



The California Tech

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K. Peng/The California Tech

Students protest the tuition hike on the steps to Beckman Auditorium before a ceremony celebrating the fund-raising of \$1 billion by the Caltech capital campaign.

Student Protest Over Increased Tuition Mars Fundraising Gala

By SONIA TIKOO

Tuesday proved to be a rather excitable day at the California Institute of Technology. At four in the afternoon, the university administration hosted a celebratory event at Beckman Auditorium to mark a "milestone" accomplishment—the successful fund-raising of one billion dollars within the past three years.

The *There's Only One Caltech* campaign was initially founded in October of 2002 and launched by a generous gift by the Gordon and Betty Moore Foundation. Slated to run until 2007 to a final earnings goal of 1.4 billion dollars, the fund-raising endeavor is currently

well ahead of schedule, with only 390 million dollars remaining to be raised. The Beckman feature included presentation of a campaign video, as well as a quartet of speakers who either benefited from or provided donations to Caltech.

Wally Weisman, chairman of the Campaign Leadership Committee, provided opening discussion and was quick to introduce the first speaker of the night, Dr. Annelia Sargent, Rosen Professor of Astronomy and director of the Owens Valley Radio Observatory. Sargent spoke highly of Caltech's financial support of her project, the Combined Array for Research and Millimeter Astronomy (CAR-

MA), which analyzes the formation of star and planetary systems. "I think as a result of this, we expect to be able to go out and look at galaxies that would be evolving a billion years after the big bang, if not earlier with the first stars forming. To look for planetary systems in formation and try to understand them—to look at the interstellar medium and its chemistry and try to understand how life formed in this environment. This is what has been enabled—the freedom to actually attack this problem by gifts such as those that come from our campaign."

Another featured speaker was Caltech sophomore Benjamin Golub, who benefited from the campaign because his pure mathematics Summer Undergraduate Research Fellowship (SURF) project was funded by donor money. "The most abstract work has

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Looming Oil Crisis To Cause End of Suburbia

By ALEX SIEGEL

If you are among the majority of Americans, then chances are you live in a suburb, far from where you work, where you eat, and where you shop. It seems to be a convenient life, not as noisy and polluted as the city, but not as far from society as the country. According to the aptly title documentary, *The End of Suburbia*, within the next few decades, all the suburbs will be gone. Last Tuesday, Caltech's chapter of Engineers for a Sustainable World had a screening of the film followed by a discussion to raise awareness about the future of oil.

During the Industrial Revolution, the city became a less than perfect place to live. Industry brought pollution, noise, and a loss of the feeling of community. After World War II, when the soldiers were coming home, vast amounts of new housing needed to be built. As a reward to veterans, soldiers returned to their own homes in the suburbs. According to the film, "Suburbia [had] become the American dream."

After World War II, America was the only country in which the

working middle class could own a house. During the 50s and through the 70s there was a mass movement from the cities to suburbs. Americans sought their new dream of home ownership, but according to the film, suburbia has the disadvantages of both the country and the city.

It failed to deliver what it promised, a home built in harmony with nature while still being close enough to work. In fact, most suburbs were built over the remains of the nature that they professed to be. There was also a loss in the sense of a community, as people were constantly on the move between their homes and the nearby cities in which they spent much of their time.

Suburbia would not have been possible without a reliable source of transportation to reach the cities. At one point, the light rail system seemed to work, but General Motors, Firestone, and Standard Oil conspired together and bought out the light rail system in favor of their mutual interest, the car. General Motors also held a contest to plan the best highway system,

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President, BoC Chair Election Cycle Nears

By KEVIN BARTZ

Pinning up promises ranging from smoother renovations to a larger *little t*, six ASCIT hopefuls—three for president and three for vice president—square off in a debate today at noon on the Olive Walk, rolling out last-minute appeals to undecideds before Wednesday's election.

"I would say that both the presidential and vice presidential elections are really important right now," said outgoing President Galen Loram '05, "because we're going to be moving into trailers, and navigating through those straits will be the duty and promise of the president."

