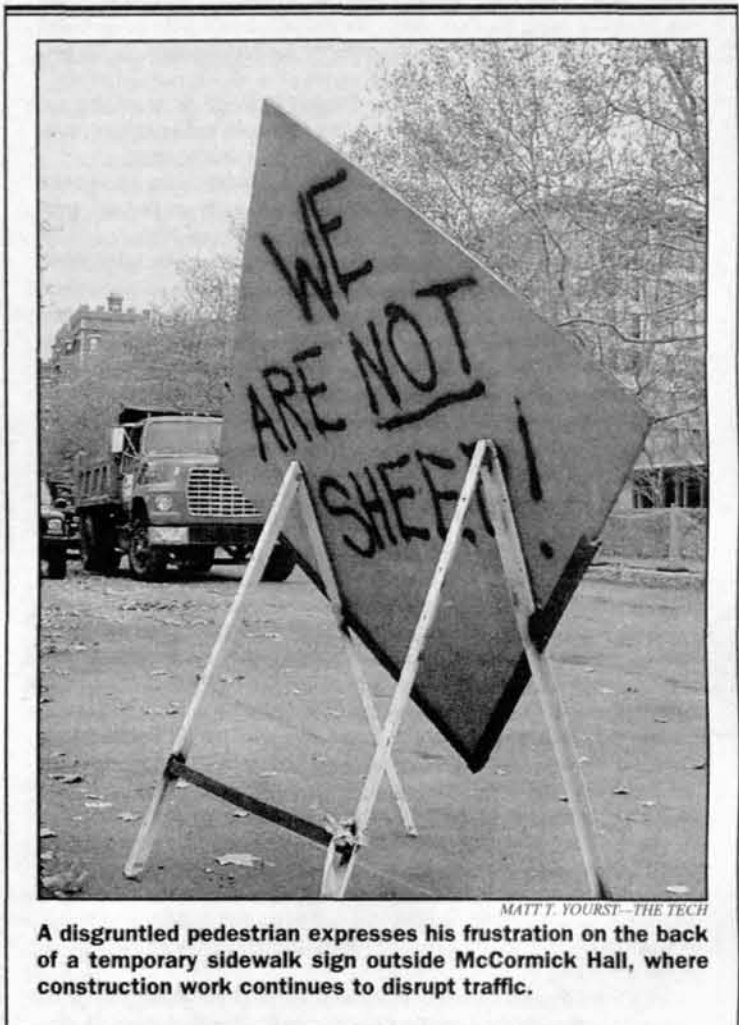
Section 9.4 of MIT Policies and Procedures states that "Harassment or discrimination against individuals on the basis of race, whether subtle or blatant, is unacceptable at MIT. It will be addressed with quick and decisive action whenever it occurs."

Purinton said she was surprised by the amendment since the CSC does not restrict membership in any way, and "in most cases, the president, vice president, and cultural director probably are of Chinese origin."

Chau said that the club does have "a couple non-Chinese members," while Chang noted that non-Chinese members had run for office recently.

He also clarified that "Chinese origin" did not necessarily mean Chinese ancestry, but rather some significant link to Chinese culture. Chang said it was important to the CSC that their leaders have knowl-

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MATT T. YOURST—THE TECH
A disgruntled pedestrian expresses his frustration on the back of a temporary sidewalk sign outside McCormick Hall, where construction work continues to disrupt traffic.

Mandelbrot on Fractals, Academia, and Industry

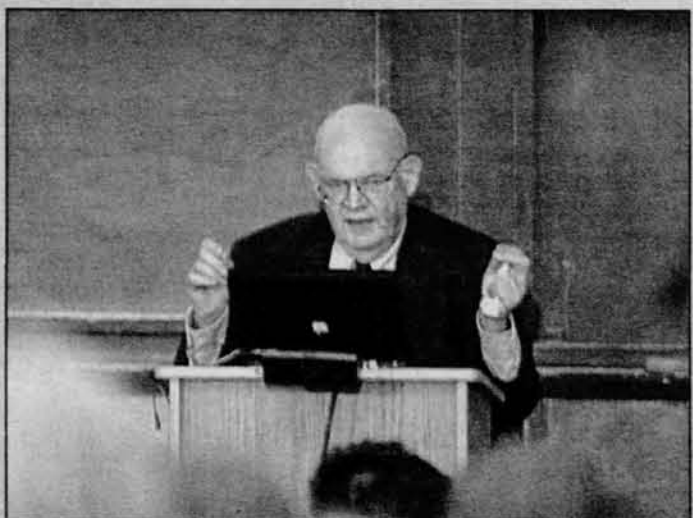
By Akshay Patil
STAFF WRITER

The Tech had an opportunity to talk to math and physics legend Benoit B. Mandelbrot during his short visit to MIT. One of the fathers of fractal science, Mandelbrot discovered a mathematical set of numbers whose graphical representation is so stunning that it is often considered the face of fractals and chaos today.

The Tech: Do you have any personal heroes and inspirations that have driven you over the years?

Benoit Mandelbrot: For a long time my hero was John von Neumann, who was, among other things, one of the pioneers of computers. I was a post-doc with von Neumann when Dr. von Neumann died and he was my hero because he succeeded during his life in doing work in mathematics and application based technologies; all without

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TIMOTHY W. SUEN—THE TECH

Renowned for his work in fractal geometry, Yale Professor of Mathematics Benoit B. Mandelbrot speaks about his life's study of "roughness" to a packed 54-100.

Students Debate New Orientation Schedule Plans at Town Meeting

By Eric J. Cholankeril
MANAGING EDITOR

Members of the Residence System Implementation Team presented plans for a one-week 2002 orientation schedule at a town meeting hosted by the Undergraduate Association on Tuesday.

The abbreviated schedule would reserve three evenings in the week for Residence Orientation, a scaled-down version of dormitory rush. The Residence Midway would follow Monday night's welcome dinner. Individual residence hall events would take place Tuesday and Wednesday night,

while an IFC-wide event for students interested in pursuing Greek life would take place Tuesday night as well.

On Thursday, students would enter the "Orientation Adjustment Lottery" and either choose to remain in their assigned residence hall or switch to a different one. In-house dorm rush would occur Friday night and Saturday, and students would move to their permanent rooms by Sunday.

Other Orientation activities, such as the President's Convocation, Welcome Dinner, informational sessions,

and advanced standing exams, would take place during daylight hours.

Squatting policy clarified

At the meeting, Dean for Student Life Larry G. Benedict also announced that incoming freshmen would not be allowed to preferentially "squat" rooms assigned to them over the summer, although they would be allowed to remain in their assigned residence halls.

After receiving the Orientation mailing in mid-May, freshmen would

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Search Committee Appoints Zue Director Of LCS Following Two Month Interim Role

By Brian Loux
ASSOCIATE NEWS EDITOR

After serving as interim director for two months, Professor Victor W. Zue has been named director of the Laboratory for Computer Science by an internal search committee.

"I would like to continue the tradition of being an internationally pre-eminent computer lab," Zue said.

Zue became interim director on August 31 following the death of Michael L. Dertouzos four days earlier. A five member committee was formed soon after by Dean of Engineering Thomas L. Magnanti to determine who should permanently take over the position.

Zue arrived at MIT in 1970 as a

graduate student, going on to obtain his doctorate of science in Electrical Engineering and Computer Science in 1976. He began to work at LCS in 1989 and quickly rose in the ranks to become the Associate Director in 1992.

Jury of peers select Zue

Faculty close to Zue were pleased with his appointment as director.

"We talked to a large number of people in the lab to see how they would like to see the lab move forward in terms of directorship," said Professor Ronald L. Rivest, a search committee member. "We asked them many questions and there was

a good range of discussion."

There were no candidates for the position; rather, names like Zue's arose only via the recommendations of colleagues. "We had an excellent candidate already, the lab seemed to feel," Rivest said.

Many members of the LCS liked Zue during his tenure as Associate Director, and the committee noted his knowledge of the lab and its staff.

Others mentioned Zue's research record as a reason for his appointment. "He is quite a notable researcher," Magnanti said. "He's been a leading researcher in speech

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Countermeasures cannot stop stealth aircraft.

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Comics

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OPINION

Christen Gray criticizes a report calling academia "the weak link" in America's anti-terrorism fight.

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WORLD & NATION

Bush Defends Plans For Secret Military Trials for Terrorists

THE WASHINGTON POST

WASHINGTON

President Bush told federal prosecutors Thursday that secret military trials for some foreign terrorism suspects could help prevent the U.S. legal protections from being used to undermine national security.

Bush is facing complaints from Capitol Hill that he is seizing too much power by establishing the military tribunals and installing himself as the sole arbiter of who will be tried under that system.

"We're an open society, but we're at war," Bush told a conference of U.S. attorneys. "The enemy has declared war on us, and we must not let foreign enemies use the forums of liberty to destroy liberty itself. Foreign terrorists and agents must never again be allowed to use our freedoms against us." Bush used his 18 minutes of remarks to offer a forceful defense of administration policies being challenged on the grounds that they abridge civil liberties. Bush put himself firmly behind the aggressive new techniques of his Justice Department, which is using immigration laws to detain and question non-citizens, some of whom have peripheral and non-existent ties to the events of Sept. 11.

Enron Employees Take Huge Hit On Retirement Savings

NEWSDAY

Thousands of Enron Corp. workers have had their retirement savings wiped out, leading financial planners to warn against loading up pension plans with employers' stock.

Enron's 401(k) retirement plan lost an estimated \$850 million in the past two months as shares in the largest U.S. energy trader plummeted on waves of bad news about poor accounting, huge losses and insider deals that benefited top executives.

The stock's dive — from \$83 in December to 36 cents Thursday — wrecked the pension plan because Enron shares accounted for 62 percent of its assets.

Most of Enron's 21,000 workers are believed to have suffered massive losses. Some have filed suit, alleging that company officials who ran the 401(k) plan promoted Enron shares despite knowledge of undisclosed financial irregularities.

The lawsuits also charge that employees were prevented from selling company stock during a critical month when it lost more than half its value.

NTSB Ships Flight 587 Tail Fin To NASA for Analysis

LOS ANGELES TIMES

WASHINGTON

Federal air safety investigators said Thursday they will ask NASA for help in determining why the tail fin of American Airlines Flight 587 broke off, an unusual step that underscores the difficulty of the probe.

The National Transportation Safety Board said it will ship the Airbus A300's vertical tail fin and rudder to the National Aeronautics and Space Administration's Langley Research Center in Hampton, Va., for testing. Langley is the space agency's lead center for developing advanced materials such as the carbon fiber composite from which the 27-foot tail fin was constructed. The analysis could take several months.

Flight 587 crashed Nov. 12 shortly after taking off from John F. Kennedy International Airport in New York, killing all 260 people aboard and another five on the ground. The tail fin was found in Jamaica Bay, about a half mile from the Queens neighborhood where the main fuselage crashed.

Suicide Bomber Kills Israeli Bus Passengers in Jerusalem

By Lee Hockstader

THE WASHINGTON POST

JERUSALEM

A young Palestinian suicide bomber boarded a nearly empty bus in northern Israel and blew it to pieces Thursday evening, killing himself and two Israelis and wounding the handful of other passengers. The bomb was so powerful that the bus was thrown into the air and its roof peeled back like the lid of a sardine can.

Another Israeli and two other Palestinians were killed in separate violence elsewhere Thursday, the latest in a chain of bombings, shootings, assassinations and mortar attacks that have convulsed Israel, Gaza and the West Bank in the last week as the Bush administration began its first major push for a cease-fire in months.

At least six Israelis and six Palestinians have been killed since Monday, when Assistant Secretary of State William Burns and special envoy Anthony Zinni, a retired Marine general, arrived here on a mission intended to nudge Israelis and Palestinians back toward nego-

tiations.

The blast Thursday night, which ripped apart a bus traveling southwest from Nazareth to Tel Aviv near the town of Hadera, occurred while Zinni was meeting Palestinian security officials in the West Bank. Israeli officials said it proved that Yasser Arafat's Palestinian Authority is doing nothing to halt terrorism.

Arafat "wants to remain the recognized leader of all the Palestinians and therefore he will not act decisively against (the terrorist groups)," said Zalman Shoval, an adviser to Prime Minister Ariel Sharon. "So I am not terribly optimistic about this (peace) mission" by the Americans.

In a written statement, the Palestinian Authority condemned the bus attack and said it "is working at full capacity to put an end to all sorts of attacks against Israeli civilians."

Zinni also condemned the attack, saying in a statement that he conveyed his condolences to Sharon.

Arafat told the visiting Americans on Wednesday that he has instructed his security forces to take measures against militant groups

that have carried out terrorist attacks against Israel. But he said his ability to squash the groups was hamstrung by the Israelis, who have carried out attacks on his security forces.

"The music is right from the Palestinian side, but we need action to go along with the music," said a participant in the meeting.

Sharon departed late Thursday night on a scheduled trip to the United States, where he is to tour the ruins of the World Trade Center in New York and meet with President Bush at the White House. Before he left, he insisted that he will not relax his insistence on seven days of "absolute quiet" from the Palestinians before Israel embarks on a staged roadmap that could lead to renewed negotiations after two months or so.

Most independent analysts say that requirement is an impossibility given the violence that has gone on for 14 months, punctuated by only a few lulls.

But Sharon has been adamant, contending that Israel cannot start down the road toward peace talks while gunfire continues.

Ashcroft Offers Citizenship Aid In Exchange for Terrorist Tips

By Dan Eggen

THE WASHINGTON POST

WASHINGTON

The Justice Department announced plans Thursday to coax information about terrorists from foreign nationals by offering them help in obtaining legal residency or U.S. citizenship.

Unlike other anti-terror efforts launched since Sept. 11, which have included detentions of hundreds of people and possible deportation for violations of immigration laws, the new program provides tangible incentives to immigrants otherwise afraid to come forward with information, officials said.

Under the "Responsible Cooperators Program," the rewards would be offered to non-citizens "who have useful and reliable information" about terrorists, according to a directive issued to the FBI, INS, and U.S. attorneys' offices.

"They may rest assured that the United States welcomes any reliable and useful information that they can provide to help us save lives in the future," Attorney General John Ashcroft said at a news conference. "In return, we will help them make America their home."

The program marks the latest tactic by frustrated U.S. officials who have sought to identify and capture terrorists and collaborators since the attacks on New York and Washington. A nationwide dragnet since Sept. 11 has ensnared hundreds of foreign nationals, but law enforcement officials and court papers indicate that only about a dozen, if that many, are suspected of involvement in Osama bin Laden's al-Qaida terrorist network.

Ashcroft, speaking on television shows early Thursday, said the plan would open a "pathway to citizenship" for participants. But many

immigration experts said the steps were limited and that they would help relatively few foreign nationals become U.S. citizens.

James Zogby, president of the Arab-American Institute, said that while he supports efforts to gather information, he fears the incentives might reward those with terrorist ties while punishing those with none. "We are deporting good people just because they're out of status, but here we might be rewarding truly awful people because they're involved with terrorists and have information to trade," Zogby said. "I would like to see incentives, but they should be fair to everyone."

In addition, Ashcroft has directed authorities to halt deportation proceedings and allow entry to foreign nationals if they have valuable information but do not qualify for an "S" visa. Such deferrals could be granted indefinitely.

WEATHER

Warm, Sunny Weekend on the Way

By Michael J. Ring
STAFF METEOROLOGIST

After a string of abnormally mild days earlier this week, yesterday's cold, raw, showery weather reminded us that it is the end of November. But the Boston area will enjoy warm weather again today — in fact the record high of 68 degrees F (20°C) is in some danger. The change from yesterday's chilly weather to today's mild conditions is courtesy of a warm front which is pushing its way across New England today from south to north. Warm fronts occur when a mass of less dense warm air slides over a mass of denser, colder air, pushing the colder air away. Tonight a second type of front, known as a cold front, will pass through the area. Cold fronts form when a mass of cold air sinks under a mass of warm air. The cold front expected tonight is not particularly strong, however, so temperatures Saturday will be almost as warm as those for today. This will make for a gorgeous weekend, with temperatures closer to the climatological norms of mid-October than early December.

Weekend Outlook

Today: Early clouds yielding to partly sunny skies, with near-record warmth. High near 66°F (19°C).

Tonight: Cloudy with a chance of showers as the cold front passes through. Continued mild, with lows near 52°F (11°C).

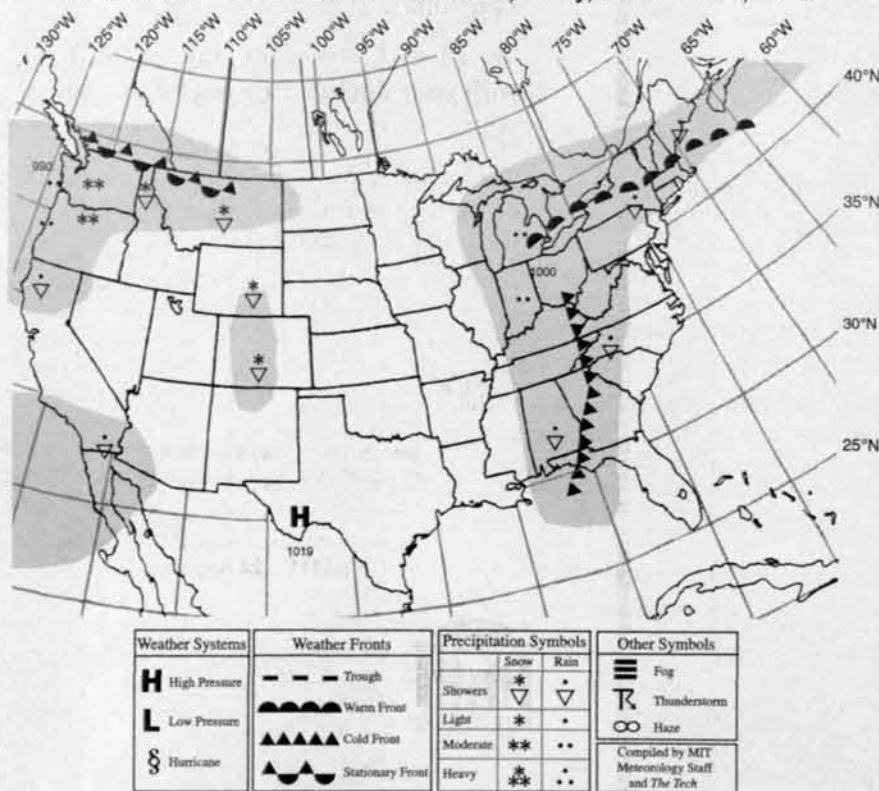
Saturday: A beautiful day, with partly sunny skies and highs in the low 60s °F (16–18°C).

Saturday night: Mostly clear and cooler, with lows in the low 40s °F (5–7°C).

Sunday: Partly sunny. Highs in the upper 50s °F (14–15°C). Lows in the upper 30s °F (3–4°C).

Monday: Partly cloudy, with a return to seasonal temperatures. Highs in the upper 40s °F (7–9°C) and lows near freezing.

Situation for Noon Eastern Standard Time, Friday, November 30, 2001



Taliban Forces Launch Attacks Against Pashtun for Kandahar

By John Pomfret
and Keith B. Richburg

THE WASHINGTON POST

CHAMAN, PAKISTAN

Despite intense bombing by U.S. warplanes, Taliban forces in south-eastern Afghanistan launched a swift counterattack Thursday against Pashtun tribal fighters who are closing in from two sides on the radical Islamic movement's last refuge in Kandahar.

The Taliban strike, which included militiamen riding motorcycles into battle, was aimed at Takhteh Pol, 25 miles southeast of Kandahar on the main road from the Pakistani border. The trading town has become a key part of an emerging U.S. strategy to surround and

squeeze Kandahar, the Taliban birthplace and the last big target in the Bush administration's war to crush Taliban power and root out accused terrorist leader Osama bin Laden.

C-17 Globemaster III transport planes delivered construction equipment and Navy engineers at another pressure point aimed at the beleaguered Taliban leadership, the desert airstrip converted into a U.S. Marine forward base 55 miles southwest of Kandahar. The Pentagon spokeswoman, Victoria Clarke, told reporters in Washington that the number of Marines at the rapidly expanding base has risen above 1,000.

Looking toward the end of Tal-

iban resistance and a new regime for Afghanistan, anti-Taliban representatives gathered in Bonn under U.N. and U.S. sponsorship announced readiness in principle to accept an international peacekeeping force and debated the composition of an interim administration and a national council charged with organizing a new government.

Takhteh Pol was captured over the weekend by U.S.-backed Pashtun guerrillas headed by Gul Agha Shirzai, who have since sought to continue their march northward toward Kandahar with help from U.S. warplanes and helicopter gunships. Other U.S.-backed Pashtun forces pressured Taliban forces around Kandahar.

United States Begins Crackdown On Uncooperative Foreign Flights

By Jonathan Peterson

LOS ANGELES TIMES

WASHINGTON

Citing national security concerns, the U.S. Customs Service on Thursday began tough new scrutiny of baggage and travelers on dozens of foreign airlines that have failed to provide U.S. authorities with advance details about their passengers.

The move follows U.S. demands that 58 airlines from the Middle East, Russia, China and elsewhere provide the name, birth date, gender, travel plans and other information on their passengers before landing in this country. Most of the airlines have yet to comply, customs officials said Thursday.

Among the first to get the tougher treatment were passengers on an Air China flight to Los Angeles International Airport on Thursday morning, a Saudi Arabian Airlines flight to John F. Kennedy International Airport in New York and others headed for Miami and Washington.

Such flights "pose a national security risk to the United States" if the airlines do not forward the passenger information, U.S. Customs Commissioner Robert C. Bonner warned in a statement. Customs, he added, plans "100 percent examinations of all people and luggage disembarking these particular flights."

The issue heated up this month when Congress passed aviation security legislation that requires airplanes

arriving from outside the United States to relay passenger data electronically, thus enabling customs inspectors to look for potential risks before flights reach the United States. The Advance Passenger Information System began in 1988, but participation had been voluntary and some overseas carriers have ignored U.S. requests to join in the effort.

Under the program, airlines submit passenger data when a plane takes off for the United States. Inspectors are able to check the names of travelers against an array of law enforcement databases and target particular passengers for closer examination when they reach a U.S. port of entry.

Social Security Commission Passes Buck Back to Bush

LOS ANGELES TIMES

The heads of a presidential commission — warning that there is no painless solution to Social Security's financial problems — left it to President Bush on Thursday to decide whether to make affluent workers pay hundreds of dollars a year in additional taxes to help keep the retirement system solvent.

The commission, appointed by Bush to find ways to let workers control some of their own payroll taxes, is shaping three alternatives to present to him next month.

One plan would let workers invest about one-third of their taxes themselves, instead of sending all of the money to the government. Another would let them control about two-thirds of their taxes.

The final approach would add an individual investment fund to the existing program. The individual account would be fed by a payment of 1 percent of taxable wages by each worker, augmented by a government contribution of 2.5 percent.

The third plan might include an increase in the \$80,400 on which workers now owe their Social Security taxes of 6.2 percent. Lifting the wage base to \$85,000 a year would add about \$285 a year to the tax bill of those who earn this much or more.

Man Poses as Firefighter, Scams New Yorkers After Sept. 11

NEWSDAY

NEW YORK

A suspected con man who police say posed as a firefighter in New York and other states to take advantage of the Sept. 11 attacks was extradited from Pennsylvania Thursday.

Jerome Brandl, 34, had been held in the Mercer County Jail, just outside Pittsburgh, since Oct. 30. Police in Hermitage, Pa., arrested him early that morning on charges of driving a 1999 Mercedes-Benz stolen from a high-ranking government official in Wisconsin, officials said.

Two weeks ago, the Queens County district attorney's office charged Brandl with scamming the New York Fire Department and city residents out of food, lodging, a ticket to Shea Stadium, money and other items following the World Trade Center disaster.

A Queens woman who met Brandl at the Mets game on Sept. 21 told police she let him to stay at her home for several days and loaned him \$500 after he said he had lost his wallet. The woman said the visitor later took her ATM card and withdrew \$880 from her bank account.

Brandl showed up at a Manhattan fire station on Sept. 18, saying he was a volunteer firefighter from Wisconsin. He quickly made friends at a place that lost two members in the tragedy, helping out with odd jobs and staying there as a guest. "Everybody hopes they throw the book at him," said firefighter Joe Petrich.

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TERRORIST CONNECTIONS

Letters To The Editor

Good GNUs

Eric Berry's article about the Takeda prize ("Stallman to Receive \$830K", published on November 13) refers to GNU and Linux, but not quite accurately. GNU is an operating system, but its name (GNU's Not Unix) has nothing to do with Linux; it refers to GNU's

compatibility with Unix. Linux, however, is not an operating system, but a kernel, one of the important components of an operating system. For that reason, the term "Linux operating system" is a misnomer. Berry was probably thinking of the popular GNU/Linux system, a version of GNU in which Linux is

used as the kernel. See the page <http://www.gnu.org/gnu/linux-and-gnu.html> for more explanation. Finally, \$830,000 is the total prize; since it is being shared by three people, each of us will get a third of that.

Richard Stallman
AI Lab Research Affiliate

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Time To Say Good Buy?

The Plague of Consumption in America

Ken Nesmith

The shopping season is upon us, or perhaps more accurately, is on top of us, doing its best to squeeze any last bit of meaning out of the Christmas holiday. This year, November 23 marked the infamous Black Friday, named so because it is on this day that most retailers move from red ink to black on the strength of post-Thanksgiving sales. Americans everywhere, after an exhausting day of giving thanks, awaken bright and early — or for the professionals, predawn and early — to go shopping after a trying, multiple-hour withdrawal from the mall. It is revolting in a way, this month-long episode of exceptionally gluttonous consumption. A large percentage of annual retail sales occur during this short period, making it the economic engine of the retail industry, fueled by a potent blend of materialism and greed and supercharged by billions of advertising dollars designed solely to shift our states of mind towards further purchasing.

This brief period is an economic and business phenomenon; it is discussed and forecast with the same attention to technical detail as world financial markets. We, the consumers, in turn feel it is all but our duty to support this perverted stilt that supports the American retail economy. The slew of growth forecasts,

conventional patterns of linear, unsustainable consumption, whereby raw materials are inefficiently converted to unrecycled waste and rapidly discarded products. There are further problems to be found in analyses of the skewed global supply chain that through a brutal combination of market forces and selectively promoted market distortions brings us a glut of products fabricated in hellish conditions akin to indentured servitude. However, during this season, investigating the psychology of our role as consumers is more relevant, or at least more manageable, than these global issues.

Consumption becomes poisonously problematic when it is treated as an end rather than a means. Unfortunately, that is precisely what happens during the modern Christmas season, and for some, the non-Christmas season as well. Consumption is now treated as an end in itself, as a set of purchase quotas we're obligated to fill. For some, it is a hobby, and a form of relief and relaxation. This season brings the entire population, or at least the entire moneyed population,

into the shopping game. The focus of these thirty days, lumped between Thanksgiving (a holiday dedicated to giving thanks for our innumerable blessings) and any of several winter celebrations, be it Hanukkah if you're Jewish, Winter Solstice if you're bitterly secular, Kwanzaa if you're creative, and Christmas if you're Christian, or just live here, has been undeniably twisted away from the foundations of either of the holidays that mark its endpoints. Jesus, whose nominal birthday remains the primary cause for the holiday judging

by the prevalence of proclamations of "Merry Christmas," versus any other competing proclamation, declared the poor to be blessed, and asked his followers to abandon their possessions and follow him. The sentiment is not limited to Christianity. The world's major religions, the paths by which humans have historically sought meaning and happiness in life, not only emphasize that happiness is not to be found in material goods, but suggest that it is actually desirable to abandon the destruc-

tive pursuit of material gain. Such a pursuit is irrevocably tied to an unhealthy state of being entailing greed, envy, and mental unrest. The hollow thrill of consumption so familiar to us right now cannot lead to any meaningful contentedness.

That is the lie of unhealthy consumption: that it brings happiness. Without resorting to an analysis of world religions and the meaning of life, this is nonetheless apparent in examining even the most half-hearted inventory of what's "really important in life." Such an exercise reveals for us where our true values lie in family, friends, service, religion, or other pursuits centered around personal growth and maturation within our communities, families, and selves.

Unfortunately, sometimes it takes the forceful hand of pain or tragic loss to open our eyes to what we should have learned from the guides of both social history and personal experience. It is telling that, in the immediate aftermath of September 11, consumption fell to a standstill as Americans everywhere were shaken from the shallow cesspools of consumer culture and bloodily reminded to take stock of the important parts of their lives. Such tragedies tend to remind us wholeheartedly of what we consider important, and somehow, useless gadgetry from Best Buy, generic style from J.Crew, and assorted crap from Walk-Mart do not manage to top our lists.

Those days saw a brief return to simplicity; even the Wall Street Journal, the vanguard of modern capitalism, made similar note on its front page following the attacks.

Perhaps in the interest of making steps towards a stronger society, we could set for ourselves the goal of focusing very strongly on the people and relationships we celebrate at this time of year as we find gifts to give to one another.

Deliberately turning our minds away from products and towards people would be a strong start in building a global economy more respectful of its human participants worldwide. More immediately, for a nation recently awakened to the reality of pain and loss, it would keep in our minds the importance of friends, family, and loved ones, and would certainly make for quite a merrier Christmas.

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and Christmas if you're Christian,
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consumer confidence measurements, and retail sales predictions indicate more than their names suggest: they tell us in no uncertain terms that the simple act of giving a gift to those who are important in our lives is now only another cog in the surging mechanistic behemoth that is unchecked global capitalism.

There is nothing inherently unethical about consumption, although problems born of the inconvenient restraints imposed by earth's finite resources are developing concerning

History: A Revolutionary Cure For Peaceful Students?

Christen M. Gray

A report was published recently by the American Council of Trustees and Alumni, founded by Lynne V. Cheney (wife of Dick Cheney) in 1995, citing professors in academia as the "weak link in America's response to the attack [of Sept. 11th]." The report cites professors at peace rallies and points out high student opinion against the war in Afghanistan as proof of this theory. This report, entitled "Defending Civilization: How Our Universities are Failing America and What Should Be Done About It," goes on to propose that American history classes, a longtime hot topic on the group's agenda, should go towards solving the problem.

The report infers that because we, the student population of America, along with

threats made to our schools every year. While our parents went out on fire and tornado drills, we were drilled in what to do when someone came through the school shooting people. Nearly every high school student knew there were guns and knives in their school.

Now, after all of this, Cheney and company are going to tell those of us who survived that we need more Western history classes because we're too peaceful?

Perhaps it's the politicians and the rest of the populace who need more education in American history. The report repeatedly cited MIT and Harvard, quoting four MIT professors and giving statistics on Harvard student opinion about appropriate response to the attacks. I would venture to say that most students at these universities are particularly well versed in Western history. I would be interested to find out the number of students that took and passed the Advanced Placement U.S. History exam in high school.

Don't get me wrong; I think history should be stressed in the curriculum. I was shocked in my senior year of high school to discover that the average graduating student, college bound or no, had no idea what the Nuremberg Laws are. These may be of particular importance in the near future as Constitutional infringements increase. But not only should we teach history; we should teach all of it, good and bad. The typical history class demands no analysis beyond what has already been written in the text. I want to hear about the flip side of things. Sure, teach students about invading the beaches of Normandy during World War II. Let them feel pride in their nation by showing pictures of

American soldiers freeing prisoners in concentration camps. But let them understand, too, that they must always be watchful of their own country by teaching them about the American internment camps which held ethnic Japanese people during that era.

History is written by the winners, and the United States has been the winner for a very long time. That should not be confused with

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being more righteous and deserving a people by inheritance than the rest of the world. The foresight of the Founding Fathers should be understood and employed to help and uplift our worldwide neighbors rather than exploiting them.

I invite you to go read the report at www.goacta.org/Reports/defciv.pdf. However, this is really just a silly, biased piece of paper that some group made up. The real point lies in the repeated accusation that the college students and academics who oppose the war and more violence do so because of ignorance. Perhaps it's really because we understand history at least as well as Cheney's group does, but still retain the idealism that allows us to love all people instead of just Americans. Perhaps it's just because we just got tired of all the violence. Whatever the reason, we are not blind sheep, and I think a lot of us are getting tired of being told otherwise.

some (by no means all) of our professors, are too peaceful, we are anti-American. Since when is stating "Recycle Plastic, Not Violence" an act of treason?

Our generation, specifically today's college students, went through high school under the constant shadow of violence. We watched as the atrocity at Columbine High School unfolded from our very own classrooms. Many of us even had copycat shootings occur where we lived. We had bomb

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MCAS Fails The Grade

Vivek Rao

Quick: A solar eclipse occurs when A) the moon blocks the Earth from the sun B) the first four planets in the solar system are aligned C) Earth blocks the moon from the sun D) Earth's shadow falls on the sun. Not too hard, you say? Perhaps, but this typical Massachusetts Comprehensive Assessment System (MCAS) question — no, it's not from Who Wants to Be a Millionaire — will soon determine whether or not students graduate from high school, a ridiculous concept, to say the least.

The test is administered each year to Massachusetts fourth, eighth, and tenth graders in a number of subjects, most importantly English, mathematics, and science. In the first few years of the MCAS era, the results have been quite staggering, with sometimes as many as 60-80 percent of students either failing or needing improvement in a subject. Now, however, we move into the next phase of MCAS, when high school students are required to pass the tenth grade version of the test in order to receive a high school diploma.

Students at all grade levels fare rather poorly on the MCAS tests, but state lawmakers will tell you that the problem is not with the MCAS, but with the students, the teachers, and the curricula. On one level, they are right in that the quality of education

*The MCAS tests only a
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politicians backing the MCAS to
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can always use improvement. On another level, however, it is ludicrous to evaluate thirteen years of structured education with an approximately 20-hour test. It is impossible to measure a high school student simply on the basis of his or her ability to take some standardized test, for more goes in making a solid citizen that filling in a bunch of circles with a number two pencil.

Colleges, as skewed as their admittance system may be, realize this, and that is why they do not make decisions simply based on SAT scores; instead they take into consideration a number of factors, academic and otherwise. Similarly, the Massachusetts Department of Education needs to reform its policy immediately. Accountability, the idea behind MCAS, is itself not the problem. With public education as decentralized as it is today, it is very important that statewide and nationwide standards be developed in order to ensure a high quality of learning in all American schools. Yet accountability should not be a one-shot deal; evaluation of school districts, teachers, and students should be based on a variety of factors, rather than just one test such as the MCAS. Such profound emphasis on one test can only have detrimental effects.

With schools and towns required to produce satisfactory MCAS results, the innovative curricula that currently exist will be replaced by a standardized program geared toward raising scores. Certainly there is a need for a certain level of uniformity, but under the proposed system, all school districts will be forced to pander to the requirements of the Department of Education. Furthermore, the MCAS tests only a certain set of skills. In fact, I would challenge those politicians backing the MCAS to take the test! As a student who took the test a few years ago, I have no doubt that more than a few lawmakers would not be "advanced" in every subject. That is not to say that they are ignorant or incapable, or undeserving of a high school diploma. It would simply show that the MCAS — or any other test for that matter — is unable to make a definitive evaluation of a person and their education. While Massachusetts politicians like Paul Celluci sit on their hands, criticizing the latest MCAS results, time is running out for students who will be required to pass the test in order to graduate. If lawmakers do not wake up from their deep slumber, this preposterous system will cause a huge number of students to fall through the cracks, their lives tarnished as a result of the flaws of the MCAS.

SCIENCE & TECHNOLOGY

Research Blurs Math, Physics

Mandelbrot, from Page 1

compromising his perfectly rigorous manner of doing things.

In time, more heroes appeared. One that is not so widely known I think, a pity, is a Spaniard who lived a hundred years ago, his name was Santiago Ramon y Cajal. Do you know his name? Ramon y Cajal was a doctor in Spain who described the structures of the nervous system, which is made of molecules, if you wish, which are the neurons, and atoms, which are parts of neurons, and how they interact.

He started in a world where nothing was known, a world in which the eye was paramount. When I first looked at pictures of the Mandelbrot set which are sort of lighter gray, darker gray, on a horrible electronic screen which was worn by excessive use with a graphic system which again gave dark gray over light gray, I was thinking of Ramon y Cajal because he looked at structures that could not be photographed. There wasn't enough contrast but, by playing with depths of field, by his extraordinary visual skills, he was marvelous.

He then drew pictures of all these neurons. It was so perfect, so early, that in the early 1950s when neuron anatomy awoke again, because of new progress here at MIT, my friends at MIT were using as the reference for the nervous system, a book, first published in Spanish 60 years before. They were using the French translation from 1903.

Now I think that Cajal had this combination of working on the very border of what was known, tools were not available, but combining every trick, skill, eye, he did provide this picture of what the brain is which has not been changed. So that is an extreme, I can also name heroes that are exemplified more than others.

Henri Poincare is a hero for reasons more general. Poincare is such a basic name in pure mathematics that one could think that he was an unquestioned person in his time, but actually in his time he was extraordinarily controversial. He defied categories, because on the one hand he was, by quite a long stretch, the most amazing man of his time in many different areas but he never proved anything rigorously, so his community disliked him for his desire to leave difficulties to others because they enjoyed it and he didn't.

TT: What was your first thought when you first saw your Mandelbrot Set?

BM: Well it was the middle of the night and I thought I was dreaming a nightmare or something. Truly I thought some machine had gone haywire or something. So the cure to that is to change some place and look at it again.

The next day, we, my programmer and myself, came back to it and we checked again differently and again zooming in and out. And then the third day, came back to it and the thing was totally familiar.

It was an uncanny situation — something moved from being totally wild to something I felt as if I had known forever. I've been telling that to people, and whenever I tell that story among people my age, who are of the age to see it when it was still totally new, they say they had the same experience. I just attended a meeting on this topic with several known physiologists, the question is whether it is part of the wiring of the human brain which is trained into these shapes, it is totally hypothetical, that possibility.

TT: With the discovery of self

similarity everywhere, how has this effected or reinforced your belief in God or the supernatural?

BM: No comment.

TT: It seems that science now is obsessed with fractals and chaos. It's almost buzzword. Do you think the theories are being overused in other fields of science?

BM: Well I think that what you say "buzzword" and so on, was much more true 20 years ago. I remember the first few years after my book as being a combination of great pleasure

"I gave this lecture at MIT and students run after me saying they heard me or my friends speak a few years ago and that's what brought them to science ... It's actually a wonderful feeling for me."

and great pain because I simply couldn't stand to be in the middle of a fad. My impression is that the fad aspect has very much decreased. If you say what you say, I believe you.

You feel it, but it's nothing compared to 20 years ago. And the fad was in place by just the completely natural use of these techniques in many areas. Now it's different if seen by me or by people who are actually professionals working in the field and by the outside world.

Let me elaborate. The outside world knows almost nothing of science. Most of science, even in the very beginning, is difficult. To say what the problem is, is very difficult. Once you pose open questions it becomes shut off. Fractals are different insofar as the results are so striking so soon. You start with very childish assumptions you turn the thing once or twice and you get questions nobody can answer. So the absence of competition in that world means that people who are interested in science of this sort have nowhere to go except at this point: chaos and fractals.

So it is not something that is good or bad, it's just lack of competition. Yesterday I gave this lecture at MIT,

and students run after me saying they heard me or my friends speak a few years ago and that's what brought them to science and to MIT. It's actually a wonderful feeling for me because

it's much better to influence a nature so young then to influence some of one's peers. But it doesn't affect the professional development of the field.

In many areas people just take these things for granted, the tools are provided, and they go on. Where the tool came from, the motivation, my personality, the eye matters very little. And that is how it should be; I mean there is no way of it. So perception depends very much on where you stand.

TT: I know you did a lot of your work at IBM, what are your feelings about the intersection between industry and academia?

BM: Well, IBM. I was at IBM during the 35 years of history which were quite extraordinary. IBM research began, as it turned out, for internal reasons not because of choice, around the time of Sputnik. In other words, in 1957-58 IBM was a beggar who couldn't be a chooser. Anyone with a clean record, a good degree, and belonging to a well-established group with a good number of recommendations could get

any number of jobs at MIT, at Bell Labs, you name it. IBM was not even in the running.

It was a mechanical engineering outfit which was suddenly transforming itself into an electronics outfit and facing questions which the old IBM could not even begin to face. It was run by people who had very long-view and who therefore accepted that it was necessary to follow criteria which were totally independent of academic criteria.

That is again, the top of the crop in academia was unavailable and so the question of academic publications was irrelevant and the reason why after coming to IBM by some accident, as it turned out, I stayed on and on and finally stayed half of my life is that it was for that period an extraordinary place.

And a statement was made, which I don't think was made anywhere nearly so strongly about what happens if the academic criteria are abandoned because there is no choice. There is no question that a large part of my life has been spent fighting academic criteria. At one time people tell me I'm not really a mathematician. Well, I know what they mean, but I'm in for the math more than many real mathematicians. People say I'm not a really a physicist, I know what they mean.

I received the Wolf Prize in Physics. Some people believe otherwise. There is a way of handling phenomena which academia does not do well. Today it is particularly severe, because all the institutions of research in the United States were set up in the late 40's under conditions which are long gone. Those institutions are, well, not necessarily fitted for plain reality; in fact they are not fitted for reality.

Academia, as I know it from years at Harvard, before I went to Yale — academia simply does not know how to deal with administration. It doesn't have structures for it.

We do our best at Yale, in fact the reason why I stay at Yale and I'm happy there is because it turns out that the math department is a particularly open-minded department which has a great deal of variety of activities. Everybody can interpret mathematics very broadly.

I think that's how it should be, that is, in the near future. Now, academic specifications must be modified. I mean some activities simply must be replaced by other activities. Change is indispensable. I see very well how the lessons are influenced by my work, not because some horrible committee decided for it, because actually even with what you said about the popularity of chaos and fractals, many committees are rather hostile to it because they say we should not let that be alone.

So they are hostile, but people vote with their feet. They come to these courses, they enjoy it. We have, at Yale, courses for non-mathematicians, little people who take fractals.

They love it and they learn more mathematics than they could ever learned any of the standard ways of teaching mathematics to a laymen.

So I think the world will change and in this sense, what happened at IBM not by design, but because of historical accident with the '57 situation and then the presence of several very hostile Russians who were directors of research and had a very broad view of science. That example should be instructive because science had become extraordinarily over organized, it had been specialized in different fields, and I think to its own detriment.

TT: One final question: what's your favorite math or physics constant?

BM: Oh! No comment ...

TT: No comment? Alright ...

BM: One!

TECHNOLOGY REVIEW

Something to Take Note Of?

Seiko's Smartpad2 — An Interesting Idea, But Portable Enough?

By Daniel B. Jonas

Seiko SmartPad2
\$200

Have you ever tried to take notes on your Palm using the Graffiti software and struggled to keep pace, only to throw your stylus down in frustration and pick up a pen and paper? Well, you are not alone. Whenever the urge hits me to write down anything longer than a sentence, I always find myself pushing my Palm aside and reaching for a notepad.

The Seiko SmartPad2, which Seiko markets as "The Connected Notepad," solves this deficiency by capturing handwritten notes and drawings and transferring them to your handheld in real time via infrared technology. The SmartPad2 works in conjunction with any handheld running Palm OS 3.1 or higher.

The SmartPad2 comes neatly disguised as a black leather executive portfolio, measuring 7.5 by 10.5 inches and weighing 1.5 pounds. When opened, on the right side lies a five by eight-inch notepad that masks the digitizer tablet mounted beneath. The two AAA batteries that power the unit are located at the case's spine. On the other side, a penholder, a business card sleeve and the infrared transceiver surround the handheld device.

Software installation was a breeze. Setup, which included installing the software package on my laptop, HotSyncing with my Palm, and slipping the batteries into the SmartPad2, took less than 15 minutes.

The SmartPad2 includes a PC application and four applications for the Palm OS (eAddress, eDateBook, eMemo and eToDo). These applications share databases with their standard Palm counterparts.

Anything written on the pad is stored as an "Ink Note" on your Palm. Each Ink Note (which can consist of multiple pages) is attached to an entry either in the address book, date book, memo pad or to do list. There is also a handy zoom feature that allows you to better view the note on your Palm by zooming in. Ink Notes can also be easily viewed through the SmartPad2 desktop software after a quick HotSync.

In order to e-mail your Ink Notes directly from your handheld, you must have the appropriate software installed (not included) and either a modem or cellular phone. Otherwise, the Ink Notes can be e-mailed as file attachments from your desktop after a quick HotSync.

In releasing the SmartPad2, Seiko slightly modified the design of its original SmartPad so that handhelds other than the Palm are compatible with the product. The SmartPad2 supports units from Palm, HandSpring, HandEra, Sony and IBM. The SmartPad2 also includes a Smart Keypad, carefully placed under the notepad, that allows direct text entry into any of the four SmartPad2 applications. This keyboard is twice the size of Palm's on-screen keyboard.

The SmartPad2 is a nifty gadget, yet the product has its fair share of drawbacks. While I was initially enamored with this new toy, the more I played with it, the more convinced I became that I would never carry one around.

First and foremost, the SmartPad2's design runs antithetical to the Palm's greatest asset: portability. With this accessory, my Palm is no longer a lightweight device that I can slip into my shirt pocket.

Additionally, the software presents some logistical problems. Unless you are running Microsoft Outlook, e-mailing Ink Notes is somewhat of a drag. Also, it is quite difficult to view an Ink Note on the Palm. In order to read your text with any clarity you need to zoom-in to 4X. At this magnification it is nearly impossible to seamlessly scroll and read the Note. In reality, the only way to read what you have written (other than by looking at the hard copy) is to view the file on your PC.

While the SmartPad2 has and will find its niche among handheld users, it will definitely not be accompanying me and my travel companions (Palm, cell phone, and Blackberry) wherever I go. And, at the street price of \$200, does it really make sense to purchase an accessory that costs almost as much as a Palm? If I happen to receive one for the holidays I am going to post it on eBay.



Seiko's Smartpad2, a slight reinvention on the original Smartpad, is the latest in Palm accessories, allowing the user to draw on a pad and have the image transferred onto the Palm.

AVIATION

Scouting For Surveillance

Detection of the B-2 Stealth Bomber
And a Brief History on "Stealth"By Tao Yue
STAFF WRITER

"Cell phones uncover stealth bombers."

In early June, the news was filled with headlines such as this one. Newspapers put them at the top of the front page, magazines printed colorful diagrams, and television networks ran the story as the lead on their evening news broadcasts.

And why not? The story was irresistible. Stealth technology is the most potent symbol of America's military supremacy in the post-Cold War world. Though other nations have worked on similar technology, so far none have been as successful as the United States. For something as commonplace as cellular telephones to bring down this symbol of America's military-industrial complex was simply too ironic for the media to resist. In almost all accounts, the technology was described as new and revolutionary, and numerous analogies to David and Goliath were drawn.



LOCKHEED MARTIN

Lockheed's F-117A has a radar signature about a hundredth as large as that of conventional airplanes.

Within a week, though, the story had practically disappeared from the media. The U.S. military did not launch any crash program to counter this threat.

No systems were sold. We are left wondering: "What happened?"

An overview of stealth technology

Stealth technology was developed at Lockheed Martin's legendary Skunk Works research facility. This facility had produced aircraft such as the P-80, America's first jet fighter; the U-2, the high-altitude reconnaissance aircraft made famous by photographing Soviet nuclear missiles being installed in Cuba in 1962; the SR-71, still the fastest operational jet aircraft ever built; and the F-117 Nighthawk, the Stealth Fighter that captured the world's attention.

Even before the Stealth Fighter's existence had been publicly announced, rumors circulated in the aerospace and defense community. Tom Clancy featured the Stealth Fighter in his novel *Red Storm Rising*, a political-military thriller describing a conventional war between the Warsaw Pact and NATO. Testors, maker of accurate scale models of cars, ships, and aircraft, even went so far as to sell a model, based upon alleged sightings of the F-19, the logical designation for this new aircraft.

When the F-117 was publicly announced, more than just its designation was surprising. The plane itself simply didn't look like a modern jet fighter. Instead of a sleek, aerodynamic profile optimized for supersonic performance, the F-117 was blocky and featured many flat surfaces. Its wing was swept so sharply back that the plane had difficulty developing enough lift to take off.

There was a reason for this. Stealth technology had begun with coatings that reflect less radar than the aluminum commonly used on airplanes. In fact, the now thirty-year-old SR-71 reconnaissance aircraft made use of radar-absorbent coatings to help lower the risk of detection. But there is no perfect absorber of radar. Skunk Works

went a step further by shaping the F-117 so that a radar beam would be bounced in direction different from the one in which it originated.

Due to the limited computing power available in the 1970s, the plane was designed using flat surfaces to reduce the number of calculations needed. Each flat surface would add an extra direction in which radar could be reflected, so the number of surfaces used was kept to a minimum. This made the plane aerodynamically unstable about all three axes, so fly-by-wire capability was required to allow the pilot to control the airplane. Enclosed bomb bays, special pilot canopies, special seals at all joints, and special cooling vents for the engines also helped make the plane stealthier.

The F-117 had a radar signature about a hundredth as large as that of conventional airplanes, making it appear little larger than a bird on radar scopes. The B-2 Stealth Bomber, which followed the F-117, benefited

from greater computing power with a contoured shape that further reduced its radar signature. The newest fighter to enter the U.S. armada, the F-22, uses a still more advanced shape.

Countering stealth a difficult task

Stealth required years of research and massive computing power to develop. Defeating it was a similarly daunting task. F-117 Stealth Fighters flew over 1300 sorties in the Gulf War without a single one being shot down. A stealth airplane was not lost in combat until 1999, when Yugoslav forces in Kosovo shot one down. This feat was, however, not repeated.

Since the beginning, though, it has been recognized that stealth is not invulnerable. Stealth relies not only on its ability not to be detected by radar, but also on its ability not to be detected by other means. This is why stealth aircraft typically do not use radar or send any radio communications while in combat. However, the engines, while cooled to minimize their infrared signatures, still emit more heat than ambient air, a vulnerability that permitted Russian-made SA-3 infrared air-to-air missiles to lock onto the aircraft shot down over Yugoslavia. In addition, stealth aircraft show up visually over a bright sky, making them usable only at night.

Those problems can be solved operationally, though, by limiting the use of stealth warplanes to favorable military situations. A more serious problem is the inherent imperfection of the surfaces of the airplane. No matter how precisely they are manufactured, they will degrade naturally during flight as a consequence of atmospheric friction. Dust in the air and rain affect it even more. Despite special techniques for repairing nicks and scratches, and sealing joints where one manufactured part is attached to another,

these are done by maintenance crews working under time pressure to get each plane out for another attack run. All of these contribute to the fact that a stealth plane will always reflect some amount of radar.

The Roke Manor system

The stealth-detecting system announced over the summer was developed at Roke Manor Research, a British defense firm based in Romsey, Hampshire. It does not try to detect emissions from careless stealth aircraft, a half-hearted and easily-counteracted move.

Instead, it attacks the stealth system itself by detecting the radar waves that do reflect off it.

John Hansman, a professor of Aeronautics and Astronautics at MIT, explains, "Some stealth aircraft, like the F-117, are specifically designed to have a low radar cross section to monostatic, or conventional, radars. They are not stealthy to some bi-static configurations."

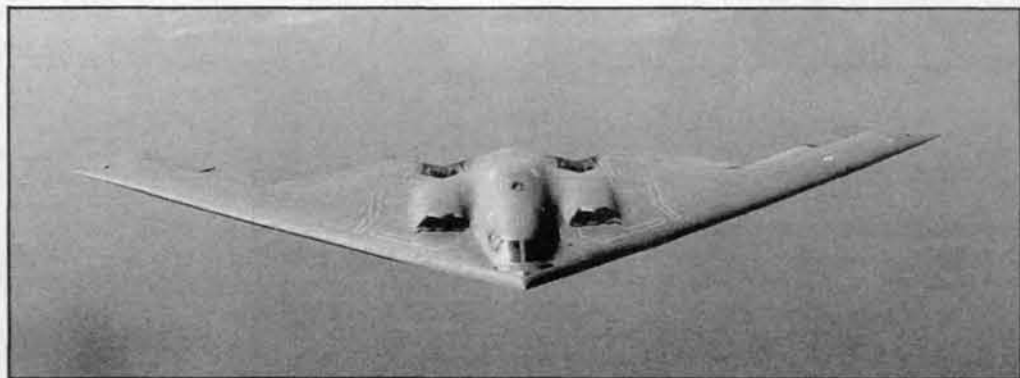
Conventional monostatic radar places the transmitter and receiver in the same location, making it simple to locate a plane when spotted. Bi-static, or multi-static radar, would position the receiver at a different position from the transmitter. This makes it more difficult to compute the location of the aircraft.

However, since stealth aircraft do reflect some radar, but away from the transmitter, bi-static radar could conceivably receive the reflection and detect the stealth aircraft.

The problem then becomes one of scale and coordination. The stealth aircraft will be visible only if ideal alignment exists so that the transmitter bounces a signal off the stealth aircraft to the receiver. Stealth aircraft, however, are vulnerable from a very small subset of possible combinations of angles.

The Roke Manor system solves that problem with computing power and some creative thinking. Building a radar every few miles to solve the first problem is prohibitively expensive. However, radar is simply an application of radio, and in today's wireless age, radio waves surround us. In particular, in industrialized nations, cell phone towers can be found every few miles, sometimes every hundred feet. Telephone companies also know exactly where the towers are located, and have telephone lines hooked up to them, facilitating communication.

In effect, the Roke Manor researchers have envisioned the use of cell phone towers as a extremely dense network of radar transmitters



NORTHROP GRUMMAN

Northrop Grumman's B-2 Stealth Bomber fell under fire after allegations arose that it is detectable by cell phone technology.

and receivers, interconnected via communications links. The sheer number of cell phone towers makes detection much easier than with solitary radar sites.

"A lot of stealth technology deals with redirecting radar waves," said Greg Duckworth, a Principal Scientist at BBN working on underwater acoustics in an area very much analogous to radar. "It's very effective against monostatic radars. However, if you have bistatic radars, in particular a very large number of sources, so that you excite the target from a wide range of angles, and you have a multiplicity of receivers in many



LOCKHEED MARTIN

Lockheed's new F-22 uses an innovative shape to hinder detection.

locations, you essentially will get around the stealth target's redirection capabilities. It is highly likely that an incident wave from a cell tower will be redirected towards one or more receivers."

Having gotten around the stealth aircraft's redirection capabilities, the system then puts together all the data from the cell phone towers. Until recently, this was not possible. However, increased computational power and advanced signal processing techniques have made it possible to sort through all the signals and form a coherent radar picture. Ironically, the further development of the same computing technology that originally made stealth possible has now made it possible to detect stealth aircraft.

Implications of Roke Manor

Given a cell phone network, massively parallel computers, and the Roke Manor software, how much can one determine about a plane? Quite a bit, as it turns out.

"If you can get a radar return, you can get all kinds of information from the return signal if you can process it sufficiently," Hansman said. "For example, if you look at the Doppler shift of the returned signal, you can get aircraft velocity. If you are sensitive enough, you can see frequency effects, such as engine rotation or structural vibration. If you have several receivers or different imaging angles, you can begin to reconstruct an image of the target."

These data further reduce the effectiveness of stealth technology. While stealth has always returned a small signal, even to monostatic radars, that signal is so small that it is usually filtered out either by the radar scope or by the operator. However, with velocity and shape information, as well as software specifically designed to detect the inconsistencies that give away a stealth airplane, it becomes considerably easier to separate planes from birds in the sky.

Ernie Rockwood, a researcher for Sensis Corporation, a company that specializes in air traffic and air defense, said that he was "not surprised" by this development. "Some

of the case with stealth technology, but because the physics makes them do that naturally."

Duckworth also drew an analogy between cell phone towers and television transmissions.

"Televisions have improved quite a bit, and comb filters have gotten better," said Duckworth. "On older TV sets, though, when an airplane goes over your house, a reflective wave from the aircraft ends up interfering at your antenna, and you see lines and artifacts on your screen. To the extent that a stealth aircraft does not absorb the wave, the remnants of it still interact with the airplane and result in detectable interference patterns."

The television analogy is particularly apt, since Lockheed has been working on a project that operates on the same principles as Roke Manor's anti-stealth system. In this project, called Silent Sentry, FM radio stations and VHF television broadcasts are used to provide the dense network of radio waves that interacts with stealth aircraft. While there are fewer FM and VHF transmission towers than cell phone towers, each individual station transmits much more powerfully. The smaller number of stations would also reduce the computational requirements of the system.

Consequences of anti-stealth

How far-reaching are the implications of this anti-stealth technology? As with all military technologies, it depends on the particular application.

Owen Cote, Associate Director and Principal Research Scientist of MIT's Security Studies Program, explained, "Even if this system works, it wouldn't be useful if you couldn't shoot the aircraft down. You'd have to find some way of guiding a missile very close to the target before an infrared or illuminating radar could achieve a lock on the aircraft."

"This is not very mobile technology," he continued. "Your cell phone towers are in fixed locations. While it would be close to impossible to destroy them all, they are susceptible to jamming just like conventional radar. Stealth might very well be a technology with a very short half life. However, against foes such as Serbia or Iraq whose technology is not yet competitive with ours, I see stealth as having a much longer life. As a proof of concept, this bistatic technology sounds right. The actual implementation, though, is another matter."

Still, Dr. Cote saw some long-term effects of a successful system.

"No offensive advantage lasts," he said. "Often there is a relatively cheap defense counter to match new offensive technology. We may find ourselves moving further away from manned delivery platforms and focusing more on cruise missiles, tactical ballistic missiles, and short range missiles with incredible accuracy."

The technology is widely acknowledged to be feasible, and Roke Manor claims to have working prototypes. However, bistatic radar is neither a miracle nor a disaster that renders worthless decades of stealth research. It is yet another battle in the war between armaments and armor.

of my co-workers and I worked on novel bistatic battlefield radar techniques to improve survivability. We also submitted a proposal to Rome Labs for an operational concept using multistatic techniques."

Defense researchers and experts in the defense industry also seem to agree that the technology is sound. Some believe this to be a natural development in radar technology.

"Underwater, they've already gone to multistatic systems because the reflectivity of targets is such that they don't naturally bounce stuff back," said Greg Duckworth. "Not because they tried to, as was

BIOLOGY

Ethics vs. Stem Cells

Technology & Culture Forum Discusses Stem Cells

By Shankar Mukherji
ASSOCIATE SCIENCE EDITOR

MIT's Technology and Culture Forum hosted a lively discussion on the future of embryonic stem cell research, featuring viewpoints ranging from academic interest to ethical concerns. The national debate over stem cell research, which had noticeably quieted following the attacks of September 11, has been reinvigorated on the heels of news that cell biologists have produced the first known cloned human embryo.

Professor George Q. Daley PhD '89 of Harvard Medical School introduced the science behind the debate, emphasizing the differences between adult and embryonic stem cells. Numerous investigators in the field, Daley claimed, feel that the greatest therapeutic benefit from the research can only be derived from those stem cells still in the embryonic stage.

Daley, who is also a fellow at the Whitehead Institute for Biomedical Research, said that stem cells at this stage exist at "the only time in human development where the cells retain that [high] degree of plasticity."

"Each of these cells adopts a more limited fate, a limited diversity," Daley said, "so that we have more pluripotential cells in the embryo and less restricted ... multipotential cells in the adult."

Adult-derived stem cells, such as the bone marrow stem cell that gives rise to blood, do not exhibit the same degree of versatility as their embryonic counterparts, which can grow as immortal cells in culture as well as give rise to all the cells of the adult organism.

Daley noted, however, that the

issue of adult versus embryonic cells is far from closed.

"We're starting to appreciate that stem cells from the bone marrow may be able to give rise, under certain experimental conditions, to other tissues or other organ types, like the liver or even neurons."

Still, Daley remains unconvinced of the exchangeability of the two types of stem cells.

"I would argue, from the perspective of a scientist working on both embryonic and adult stem cells in my laboratory, that we do not view these cells equivalently," he said. "There is much greater plasticity, a much greater versatility in the embryonic cultures that we carry than in the adult stem cells we can generate."

The ethicist questions science

Professor of Religion Thomas A. Shannon of Worcester Polytechnic Institute expressed concerns over the direction of stem cell research. "There are numerous ethical arguments that argue for caution in embryonic stem cell research," said Shannon.

While not claiming to be an outright foe of the investigation into potential uses for stem cells in healthcare, Shannon cited several problems facing the line of investigation, most importantly the "continued commitment to high-tech medicine ... rather than getting at the underlying social and environmental causes of disease."

Shannon believes that "the benefit of the research will go to those who are insured and those who can pay out of pocket, while the vast majority will not even have access to the technology."

Instead, said Shannon, medical

research should focus on more fundamental issues in healthcare. "Is high-tech rescue medicine the way [to treat human disease], or should we follow a different model of medical practice?" he asked. "The potential is there, but the real question is whether we want to allocate our scarce resources to this effort."

Shannon also raised overarching

moral concerns over the direction of the research. Pre-differentiated cells, said Shannon, "are not morally privileged to individuality, but do contain the essence of human nature."

"To use such cells in research," continued Shannon, "is in fact to objectify human nature; it is a means to an end."

Consumers matter too

Consumer advocate Abbey Meyers, president of the National Organization for Rare Disorders, also urged caution on the part of stem cell researchers because of what she called "an understandable skepticism of medical breakthroughs".

"Stem cell research is paying a heavy price," she said, "for the hype of medical research promises."

In trying to obtain financial backing for their endeavors, according to Meyers, researchers had promised far more than they could realistically accomplish. "A far more responsible attitude must be taken by researchers if they are to regain the public's trust," said Meyers.

She pointed to the promises of gene therapy, which was widely regarded as an imminent panacea that would revolutionize medical practice. The failure of such gene therapies to sweep across the world, said Meyers, is just one example of the public being hurt "by the Wall Street hype of the research community."

The often vitriolic debate over stem cell policy, she noted, is not helping to smooth over patient mistrust of new healthcare technologies. "The adversarial nature of researchers and federal regulators only further erodes the public trust," claimed Meyers.

When asked by an audience member whether or not she was afraid that the United States would fall behind Europe and others in stem cell research, she said that "It doesn't matter who gets it first. The race between countries doesn't matter. I don't care who has them, just as long as we, the patients, can get them."

Stem cell interest on rise again

Interest in the future of biomedical research has grown after researchers at Worcester, Massachusetts-based Advanced Cell Technologies (ACT) announced that they had artificially cloned a human embryo. As current federal policy limits funding on embryonic stem cell research to those lines already established and announced by the National Institutes of Health, private companies such as ACT are moving ahead with controversial research programs while their publicly-funded counterparts stand by and watch.



DALTON F. CHENG—THE TECH
Professor George Q. Daley of Harvard Medical School and the Whitehead Institute discusses the future of stem cell research.

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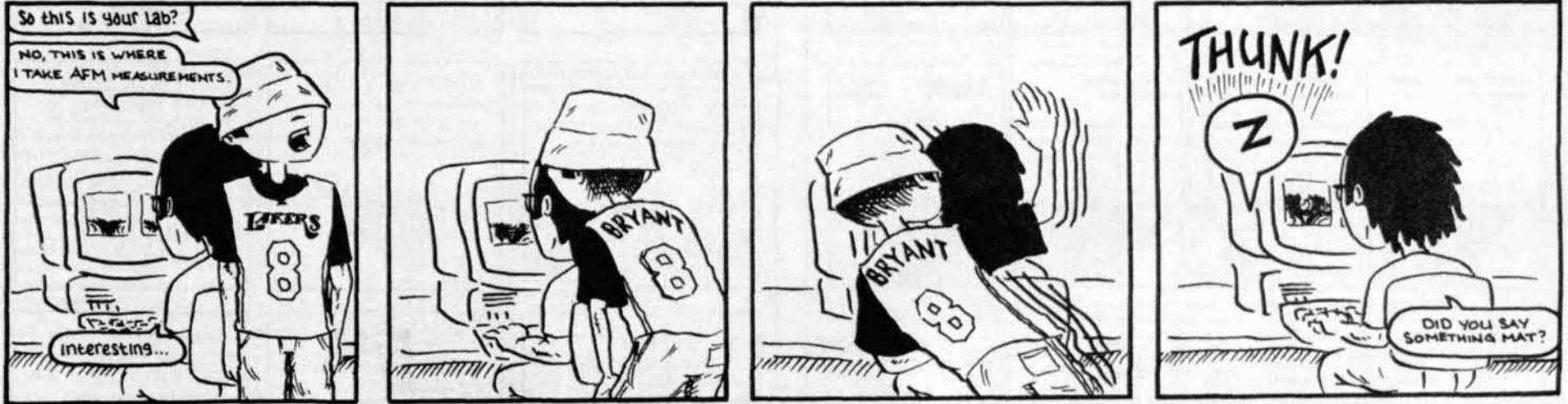
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PowerTrip: Part 1

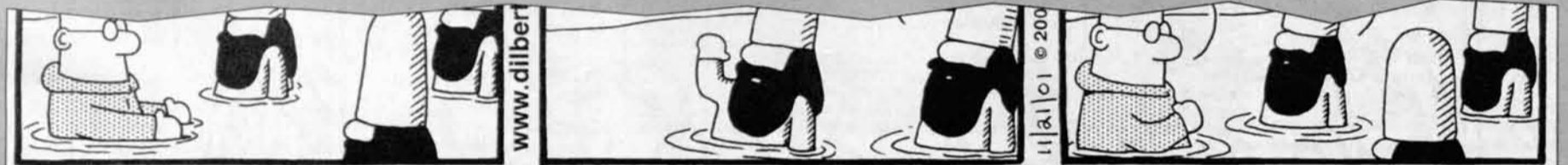
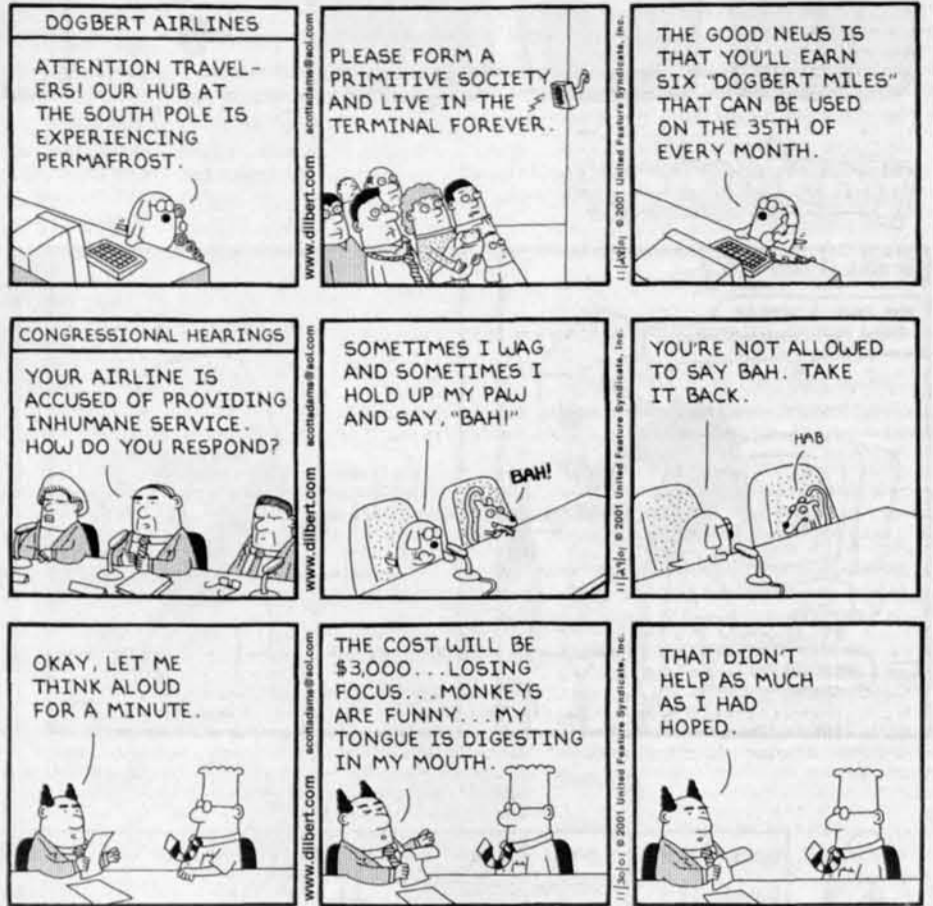


By [Signature]

FoxTrot by Bill Amend



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MIT Department of FACILITIES

CAMPUS CONSTRUCTION UPDATE

MEDIA LAB EXTENSION: Demolition of buildings E10 and E20 is underway. This work will generate noise, odor, dust and vibrations. All of these will be mitigated to industry standards.

MEMORIAL DRIVE TRAFFIC SIGNALS: Installation of traffic signals at two locations intersecting Memorial Drive, Wadsworth and Endicott streets, will continue through mid-December. Parking near these areas will be restricted while construction takes place, generally Monday-Friday, 7:30 a.m. to 3:30 p.m.

SIMMONS HALL: Excavation of Vassar St. at the west end of Simmons Hall will affect traffic flow.

DREYFUS CHEMISTRY BUILDING: Work on the facade of the building will cause vibrations. Moving of offices and labs will cause some disruptions for Building 18 users.

LOBBY 7 RESTORATION: Interior scaffolding continues to remain in place, as installation of the glass blocks for the new skylight has been completed. Construction continues at the 77 Mass. Ave. exterior entrance to repair the cracked limestone facade. Scaffolding has been erected, and foot traffic may be affected.

ZESIGER SPORTS & FITNESS CENTER: Roof work, dry wall framing, rough plumbing, casting of floor slabs, and fireproofing continue. Resulting noise may occur between 7 a.m. and 5 p.m.

For information on MIT's building program, see <http://web.mit.edu/evolving>
This information provided by the MIT Department of Facilities.



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Events Calendar

Visit and add events to Events Calendar online at <http://events.mit.edu>

Friday, November 30

9:30 a.m. - 3:30 p.m. - **BOOKSALE**. MIT Libraries' Booksale. Books in Math, Psychology, History, Biography, Engineering, Aero, Biology, Chemistry, Fiction, Art, Architecture, Urban Studies, Computer Science, and Misc. Science.
 Proceeds benefit the MIT Libraries' Preservation Fund., free. Room: Bush Room, 10-105. Sponsor: MIT Libraries Gifts Office.
 12:00 p.m. - 1:00 p.m. - **Orientation to Computing at MIT**. This seminar provides basic, non-technical information about the MIT computing environment., free. Room: N42 Demo Center. Sponsor: Information Systems.
 12:10 p.m. - 1:15 p.m. - **GABLES Monthly Lunch**. GABLES is the Gay, Bisexual, and Lesbian Employees and Supporters group. Each month, on the last working day, we gather to enjoy lunch and the company of our colleagues and friends. Occasionally there are discussions of topical interest, however the focus of this event is social. The organization also works to advance the interests of GBLT employees at MIT. The lunches are open to anyone in the wider MIT community interested in our work. We have often welcomed guests from other universities and their friends.. The cost of your lunch. Room: A variety of local eateries. Sponsor: GABLES.
 1:00 p.m. - 2:00 p.m. - **A Novel Snowmaking Process: Theory and Applications**. Mathematics Brown Bag Seminar. free. Room: 2-338. Sponsor: Chemical Engineering.
 3:00 p.m. - 4:00 p.m. - **Hoyt C. Hottel Lecture, "Oil and Gas Development in Alaska: An Evolving Story"**. President and CEO, Phillips Alaska, Incorporated, free. Room: 66-110. Sponsor: Chemical Engineering.
 3:00 p.m. - 4:00 p.m. - **Mechanical Engineering Seminar**. "Small Scale Gaseous Flows and Their Simulation", free. Room: 3-133. Sponsor: ME Seminar Series.
 4:15 p.m. - 5:15 p.m. - **On the Combinatorics of G₂**. Refreshments will be served at 3:30 PM in Room 2-349.. free. Room: Room 2-338. Sponsor: Combinatorics Seminar. Department of Mathematics.
 5:30 p.m. - 7:30 p.m. - **Steel Pan Performance**. Part of Caribbean Weekend 2001. Steel Pan Concert by Mackie Burnette and Co. Featuring the Steel Pan, original instrument from Trinidad . free. Room: Stratton Student Center (W32) 1st floor Lobby. Sponsor: Caribbean-Club.
 6:00 p.m. - 7:30 p.m. - **Christian Thinking About Technology**. MIT Nuclear Engineering Professor Ian Hutchinson will speak on Christians should responsibly apply our faith in practicing science and engineering. There will be also a time of worship and prayer.. free. Room: Student Center Twenty Chimneys (W20-306). Sponsor: Graduate Christian Fellowship.
 6:30 p.m. - **AfroBrazilian Celebration**. End-of-Term performance by students taking Guest Instructor Isaura Oliveira's Advanced Topics in Theater: Afro-Brazilian dance. They will be joined by Isaura Oliveira, and members of Iwã Pêlé*, an experimental group which creates contemporary music and dance pieces from elements of traditional African Diasporic culture. This celebration of the dance, music and dramatic traditions of the Afro-Brazilian culture will also feature live music of Sula da Silva and Akili Jamal.. free. Room: Kresge Little Theater. Sponsor: Music and Theater Arts Section.
 7:00 p.m. - 9:00 p.m. - **Falun Gong Exercise workshop**. The Falun Gong exercise is an easy and effective way to relieve stress and improve physical and mental health. Millions of people in over 40 countries practice these 5 sets of gentle movements.. free. Room: 1-242. Sponsor: Falun Dafa Club.
 7:00 p.m. - **Men's Basketball vs. RPI**. free. Room: Rockwell Cage. Sponsor: Department of Athletics.
 7:30 p.m. - **Women's Ice Hockey vs. Salve Regina**. free. Room: Johnson Ice Rink. Sponsor: Department of Athletics.
 8:00 p.m. - **MIT Wind Ensemble**. Frederick Harris, music director. An evening of original works for wind ensemble featuring the world premiere of the comic opera "Coyote's Dinner," music by MIT Lecturer Charles Shadle, libretto by MIT Senior Lecturer Michael Ouellette. With William Cutter, Carlos Archuleta, Phillip Lima, Hillary Nicholson, Mary Ann Lanier, Graham Wright (G), Mary Tsien '02. Mendelssohn's Overture for Winds, op. 24; Hindemith's Geschwindmarsch on a Theme by Beethoven; Gould's Ballad (for Peace).. \$3 . Room: Kresge Auditorium. Sponsor: Music and Theater Arts Section.
 8:00 p.m. - 10:30 p.m. - **Caribbean Cooking Session**. Part of Caribbean Weekend 2001. Learn to cook authentic Caribbean dishes, and hang with MIT Students from the Caribbean. Dishes prepared for Caribbean Dinner on Saturday Dec. 1st 2001.. free. Room: New House 3 (Spanish House). Sponsor: Caribbean-Club.

Saturday, December 1

8:30 a.m. - 5:30 p.m. - **MIT Venture Capital and Principal Investment Conference**. We expect over 400 attendees, including leading venture capitalists, entrepreneurs, faculty and students. The focus of this year's conference is to provide a vision for future of the venture industry. The keynote address will be given by Bob Metcalfe, Founder of 3Com and Venture Partner with Polaris Ventures. There will be 12 panel discussions: Terms of the New Deal, VC/LP Issues, Evaluating VC Firms; International investing in Asia, Europe and Latin America; Future Applications of Technology in the Biotech, Nano-Tech/MEMS, and Energy Industries; Real Estate, General Private Equity, and LBO Investing Issues.
 . 350\$ for professionals, 65\$ for students, 45\$ for VCPi club members. Room: Jack C. Tang Center, MIT Sloan School of Management, 70 Memorial Drive (E51), Cambridge, MA 02142. Sponsor: MIT Venture Capital and Principal Investment (VCPi) Association.
 9:00 a.m. - 6:00 p.m. - **Copyright Request Deadline for course material for Spring 2002**. The MIT Copy Technology Centers deadline for submitting copyright request forms for course material is Dec. 10, 2001 for material that will be used in course readers for the Spring 2002 semester. If you need additional time to submit copyright requests please contact the copyright administrator at 258-5275. . free. Room: MIT Copy Technology Centers . Sponsor: Copy Technology Centers .
 1:00 p.m. - **Men's Basketball vs. Cal Tech**. free. Room: Rockwell Cage. Sponsor: Department of Athletics.
 2:00 p.m. - **Squash vs. Colby College/ Cornell**. free. Room: Harvard Muir Center. Sponsor: Department of Athletics.
 2:00 p.m. - **Max Wasserman Forum on Contemporary Art: "Losing the Revolution."**. A discussion on the loss of seditious potential when avant-garde art and rock music stopped sleeping in the same bed. Moderator: Andrea Miller-Keller. Panelists: Laura Cottingham, Dan Graham, Dick Hebdidge, Paul D. Miller (aka DJ Spooky that Subliminal Kid).. free. Room: Rm 10-250. Sponsor: List Visual Arts Center.
 4:00 p.m. - **Women's Ice Hockey vs. College of Holy Cross**. free. Room: Johnson Ice Rink. Sponsor: Department of Athletics.
 7:00 p.m. - **"The Boundary"**. One-act play by Tom Stoppard and Clive Exton, produced in only 7 days — just another play about lexicography, infidelity and cricket. A "one-week wonder" production.. free. Room: Stratton Student Center Private DR #1. Sponsor: Dramashop.

Events Calendar appears in each issue of *The Tech* and features events for members of the MIT community. *The Tech* makes no guarantees as to the accuracy of this information, and *The Tech* shall not be held liable for any losses, including, but not limited to, damages resulting from attendance of an event.
 Contact information for all events is available from the Events Calendar web page.

7:30 p.m. - 9:30 p.m. - **Horizontal Wine Tasting**. A tour of a selection of wines. Must be 21 or over.. TBD (\$5-\$10). Room: Next House Dining. Sponsor: Epicurean, The.
 7:30 p.m. - 10:00 p.m. - **Caribbean Dinner and Cultural Show**. Part of Caribbean Weekend 2001. Enjoy a nice Caribbean dinner and watch various types of Performances reflecting Caribbean Culture. Stay for the party and dance the night away Caribbean style.. \$ 3.00. Room: 20 Chimneys, Stratton Student Center 3rd floor. Sponsor: Caribbean-Club.
 8:00 p.m. - **Men's Ice Hockey vs. Coast Guard**. free. Room: Johnson Ice Rink. Sponsor: Department of Athletics.
 8:00 p.m. - **"The Boundary"**. One-act play by Tom Stoppard and Clive Exton, produced in only 7 days — just another play about lexicography, infidelity and cricket. A "one-week wonder" production.. free. Room: Stratton Student Center Private DR #1. Sponsor: Dramashop.
 8:00 p.m. - **MIT Concert Choir**. William Cutter, music director. Handel's "Messiah," (parts 1 and 2,) to benefit the New England victims of the September 11 tragedy. Soloists, Kendra Colton, Lynn Torgove, Rockland Osgood, Thomas Jones. . \$5 at the door. Room: Kresge Auditorium. Sponsor: Music and Theater Arts Section.
 8:00 p.m. - 11:00 p.m. - **Patrol**. Shoot your friends! Travel to strange, new classrooms; meet interesting, unusual people; and kill them. A team game of shoot-em-up; guns provided.. free. Room: Building 36, First Floor. Sponsor: Assassins' Guild, MIT.
 8:00 p.m. - **Resonance of MIT a cappella concert**. MIT's newest a cappella group presents it's fall concert with their guest, Brandeis' Voice Male. Co-ed, secular, wacky, intense - Resonance will knock your socks off and possibly shatter your glasses, but in a good way. r.. free. Room: 10-250. Sponsor: Resonance of MIT A Capella Group.

Sunday, December 2

1:00 p.m. - 5:30 p.m. - **Ballroom Dancing Workshops**. Beginner ballroom dance steps will be taught. There will also be a new focus on developing techniques as well. Open to everyone. No experiences necessary. No partners required.. Visit our website for pricings. Room: Visit our website for venues. Sponsor: Ballroom Dance Club.
 - **6.370: The MIT ACM/IEEE Annual Programming Competition**. Registration opens today!!
 The MIT ACM/IEEE Chapter's annual programming competition is held during IAP. This year we are offering competitors a chance to implement the artificial intelligence for an army of virtual robots in a 3D realtime strategy game. . free. Sponsor: MIT ACM/IEEE.

Monday, December 3

12:00 a.m. - **CCRR Grants Application Deadline**. Monthly deadline for CCRR grant proposals. free. Sponsor: Committee on Campus Race Relations.
 8:30 a.m. - 8:45 a.m. - **Morning Prayer**. Brief time of prayer for peace and justice. All are welcome. . free. Room: MIT Chapel. Sponsor: Protestant Student Community, Tech Catholic Community, Episcopal Ministry at LEM.
 "The Future of Afghanistan". An informal talk featuring a French expert on Afghanistan. Speaker will be introduced by MIT Political Science Professor Stephen Van Evera, Associate Director of the MIT Center for International Studies.. free. Room: Center for International Studies, Bldg. E38, 6th floor conference room. Sponsor: Center for International Studies.
 12:00 p.m. - 1:00 p.m. - **PowerPoint Quick Start**. PowerPoint makes it easy to jazz up your presentations. Get an introduction to what PowerPoint can do. Find out how to create slide shows. Learn how to use drawing tools, graphics, and create handouts. . free. Room: N42 Demo Center. Sponsor: Information Systems.
 4:00 p.m. - 5:00 p.m. - **Colloquium: "The dual life of a high-T_c superconductor"**. "The dual life of a high-T_c superconductor". free. Room: 13-2137 (von Hippel Room). Sponsor: Center for Materials Science & Engineering.
 4:00 p.m. - 5:00 p.m. - **EECS Colloquium**. Practical Byzantine Fault Tolerance. free. Room: Edgerton Hall, 34-101. Sponsor: EECS.
 4:00 p.m. - 5:00 p.m. - **Continuum Seminar: "Actin polymerization engines"**. Abstract: Actin polymerization driven motility plays a central role in cell morphology and motility. While the biochemical mechanism underlying this biomolecular engine is well studied, the biophysical basis for actin-based movement is poorly understood. To understand the coupling between biochemical kinetics and mechanical force production, we consider a model system, *Listeria monocytogenes*, a pathogenic bacterium which moves in cells using an actin polymerization engine. We were able to reconstitute the motility in vitro using bovine brain extract. By allowing the motile reaction to occur in an inert polymer gel (methylcellulose - MCL) of varying concentration, the noise in the experiment can be suppressed, and the velocity of *Listeria* can be systematically controlled. Our results showed that the motion proceeds in a step-like manner, consistent with earlier observations inside cells. The step size is seemingly constant over a range of MCL concentrations; however the pause time increases dramatically as a function of concentration. Simultaneous video microscopy and microrheology enable us to use the data to get a force-velocity curve for this polymerization engine. The result is consistent with the idea that the engine is self-strengthening; at larger loads, the engine adjusts by taking longer pauses, recruiting more filaments and generating a higher power. . Room: 3-370. Sponsor: Mechanical Engineering Dept..
 4:00 p.m. - 6:00 p.m. - **STS Colloquium**. "Everything Begins in the Ocean—Including Science". free. Room: E51-095. Sponsor: STS. History of Science Department, Harvard University.
 4:00 p.m. - 5:00 p.m. - **"Gluing and wormholes for the Einstein constraint equations."**. free. Room: MIT Room 2-143. Sponsor: Differential Geometry Seminar, Department of Mathematics.
 5:00 p.m. - **MIT Chamber Music Society Concert**. The Chamber Music Society, coordinated by Professor Marcus Thompson, is comprised of students selected by audition to study and perform chamber music literature. Ensembles coached by John Harbison. Bach's A Musical Offering BWV 1079; Mozart's Quartet for Piano and Strings. free. Room: Killian Hall. Sponsor: Music and Theater Arts Section.
 7:30 p.m. - 8:30 p.m. - **Finals Pajama Party**. What do late nights, pajamas and finals have in common? Come find out! We'll help you learn how to conquer final exams. Games and prizes are available; come dressed in your best PJs!. free. Room: Talbot Lounge, East Campus. Sponsor: Learning Strategies.
 8:00 p.m. - 12:00 a.m. - **Monday Night Football at the Ear**. Watching football at the Ear makes Dennis Miller a little more tolerable. The Thirsty Ear Pub is located in the Ashdown House basement. Enter through the courtyard. Hours: Monday: 8 pm - 12 am, Tuesday - Thursday: 7 pm - 1 am, Friday: 4 pm - 1 am. Must be over 21. Proper ID required.. Free. Room: The Thirsty Ear Pub. Sponsor: The Thirsty Ear Pub.

Crossword Puzzle

ACROSS

- 1 Ostrichlike bird
- 4 Help!
- 7 Medium
- 14 Backtalk
- 15 Eisenhower
- 16 Like very narrow roads
- 17 Against laws
- 19 Afternoon show
- 20 Bathing au naturel
- 22 Determine weight by lifting
- 23 Pop
- 24 Tendon
- 27 Clarinetist Shaw
- 29 "Death in Venice" author
- 31 Actress Blanchett
- 32 Regret
- 34 Cleansing agent
- 36 Quaint hotel
- 37 Tourists' totes
- 41 Adler and Benson
- 43 Ring legend
- 44 Workplace watchdog grp.
- 46 Part of IOU
- 47 Womanizer
- 49 Whopper
- 51 Island group
- 55 Steps over a fence
- 57 Ivey or Elcar
- 59 Dilettante's painting
- 60 Crucial times
- 63 Limerick's river
- 65 Ancient period
- 66 Listening attentively
- 67 ___ and tuck
- 68 Holy sister
- 69 Paris' Les Champs ___
- 70 South African golfer
- 71 Social insect

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DOWN

- 1 Inventor Gray
- 2 Dairy farmer, at times
- 3 Exalt
- 4 Indication
- 5 Approves
- 6 Rarely
- 7 Blue-and-yellow fish
- 8 Ginger cookie
- 9 Abominable snowmen
- 10 Outpatient facility
- 11 Finger flaw
- 12 Made of: suff.
- 13 Third grade
- 18 Whole
- 21 Lupino and Tarbell
- 25 Sicilian peak
- 26 Harmless cysts
- 28 Continental dollar
- 30 W. alliance
- 33 "___ of Eden"
- 35 Church seats
- 37 Crow calls
- 38 Scads
- 39 Of war
- 40 Subtle differences
- 42 Intro
- 45 Actor Alda
- 48 Fails to pass
- 50 Word with fire or search
- 52 Tomorrow, in Tijuana
- 53 Use more firepower
- 54 Missing
- 56 First name of 70A
- 58 March follower
- 61 Nary a one
- 62 How clumsy of me!
- 63 Haggard novel
- 64 Actor Linden

Solution, page 14

EARN UP TO \$600 / MONTH

We are looking for healthy men to participate in our **Anonymous Sperm Donor Program**. To qualify, you must be between 19-39 years old, enrolled in or graduated from a four year college or university and able to commit for 9-12 months. Donors will be compensated \$50 for each acceptable specimen.

Call California Cryobank's CAMBRIDGE facility at **617.497.8646** M-F, 8:30 a.m - 5:00 p.m. or email donors@cryobank.com to see if you qualify.

The Fannie and John Hertz Foundation takes great pleasure in announcing its Fall 2001 Fellowship Awards to MIT graduate students.

Mr. Russell Cox
 Department of Electrical Engineering and Computer Science

Mr. Garry Maskaly
 Department of Materials Science and Engineering

Mr. David Oertel
 Department of Chemistry

Mr. Joel Rosenthal
 Department of Chemistry

are four of 21 Hertz Foundation Fellows chosen from a field of 570 applicants to receive a five year, \$200,000 Graduate Fellowship Award in the Applied Physical Sciences. The Hertz Foundation would like to extend its congratulations to Massachusetts Institute of Technology for attracting these Fellows to their graduate programs.

See www.hertzfoundation.org for more details.

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Clubs

Axis
13 Lansdowne St., 617-262-2437
Sundays: See Avalon below.
Mondays: *Static*. Gay, casual dress. \$5, 18+.
Thursdays: *Chrome/Skybar*. Progressive house, soul, disco; dress code \$10, 19+; \$8, 21+.
Fridays: *Spin Cycle*. Prog. house, 80s. \$12, 19+; \$10, 21+.

Avalon
15 Lansdowne St., 617-262-2424
Sundays: *Gay Night* (with Axis on long weekends). Featuring hardcore house and techno. \$10, 21+.
Thursdays: *International Night*. Eurohouse. \$10, 19+.
Fridays: *Avaland*. House. \$15, 19+.
Saturdays: *Downtown*. Modern house, club classics, and Top 40 hits. \$15, 21+.

Karma Club
9 Lansdowne St., 617-421-9595
Sundays: "Current dance favorites" by guest DJs. Cover varies.
Tuesdays: *Phatt Tuesdays*. With Bill's bar, modern dance music. \$10.
Wednesdays: *STP*. Gay-friendly, house. \$15, 21+.
Thursdays: *Groove Factor*. House.
Fridays: *Pure*. Drum and bass, guest DJ. \$15, 19+.
Saturdays: *Elements of Life*. International House. \$15.

ManRay
21 Brookline St., Cambridge, 617-864-0400
Wednesdays: *Curses*. Goth. Appropriate dress required. \$5, 19+; \$3, 21+.
Thursdays: *Campus*. Popular tunes + House. Gay, casual dress. \$10, 19+; \$8, 21+.
Fridays: *Fantasy Factory* (First and third Friday of the month. Features kinky fetishes and industrial music.) *Hell Night* (every second Friday. 19+). Includes Goth music.) *Ooze* (the last Friday of the month.) \$10, 21+, reduced prices for those wearing fetish gear.
Saturdays: *Liquid*. Disco/hse. + New Wave. \$15, 19+; \$10, 21+.

Popular Music

Axis
13 Lansdowne St., 617-262-2437
Next: 423-NEXT
Dec. 1: Cold.
Dec. 9: H2O.
Dec. 10: DJ Krush.
Dec. 11: Genitorturers.
Dec. 12-16: Mighty Mighty Bosstones.

Avalon
15 Lansdowne St., 617-262-2424
Dec. 1: Beenie Man.
Dec. 12: Lifehouse.
Dec. 12: Jonatha Brooke.
Dec. 27: Pat McGee Band.
Jan. 18: Mission of Burma.

Berklee Performance Center
Berklee College of Music
1140 Boylston St.
Free student recitals and faculty concerts, 4 p.m. and 7 p.m. some weekdays. For info on these concerts, call the Performance Information Line at 747-8820.

Dec. 1: South Central Mass Choir.
Dec. 15: Jane Olivor.

Club Passim
47 Palmer St, Cambridge, 617-492-7679
Tuesdays: Open Mic at 8 p.m. (sign up at 7:30). \$5.
Nov. 30: Grey Eye Glances.
Dec. 3, 10 at 7:30 p.m.: Arabesque. Showcase of Arabic and Near Eastern music.

FleetCenter
Ticketmaster: 931-2787.
Dec. 3: Mix 98. 5 Holiday Hoe-

On The Town

A weekly guide to the arts in Boston
November 30 – December 6
Compiled by Fred Choi

Send submissions to ott@the-tech.mit.edu or by interdepartmental mail to "On The Town," The Tech, W20-483.

down, with Coldplay, the Cranberries, Alanis Morissette, and Bare-naked Ladies.
Dec. 9-11: Britney Spears.
Jan. 22-24: Elton John and Billy Joel.

The Middle East
Central Square, 354-8238
Ticketmaster: 931-2787.

Nov. 30: Wheat; Matt Pond.
Dec. 6: Local H.
Dec. 8: Karate.
Dec. 18: Angels of Light (Michael Gira of the Swans), Virgil Shaw.
Dec. 22: Reid Genauer (Of Strangefold), Aaron Katz Project (Of Percy).

Orpheum Theatre
1 Hamilton Pl., Boston, 617-679-0810
Ticketmaster: 931-2787

Dec. 1: Dark Star Orchestra.
Dec. 2: Brian McKnight.
Dec. 4: Lucinda Williams.
Dec. 8: King Crimson.
Dec. 14-15: Trans-Siberian Orchestra.
Dec. 31: Hybrasil.

Paradise Rock Club
967 Commonwealth Ave., Boston, Ma. 02215, 617-562-8804

Nov. 30: Dixie Dregs.
Dec. 1: Max Creek.
Dec. 2: Starsailor.
Dec. 6: Sonia Dada.
Dec. 7: Nikka Costa.
Dec. 8: Big Wu.
Dec. 11: The Nortec Collective.
Dec. 12: Ocean Colour Scene.
Dec. 14: Actual Proof.
Dec. 15: Jaguares.
Dec. 31: The Sheila Divine.

Sanders Theatre
45 Quincy St., Boston 02138, 617-496-2222

Call for schedule.

Jazz Music

Regattabar
Concert: 876-7777
1 Bennett St., Cambridge 02138, 617-662-5000

Call for schedule.
Scullers Jazz Club
DoubleTree Guest Suites, 400 Soldiers Field Rd., Boston, 617-562-4111

Nov. 30: John Pizzarelli Trio.

Classical Music

Ning An
Sun. Dec. 2 at 5 p.m. and Harvard Epworth United Methodist Church, 1555 Massachusetts Ave. in Cambridge (near Harvard Square, next to the Harvard Law School). Winner of the Third Prize in the 1999 Queen Elizabeth Music Competition and First Prize in the 2000



Soulful and folksy, Martin Sexton plays the Somerville Theater on Friday, December 14.

National Chopin Piano Competition. The programme will include: Chopin: Berceuse, op. 57, Rondo, op. 16; Rachmaninov: 3 Preludes, Sonata No. 2. Admission is free, and the location is wheelchair accessible. For further information, call 617-354-0837.

Boston Symphony Orchestra
Tickets: 266-1492.
Performances at Symphony Hall, 301 Massachusetts Ave., Boston, unless otherwise noted. For MIT students, visit web.mit.edu/arts/general/BSO.html for more information on how to get tickets.

Dec. 6 at 10:30 a.m. (rehearsal), Dec. 6, 8 at 8 p.m., Dec. 7 at 1:30 p.m.: Beethoven: Overture from the incidental music to Goethe's *Egmont*, Op. 84; Piano Concerto No. 4 in G, Op. 58; Bartok: Concerto for Orchestra. Seiji Ozawa, conductor; Dubravka Tomsic, piano. Pre-concert talk given by Helen Greenwald, New England Conservatory, one hour prior to the concert, in Symphony Hall. Free to performance ticket holders.

A performance that will leave you filled with holiday cheer. There's no better way to enjoy the spirit of the season! Performances conducted by Keith Lockhart unless otherwise noted.

Boston Holiday Pops

This season, continue the tradition of the Holiday Pops with your family and friends. Join the Boston Pops in historic Symphony Hall for Dec. 13-14, 18, 20-22, 26-29, 31, most days performances at 3 p.m. and 7:30 p.m. Check www.bso.org for full schedule and to reserve tickets.

Theater

Othello
Through Jan. 17, 2002 at the Loeb Drama Center. Russian director

a.m.-5 p.m.; Sat.-Sun., 10 a.m.-5:45 p.m. West Wing open Thurs.-Fri. until 9:45 p.m. Admission free with MIT ID, otherwise \$10, \$8 for students and seniors, children under 17 free; \$2 after 5 p.m. Thurs.-Fri., free Wed. after 4 p.m. Mon.-Fri.: introductory walks through all collections begin at 10:30 a.m. and 1:30 p.m.; "Asian, Egyptian, and Classical Walks" begin at 11:30 a.m.; "American Painting and Decorative Arts Walks" begin at 12:30 p.m.; "European Painting and Decorative Arts Walks" begin at 2:30 p.m.; Introductory tours are also offered Sat. at 11 a.m. and 1:30 p.m. Permanent Gallery Installations: "Late Gothic Gallery," featuring a restored 15th-century stained glass window from Hampton Court, 14th- and 15th-century stone, alabaster, and polychrome wood sculptures from France and the Netherlands; "Mummy Mask Gallery," a newly renovated Egyptian gallery, features primitive masks dating from as far back as 2500 B.C.; "European Decorative Arts from 1950 to the Present"; "John Singer Sargent: Studies for MFA and Boston Public Library Murals." Gallery lectures are free with museum admission.

Museum of Science
Science Park, Boston. (723-2500), Daily, 9 a.m.-5 p.m.; Fri., 9 a.m.-9 p.m.; Sat.-Sun., 9 a.m.-5 p.m. Admission free with MIT ID, otherwise \$9, \$7 for children 3-14 and seniors. The Museum features the theater of electricity (with indoor thunder-and-lightning shows daily) and more than 600 hands-on exhibits. Ongoing: "Discovery Center"; "Investigate! A See-For-Yourself Exhibit"; "Science in the Park: Playing with Forces and Motion"; "Seeing Is Deceiving." Ongoing: "Friday Night Stargazing." Fri., 8:30 p.m.; "Welcome to the Universe," daily; "Quest for Contact: Are We Alone?" daily. Admission to Omni, laser, and planetarium shows is \$7.50, \$5.50 for children and seniors. Current Laser Light shows: *Laser Beastie Boys*, *Laser Rage-fest 3*, *Laser Pink Floyd: Dark Side*, *Laser Aerosmith*.

Blue Man Group
Charles Playhouse, 74 Warrenton Street, Boston, indefinitely. Curtain is at 8 p.m. on Wednesday and Thursday, at 7 and 10 p.m. on Friday and Saturday, and at 3 and 6 p.m. on Sunday. Tickets \$35 to \$45. Call 426-6912 for tickets and information on how to see the show for free by ushering.

Exhibits

Isabella Stewart Gardner Museum
280 The Fenway, Boston. (566-1401), Tues.-Sun. 11 a.m.-5 p.m. Admission \$10 (\$11 on weekends), \$7 for seniors, \$5 for students with ID (\$3 on Wed.), free for children under 18. The museum, built in the style of a 15th-century Venetian palace, houses more than 2,500 art objects, with emphasis on Italian Renaissance and 17th-century Dutch works. Among the highlights are works by Rembrandt, Botticelli, Raphael, Titian, and Whistler. Guided tours given Fridays at 2:30 p.m.

Museum of Fine Arts
465 Huntington Ave., Boston. (267-9300), Mon.-Tues., 10 a.m.-4:45 p.m.; Wed., 10 a.m.-9:45 p.m.; Thurs.-Fri., 10

special effects and costumes. Filled with the wonder and magic of the holidays, *The Nutcracker* follows a young girl named Clara on her dream adventure. The ballet is set to the music of Tchaikovsky and is choreographed by Bruce Marks, Anna-Marie Holmes, Sydney Leonard, and Daniel Pezig. Tickets \$65-\$14. Visit www.bostonballet.org for more information.

The Films of Frederick Wiseman
The Museum of Fine Arts offers a complete retrospective of Wiseman's 31 documentaries, every Saturday, through April 14, 2002. At the Remis Auditorium Museum of Fine Arts, Boston, 02115 unless otherwise noted. For tickets and more information, call 369-3770. Tickets are \$8, \$7 MFA members, seniors, students.

Dec. 8 at 10:30 a.m.: *Ballet* (1995, 170 min.). *Ballet* is a profile of the work of the American Ballet Theatre, an important classical ballet company. The film presents the Company in rehearsal in their New York studio and on tour in Athens and Copenhagen. Choreographers, ballet masters and mistresses are shown at work with principle dancers, soloists, and the corps de ballet. Other sequences involve the administration and fund raising aspects of the Company.

Jan. 9 at 8 p.m.: *Titicut Follies* (1967, 84 min.). The film is a stark and graphic portrayal of the conditions that existed at the State Prison for the Criminally Insane at Bridgewater, Massachusetts. *Titicut Follies* documents the various ways the inmates are treated by the guards, social workers and psychiatrists.

Jacqueline Kennedy: The White House Years
Through Feb. 28. At the John F. Kennedy Library, Columbia Point, Dorchester, MA. Using the Kennedys' path to the White House as a framing device, Vogue editor Hamish Bowles presents outfits along with related material. Photos of events and appearances are blown up, and correspondence with designers proves that Kennedy's seemingly effortless grace was part of an overall exacting attention to detail. Open most weekdays and weekends 9 a.m. to 5 p.m. Admission \$15-\$8. May be crowded.

A Studio of Her Own: Women Artists in Boston 1870-1940
Through Dec. 2, 2001, at the Museum of Fine Arts. This exhibit presents over eighty of the finest paintings, sculpture, and decorative arts created by women at the turn of the last century. Drawn equally from the MFA's holdings, other museums and institutions, and private collections, the exhibition includes works by over forty artists. While some of them are well known, like Lilian Hale and Anna Vaughn Hyatt, many others remain uncelebrated. No matter the level of their fame, their art represents an aesthetic achievement of great significance and beauty.

Mahogany
Dec. 9 at 7 p.m.: Other Music Harvard Square (90 Winthrop St., Cambridge MA) proudly welcomes Mahogany for an in-store performance. Free admission, but limited capacity. For more information, call 617-491-4419 or visit www.simdisc.com/index2.html.

FRIDAY'S PICK OF THE WEEK

Andy Stochansky
Canadian musician brings his eclectic mix of sounds to Boston, ranging from the serene to the rockin'.

Dec. 4: The Lizard Lounge, 21+, 1667 Mass Ave, 617-547-0759
Dec. 5: The Toad, 21+, 1912 Massachusetts Ave, 617-497-4950

Amelie
★★★★ 1/2 stars!
--Jay Carr, BOSTON GLOBE
"Amelie" is a fey charmer. You've heard of "The French Connection". "Amelie" is, par excellence, the French confection."

Shows Daily at 12:05, 1:05, 1:40, 2:50, 3:50, 4:30, 5:35, 6:40, 7:10, 8:25, 9:25, 9:50
Early show Mon-Sat at 11am

Sidewalks of New York
Ed Burns' romantic comedy has an ensemble cast including Heather Graham, Rosario Dawson, and Dennis Farina. Jamie Malanowski of the New York Times says, "A smartly observed comedy of manners. Exceeds the promise of Edward Burns' widely praised debut, 'The Brothers McMullen'!"

Shows Daily at 1:00, 2:30, 3:40, 5:00, 6:30, 7:40, 9:15, 10:05
Early show Mon-Sat at 11:30

Novocaine
--Jay Carr, BOSTON GLOBE
"Wickedly entertaining! 'Novocaine' is a battle between chaos and the illusion of order, which is to say, between chaos and even more chaos. As the tightly coiled Martin unwinds with terrified delight, he becomes a deliciously discombobulated pilgrim in Atkins' wickedly entertaining moral void."

Shows Daily at 12:15, 1:15, 2:35, 3:30, 5:10, 6:10, 7:25, 8:40, 10:10
Early show Mon-Sat at 10:45am

Waking Life
"★★★★"
--Jay Carr, BOSTON GLOBE
"Much is called innovative. Little is. Richard Linklater's 'Waking Life' is one of the exceptions. It's film reinventing itself before our eyes, turning into sort of a liquid, flowing painting, using old techniques in new ways."

Shows Daily at 2:15, 3:20, 4:45, 7:35, 9:20, 10:00
Early show Mon-Sat at 11:20

Man
This critically-acclaimed film is the latest offering from the Coen brothers, who delighted audiences with "O, Brother, Where Art Thou?" and "Fargo". Stars Billy Bob Thornton, James Gandolfini, Frances McDormand, and Michael Badalucco.

Shows Daily at 12:20, 1:20, 4:20, 6:25, 7:20, 9:55
Early show Mon-Sat at 11:15am

Attention School of Engineering Sophomores:

So you've got the technical skills, but do you have **all** that it takes?

Allow us to introduce you to:

UPOP, is a new program open to all engineering sophomores* that will allow you to develop your engineering and business skills while providing you a taste of real-life work experience.

Want to know more? Come to an info session:

Room 4-370 at 7:30pm to 8:30pm

Tuesday, December 4th – A thru G

Wednesday, December 5th – H thru Q

Thursday, December 6th – R thru Z

*To be sure we have enough **pizza** for everyone we prefer you attend the info session that corresponds with your last name.*

* Details regarding enrollment procedures for students in different departments will be given at the information sessions

resonance

Saturday

Dec 1st

8:30 pm

10-250

fall concert!

with guest group Brandeis VoiceMale

Newman Talks About Research Combining Space and Biology

Mir Research On Effects of Gravity Leads to Mars Discussion

By A. S. Wang
STAFF REPORTER

The Biomedical Engineering Society concluded its fall Distinguished Lecture Series yesterday with a talk by MacVicar Fellow and Associate Professor of Aeronautics and Astronautics Dava J. Newman.

Newman's lecture, "From Mir to Mars: Aerospace Biomedical Engineering," focused on her experiment on the effect of low gravity on human mobility.

Human health in space

Newman's talk began with a discussion of her research on the Russian Space Station, Mir. Newman's two-year experiment attempted to understand the impact of extended exposure to a lack of gravity, known as microgravity, on human mobility.

"After roughly 30 days, I found that the astronauts are completely adapted to the microgravity environment," Newman said. "And in cases of such extended space flight, there is significant evidence of physiological de-conditioning."

She gave the example of muscle density loss, where "the data shows a bone mineral density loss of 1.3% with every 30 days of exposure to microgravity." Among her other findings, Newman was excited to report that "There is

very strong evidence of a pre-programmed motion response in the brain that is 'retrainable.'"

Newman discusses Mars travel

The second part of Newman's talk focused on more general topics in of aeronautical research. Newman talked about the research implications of the International Space Station. "The construction of the International Space Station is scheduled for a 2007 or 2008 completion ... and I am optimistic that 2014 will make a great launch date for a manned Mars exploration mission."

"That gives us only 10 years to develop all the technologies and capabilities we need, and I am willing to devote 10 years to help put man on Mars," Newman said.

Among current technological insufficiencies, Newman cited the space-suit as a major limitation. "We currently have a 300 pound suit ... which is okay in a weightless space station, but on Mars we are really looking for something ... much lighter!"

"Astronauts need to be able to get into their suit easily, like putting on regular clothing," Newman said. Interesting suggestions Newman has considered include a spray-on suit. "I do not read science fiction," Newman said, "... technologies we have recently

found are actually very promising."

However, "NASA does not currently fund any programs or research for any manned mission to Mars, they only fund programs involving robots," Newman said. Still, she is very confident that in the near future, manned Mars exploration will happen. Thus she concluded her talk encouraging students to join her in this area of research.

BMES offers expanded schedule

BMES Vice-President David Yin '03 said after the lecture, "BMES has definitely become more active, especially this year. We are going to continue to do these lectures on a wider range of topics relating to current events."

"Over IAP, BMES will be offering a symposium of six to seven faculty members," said BMES President Philip Mahdjoob-Alexander '02. "MIT's [bioengineering] resources are scattered. BMES tries to bring some of these resources together, the IAP symposium is designed to do that."

The Newman talk followed an earlier talk by Professor Laurence R. Young on human space exploration.

The talk was co-sponsored by the Biotechnology Process Engineering Center.

CSC Officer Provision Mandates Leadership With Chinese Origins

CSC, from Page 1

edge and understanding of Chinese culture so the group does not become simply a "social club."

Purinton said that she did not pursue the matter directly because "the ASA plays that role," and she thought students would object if she stepped in. However, she added that "if something blows up about this, that's when I would step in."

Provision likely to be removed

Saenz Otero brought up the matter at last night's regular ASA meeting, although he had not yet discussed the matter with the CSC.

"We require that all ASA-recognized groups acknowledge MIT's discrimination policy," Saenz Otero said. "I don't think

there's much disagreement on the issue here. The amendment would be a violation of MIT and ASA non-discrimination policy and we would make sure it was undone."

Saenz-Otero said the ASA would meet with the CSC and ask them to remove the provision from their constitution.

If the ASA asks the group to remove the clause requiring Chinese origin, Chau said that she personally did not see a problem, but did not want to speak for the entire club.

Chang said that he thought the CSC would be averse to removing the provision completely, since the reduced requirement was reached only after three cabinet meetings. He said the CSC would be open to clarifying the policy rather than removing it outright.

Colleagues Recommend Zue to Fill Vacated Spot

Zue, from Page 1

recognition. He brings his administrative background and leadership in research."

Zue was also successful in bringing sponsors for the lab, specifically the Defense Advanced Research Projects Agency, which was a large concern for the committee. "Our research budget is about 20 million per year, and DARPA has been a primary source of funding from the government. We also have many industrial

sponsors," Rivest said.

LCS future focused on research


Zue said that he hopes to continue the breakthrough research of the era and administration that preceded him. "In this era," Zue said, "we would like to expand into areas that have not already been in computer science."

Not surprisingly, Zue has high hopes for the fields he has researched in the past, specifically speech recognition and computational biology. "I think computer science has a lot to learn from and offer to biology," Zue said. He mentioned how much the Human Genome Project benefitted from computer science, and hopes that other combined projects in the future could achieve similar results.

He also hopes to greatly advance Project Oxygen, a joint project between the Artificial Intelligence Laboratory and LCS. The project attempts to integrate computer technology into everyday chores of life. "We are doing a lot of very interesting things," he said.

Zue said plans to continue as LCS director for a few years. He cited his love for the laboratory as the main reason he decided to take the job.

Jeffrey Greenbaum contributed to the reporting of this story.




Wednesday, December 5, 2001
7:00 pm
Room 10-250
Massachusetts Institute of Technology

CREATING TOMORROW'S LEADING FIRMS

MIT \$50K

Entrepreneurship Competition

\$1K Awards



Keynote Speaker:
Mike Phillips
Co-founder and Chief Technology Officer
SpeechWorks International, Inc.

<http://50k.mit.edu>

Solution to Crossword

from page 11

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Positions Available

Positions Available for live-in Resident Advisors for MIT's Fraternities, Sororities, and Living Groups

Please send a resume and cover letter to the Office of Fraternities, Sororities, and Living Groups, W20-549, 84 Massachusetts Avenue, Cambridge, MA 02139, Attn: Jennifer Johnson.

Description:

A Resident Advisor is expected to serve as a mentor, guide, resource, and tutor for resident students and to serve as a liaison between the chapter and the Dean's Office. While not charged with enforcement responsibilities, he/she would be expected to know and have their students aware of MIT policies and of common sense safety practices. (Training provided.)

Remuneration: All Resident Assistants receive free room and board. In addition, some organizations may include a small stipend. Each Resident Advisor is furnished with a single room in the chapter facility.

Qualifications:

A BA or BS and/or graduate enrollment at an accredited institution are required.

Squatting Issue Draws Debate

Housing, from Page 1

make a preliminary housing selection in mid-June and receive a room assignment by July 22.

Benedict added that rooming assignment chairs would continue to have authority over room assignment within a residence hall, both during the summer and after the Orientation Adjustment Lottery.

IFC events scaled down

IFC involvement will be significantly reduced during 2002 orientation, said IFC Recruitment Chair Joshua S. Yardley '04. Formal fall recruitment by fraternities and living groups will take place well into the term, from September 20 to October 4. Panhellenic rush will not begin until the last week of IAP.

The summer IFC mailing will not be sent out until July, after freshmen have indicated their residence hall preferences. The Interactive Introduction to the Institute CD-ROM will be split into separate residence hall and FSILG discs, to be mailed separately in the May Orientation mailing and the July IFC mailing.

Adjustment lottery draws debate

Discussion of the adjustment lottery focused on whether freshmen should be penalized for failing to enter the lottery.

"We're trying to come up with

positive rewards" such as a raffle, so that freshmen will be encouraged to enter the lottery even if they wish to remain in their assigned residence hall, said Dormitory Council President Matthew S. Cain '02.

"If you don't enter the lottery at all, you're going to be in the same dorm ... You cannot be put someplace you didn't choose," said Residential Life Associate Anthony E. Gray. "In the [Bacow] report, you are guaranteed not to do any worse than in the adjustment lottery."

Howard N. Kleinwaks '02, co-chair of the Committee on Housing and Orientation, dismissed concerns that freshmen would not enter the lottery. "Everybody is told that they have to go to that page and click on it," he said.

"The answer is that you don't tell them" that they don't have to enter, said UA President Jaime E. Devereaux '02.

Cain advised against penalizing freshmen who may simply forget to sign up. "I really don't want to make them feel like they're a loser already."

Length of orientation questioned

Some students who attended the meeting expressed concern over the short period of time allotted for Residence Orientation, and proposed adding a few days on either end. "We don't have any days, we have

evenings," said Josiah D. Seale '03 about the proposed schedule.

Ricky A. Gresh, assistant director of student life programs, explained that a long orientation made faculty participation difficult. In addition, he said, the view of the faculty was that a long orientation period has caused "exhaustion" at the start of the fall term.

"This is something that faculty want," Cain said.

Students also questioned the rationale behind scheduling residence activities in the evenings, with advanced standing exams scheduled for the following day. "I understand the faculty concerns, but do they want students to do badly on the exams?" asked Sherri E. Davidoff '02.

One favorable aspect of the schedule is that it allows pre-orientation programs to begin and end on later dates. "Up to this time, Interphase and international students have been excluded from pre-orientation programs" due to overlapping schedules, said Julie B. Norman, associate dean for academic resources and programming.

Cain described the RSIT plan as a good compromise given the complexity of the report issued by former Chancellor Lawrence S. Bacow '72. "The Bacow report is as easy to interpret as the Constitution or the Bible," Cain said.

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SPORTS

Fencing Team Dominates Meet

Purcell, Bras Lead Way in Sweep of Five New England Schools

By Curtis Wade III
TEAM MEMBER

MIT's fencing teams began their seasons on November 17 with victories over Harvard University and other New England Fencing Intercollegiate Conference (NEIFC) opponents.

Caroline M. Purcell '02 and Rafael E. Bras '02 remained undefeated on saber and led the way as the Engineers tallied victories over UMass Boston, University of New Hampshire, Harvard, Wellesley, and Boston University. The victories over Harvard and Wellesley, in addition to improving the Engineer's NFC status, count as NCAA victories and improve the men's record to 4-0 (1-0 NCAA) and the women's to 5-0 (2-0).

Men weather Harvard attack

The first two schools, UMass and UNH, proved an easy warmup for the men's pending showdown with Harvard. In team format, three fencers from each squad—epee, foil and saber—fence each of the opposing school's respective fencers, for a total of nine bouts per squad and 27 bouts per school.

The Engineers defeated UMass by the comfortable margin of 19-8, and UNH by the blistering score of 25-2. Bras' 3-0 sweep of UMass was matched by 3-0 efforts by Douglas J. Quattrochi '04 and Galen E. Pickard '05. Saber and foil finished 7-2.

Against UNH, the saber squad swept 9-0 and both foil and epee finished 8-1. Bras continued his undefeated rampage through the competition, supported by the 2-0 and 3-0 efforts of fellow saber fencers Richard D. Burstein '02 and Jason M. Levine '03. William F. MacFarlane '05 and Vincent Chen '05 went undefeated in foil, while Matthew R. Levy '04 joined Pickard in defeating all of UNH's epee fencers.

The high point of the day came as the men faced a Harvard team that had steadily narrowed the Engineers' margin of victory from 21-6 three years ago to 14-13 and 15-12 in the past two years. With the long tradition of MIT dominance over Harvard on the line, intensity surrounded every bout as the race for 14 wins began.

Harvard took a slight lead in the first round as Coach Jarek Koniusz looked on, every bit as tense as his fencers. MIT gained the advantage early in the second round, and never looked back.

Team captain Oliver J. Chadwick '02 (foil) and epee squad leader Neal K. Devaraj '02 joined Bras in going undefeated. 2-1 efforts by MacFarlane, Levine and Burstein, along with additional victories by Chen and epeeist Curtis Wade III '01, clinched the 17-10 win.

Keyed to a higher pitch after all the excitement, the Engineers pummeled BU 24-3. Anthony P. Reinert

'03, Bras, Levine, Burstein, MacFarlane, Chen, Quattrochi and Levy vanquished all their opponents, as saber and foil finished 9-0. The saber squad boasted the best record for the day, finishing a combined 32 and 4.

Women sweep opponents

Not to be shown up by their male counterparts, women's saber put together a mind-boggling 41-4 squad performance. Jennifer A. McKeehan G and Priscilla del Castillo '04 added 13-2 performances to Purcell's 15-0 romp as the squad swept UNH, Wellesley and BU, and finished 7-2 against UMass and Harvard. 12-1 and 10-2 outings by Susannah M. Dorfman '05 and Clarissa Y. Smith '04 led the foil and epee squads to outstanding 36-9 and 35-10 records.

The women's first two opponents, UMass and UNH, posed little trouble as MIT posted 23-4 and 25-2 victories. Christine A. Yee '03, and Lisa M. Bell '04 added three victories apiece and Danielle M. Morse '02 two more as the women foilists swept the UMass squad. Epee matched saber's 7-2 finish as Smith went undefeated and Michelle A. Nadermann '03 contributed two more wins.

Foil and epee both posted 8-1 marks which led to saber's sweep of UNH. Morse and Dorfman went 3-0 and Natalie E. Cusano '02 and Jennifer R. Lue '03 added two wins apiece as Smith posted another 3-0 record.

The women showed little signs of stopping as they rolled over their presumably tougher NCAA opponent Wellesley by a score of 19-8. Dorfman, Yee and Morse went 2-1 and Nadermann led the epee squad with a 2-1 performance.

The Engineers next faced a Harvard team that had won two of the last three meetings, including one of the rare losses in last year's amazing 18-3 season. Undaunted, MIT rose to the challenge, quickly establishing their role as steamroller rather than underdog, handing the Crimson a 19-8 defeat. Dorfman and Smith went 3-

0 and were supported by Cusano and Nadermann's 2-1 efforts.

The women ended the day by picking BU apart with a 26-1 victory, showing again why they are the reigning New England Champions. Purcell, Del Castillo, McKeehan, Bell, Dorfman, Cusano, Lue and Nadermann all went 3-0.

MIT faces challenging matches

Under Coach Koniusz, MIT fencing has earned a healthy respect in recent years. Top schools such as St. John's, Penn State (National Champions five of the last six years), and University of Pennsylvania (perennial top 10 finisher) now routinely schedule meets with MIT. Consequently, MIT has one of the toughest schedules in the country, and fences over 20 times a year. Some schools (like Yale) schedule only 8 opponents.

Both teams travel to Brandeis tomorrow to square off against local rivals Brandeis and Boston College as well as Brown, Vassar, and the defending National Champion St. John's team. MIT finished 12th in the nation last year, their highest finish since the NCAA went to a combined men's and women's format during the 1989-1990 season. This finish placed them ahead of every other Division III fencing program in the nation, and above half the Division I programs, including Brown. Barring St. John's, and one close loss to Brown two years ago, the women have won every meeting against these schools in the last three years. The men look to avenge last year's narrow losses to BC and continue their winning streak against a Brandeis team that has split the last eight meetings.

Win Over FSC Pushes Men's Streak to Four

By Rich Weber

The Men's basketball team won its fourth straight game on Tuesday, defeating Framingham State College 77-46. Strong guard play by freshman Daniel F. Kanamori '05 and the well-played inside game of Kyle T. Doherty '04 and Michael E. Huhs '05 allowed the Beavers to avenge last season's loss to FSC.

On the first play of the second half, Kanamori hit Doherty with an alley oop dunk. The crowd exploded, and Framingham's chances of a comeback diminished. The Rams' lack of offense kept them from making a serious run against the Engineers' 20 point lead throughout the game.

Huhs' insertion into the starting lineup sparked him to produce 11 points and earn 7 rebounds. His play, along with Doherty's 10 points and 5 rebounds, gave the Engineers too much strength in the frontcourt for the Rams to handle. As Huhs becomes more aggressive around the backboard in future games, he and Doherty will be looking to feast on the small NEWMAC forwards.

Adam J. Gibbons '05 led the Engineers in scoring for a second straight game, with 17 points. His sweet touch from the outside and quick dribble gave him many weapons with which to attack hopeless defenders. "Gibbons will most likely continue to improve, and could turn into the league's top freshman," said Captain Neal E. Brenner '03.

Kanamori put on another passing and defensive clinic with 10 assists and five steals. Late in the game, he

threw a fake around the back pass, then cupped it around the defender to a streaking Sebastian B. Heersink '03 for the easy deuce. His circus pass and alley oop were legitimate Sports-center highlights. "It's just been too easy, if the games continue like this, I'm gonna stop playing," he said.

The Engineers' next two games will be home against Rensselaer Polytechnic and California Institute of Technology, as the Tech School Clash has moved from Chicago to Cambridge. Friday night's game should be exciting, with the Engineers 2.5 point underdogs to a strong RPI. Cal Tech owns the worst record in all of NCAA basketball for the past 3 years, and are 25 point underdogs to the Beavers.

| | 1 | 2 | Total |
|------------------|----|----|-------|
| Framingham State | 21 | 25 | 46 |
| MIT | 38 | 39 | 77 |

| | All FG | 3 Pt | FT | A | PF | Pa | A TO | BLK | STL |
|--------------------|--------|------|-------|----|----|----|------|-----|-----|
| MIT | M.A. | M.A. | M.A. | A | PF | Pa | A TO | BLK | STL |
| *Dany Kanamori | 3-4 | 1-3 | 2-4 | 3 | 2 | 9 | 10 | 2 | 1 |
| *Andrew Tisa | 1-8 | 1-6 | 0-0 | 3 | 1 | 3 | 1 | 0 | 0 |
| *Michael Huhs | 5-7 | 0-0 | 1-1 | 7 | 2 | 11 | 0 | 1 | 0 |
| *Adam Gibbons | 7-11 | 2-5 | 1-3 | 5 | 2 | 17 | 3 | 2 | 2 |
| *Kyle Doherty | 4-10 | 0-0 | 2-4 | 4 | 5 | 10 | 0 | 1 | 3 |
| Alexander Phillips | 1-3 | 0-0 | 1-2 | 2 | 1 | 3 | 2 | 0 | 0 |
| Neal Brenner | 1-2 | 0-1 | 0-1 | 1 | 2 | 0 | 1 | 0 | 0 |
| Stuart Laval | 2-3 | 0-0 | 0-0 | 3 | 1 | 4 | 0 | 1 | 0 |
| Boris Paszkale | 2-3 | 0-1 | 6-6 | 7 | 3 | 10 | 1 | 4 | 1 |
| Sebastian Heersink | 3-5 | 0-0 | 2-2 | 4 | 2 | 8 | 1 | 1 | 0 |
| John Miller | 0-0 | 0-0 | 0-0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Luke Radorfer | 0-1 | 0-0 | 0-0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Framingham State | 17-41 | 5-22 | 7-16 | 44 | 23 | 46 | 9 | 25 | 6 |
| MIT | 29-59 | 4-16 | 15-23 | 41 | 20 | 77 | 17 | 17 | 15 |

| Shooting | First Half | Second Half | Total |
|----------|-------------|-------------|--------------|
| MIT | M.A. Per | M.A. Per | M.A. Per |
| All FG | 8-29 27.60% | 9-32 28.10% | 17-61 27.90% |
| 3 Pt FG | 1-9 11.10% | 2-9 22.20% | 3-18 16.70% |
| FT | 3-12 25.00% | 6-11 54.50% | 9-23 39.10% |

| Shooting | First Half | Second Half | Total |
|------------------|--------------|--------------|--------------|
| Framingham State | M.A. Per | M.A. Per | M.A. Per |
| All FG | 14-30 46.70% | 15-29 51.70% | 29-59 49.20% |
| 3 Pt FG | 3-10 30.00% | 2-7 28.60% | 5-17 29.40% |
| FT | 8-10 80.00% | 7-13 53.80% | 15-23 65.20% |

| | 1 | 2 | Total |
|------------|----|----|-------|
| Anna Maria | 32 | 35 | 67 |
| MIT | 20 | 26 | 46 |

| | All FG | 3 Pt | FT | A | PF | Pa | A TO | BLK | STL |
|----------------------|--------|------|-------|----|----|----|------|-----|-----|
| MIT | M.A. | M.A. | M.A. | A | PF | Pa | A TO | BLK | STL |
| *Megan Dougherty | 2-11 | 1-5 | 5-9 | 3 | 4 | 10 | 2 | 3 | 0 |
| *Amy Mok | 3-16 | 1-7 | 0-0 | 3 | 1 | 7 | 2 | 1 | 0 |
| *Crystal Russell | 3-7 | 0-0 | 3-7 | 20 | 2 | 9 | 3 | 9 | 0 |
| *Allison Johnson | 2-4 | 0-1 | 0-0 | 1 | 1 | 4 | 2 | 1 | 0 |
| *Helena Kadyaszewski | 2-8 | 0-0 | 1-2 | 11 | 4 | 5 | 0 | 4 | 0 |
| Meg Hendry-Bryant | 2-5 | 0-0 | 0-2 | 6 | 7 | 4 | 0 | 0 | 0 |
| Lauren Tsui | 2-7 | 1-5 | 0-1 | 3 | 1 | 5 | 3 | 3 | 0 |
| Cecily Way | 0-1 | 0-0 | 0-0 | 2 | 0 | 0 | 0 | 1 | 0 |
| Joanna Nason | 0-1 | 0-0 | 0-0 | 0 | 1 | 0 | 1 | 1 | 0 |
| Connie Tang | 1-2 | 0-0 | 0-2 | 5 | 7 | 2 | 0 | 0 | 1 |
| Blair Connolly | 0-0 | 0-0 | 0-0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Anna Maria | 23-64 | 5-15 | 16-26 | 43 | 21 | 47 | 14 | 10 | 3 |
| MIT | 17-44 | 3-18 | 9-23 | 59 | 19 | 46 | 13 | 23 | 6 |

| Shooting | First Half | Second Half | Total |
|----------|-------------|-------------|--------------|
| MIT | M.A. Per | M.A. Per | M.A. Per |
| All FG | 8-35 22.90% | 9-29 31.00% | 17-64 26.60% |
| 3 Pt FG | 1-9 11.10% | 2-9 22.20% | 3-18 16.70% |
| FT | 3-12 25.00% | 6-11 54.50% | 9-23 39.10% |

| Shooting | First Half | Second Half | Total |
|------------|--------------|--------------|--------------|
| Anna Maria | M.A. Per | M.A. Per | M.A. Per |
| All FG | 10-24 41.60% | 13-30 43.30% | 23-54 42.50% |
| 3 Pt FG | 3-10 30.00% | 2-5 40.00% | 5-15 33.30% |
| FT | 9-15 60.00% | 7-11 63.60% | 16-26 61.50% |



Rita E. Monson '04 reaches for a shot during a squash match last week. Squash will face Colby and Cornell on Saturday at the Harvard Muir Center.

Hockey Loses a Pair of Road Games

By Matthew Van Home
TEAM MEMBER

After a fast start to the season, beating Daniel Webster and WPI 3-1 and 3-2 respectively, the Engineers had a rough set of two games on the road.

On November 10, the team made the long trip to Lyndonville, Vermont to play the Lyndon State Hornets. MIT came out fast in the first two periods, going into the locker room before the last period ahead 4-2.

However, some overconfidence and a few ill-timed penalties gave the Hornets the break they needed to get back into the game. Lyndon State was able to sneak three goals in during the final period to win the game 5-4.

The disappointing loss motivated the Engineers to come out with a big game against league rival

Bryant College on November 16. The game was very even throughout the entire game and the score remained at 0-0 until just three minutes left in regulation. Bryant then got their third short-handed breakaway of the game, and despite making the first save, goalie Matthew P. Van Home '02 was not able to stop the rebound that was knocked home by a trailing Bryant player.

The game was not over yet as MIT got a face-off deep in the Bryant end a minute later. The Engineers won the face-off and Brent R. Fisher G was left wide open near the net with the puck. Fisher put a shot

past the Bryant goalie to tie the game at one goal each. The score remained at 1-1 as time expired sending the game into a five minute, sudden-death overtime.

Parker E. Larson G won the face off, but had the puck stolen from his stick by a Bryant defender. The defender hit a breaking teammate for their fourth breakaway of the game. This time they found the back of the net, beating Van Home to his right side.

The Engineers, now 2-2 overall and 0-2 in the league, continue a five game home stand with Coast Guard on Saturday, December 1.

UPCOMING HOME EVENTS

Friday, November 30
Men's Basketball vs. RPI, 7:00 p.m.
Women's Ice Hockey vs. Salve Regina, 7:30 p.m.

Saturday, December 1
Men's Basketball vs. Cal Tech, 1:00 p.m.
Squash vs. Colby College/Cornell, 2:00 p.m.
Women's Ice Hockey vs. College of Holy Cross, 4:00 p.m.
Men's Ice Hockey vs. Coast Guard, 8:00 p.m.

Tuesday, December 4
Men's Basketball vs. Eastern Nazarene, 7:00 p.m.

Wednesday, December 5
Men's Ice Hockey vs. Central Connecticut, 7:30 p.m.

Thursday, December 6
Women's Basketball vs. Suffolk, 7:00 p.m.

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