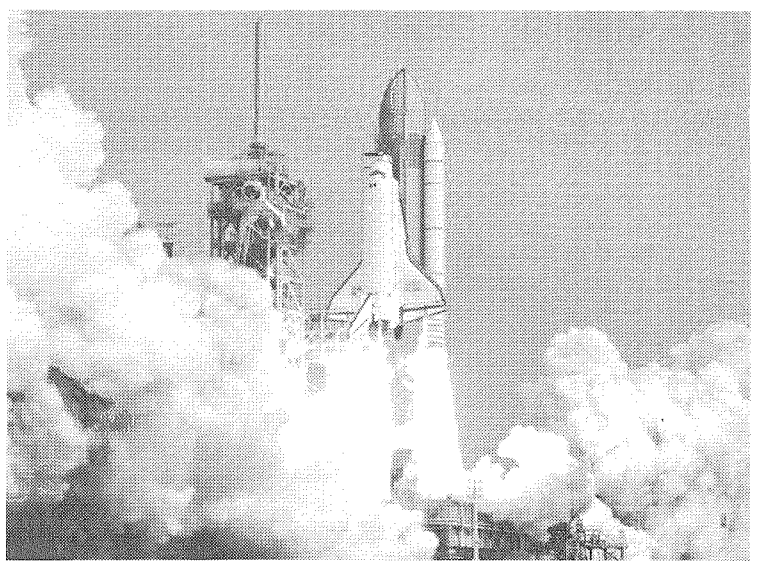
In an unusual twist, two of the three candidates vying for this charge are sophomores—Billy Zdon '07 and Warner Leedy '07—while only one, Ryan Farmer '06, is a junior. On the vice presidential side, one sophomore and two juniors—Greg Stachelek '07, Anamaria Effler '06 and Michelle Wyatt '06—have thrown their hats in the ring. By ASCIT bylaws, the vice presidential seat doubles as a Board of Control chairmanship.

In classic ASCIT fashion, the candidate pool runs the gamut from inside to outside the beltway. Farmer is the BoD's outgoing treasurer, while Leedy and Zdon promise fresh outlooks. Likewise, Effler and Wyatt are both BoC representatives, while Stachelek tags "new perspectives" as the flip side to his lack of BoC experience.

Similar but nuanced themes underlie the contenders' promises. The catch phrase in the Farmer camp is "unification and representation"; Farmer hopes to unify undergraduates through sports galas like last year's basketball barbecue; and represent student concerns by inviting trustees and alumni to student functions.

Leedy's chief campaign promise is "to make more accurate the portrayal of the student body that ASCIT gives the administration." As part of an effort to smooth notoriously tense relations between the BoD and the Interhouse Committee, Leedy envisions house presidents at the core of the legislative process. "One thing I would

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Courtesy of www.nasa.gov

When shuttle operations begin again, the payload rating is likely to be slashed again, making it more expensive to put things in orbit.

Dimotakis Explores Alternatives For Spaceflight After Columbia

By DAVID CHEN

What happened to the shuttle Columbia and what are the implications for future space access? These are the questions that John K. Northrop Professor of Aeronautics Paul E. Dimotakis answered Wednesday night.

Professor Dimotakis, also a Professor of Applied Physics, began the presentation by noting that a unique aspect of the Columbia tragedy was the presence of amateurs video-taping the event. During the re-entry of the Columbia Shuttle, there was a flash and an item fell off, quickly decelerating behind the shuttle. From the videos, an ad-hoc team consisting of Caltech and JPL members was able to calculate the deceleration of this item.

This calculation was possible because the first video, by Jay Lawson, showed Venus in the

background after following the orbiter for a bit after the explosion. Venus was visible in the background 4.68 seconds after the flash, indicating a separation of 2 arcmin.

Since both videos showed the flash, the team was able to use another video, this one from John Sanford. The Sanford video had the advantage of tracking the orbiter for a longer period of time, allowing the team to integrate the traversed distance more accurately. Professor Dimotakis showed a slide filled with equations and joked, "This is part of the Ae101 homework."

They were able to calculate that the flash and explosion occurred at an altitude of 69 kilometers. The orbiter decelerated at about 3.1 meters per second-squared, while the object slowed at about 16 kilometers per second-squared, so "it essentially stopped." From

this knowledge, they were able to eliminate objects that could not have fallen off, such as tiles, since that would be too light.

Professor Dimotakis also noted that the trajectory of the piece was very far from parabolic because of the exponential slow-down. Thus, this missing item lost most of its speed while still high. A slide showed that the item practically fell straight-down during the end.

To estimate the location of this ejected piece, the team used a simple model and also used ACAPS, the AeroCaptureSimulation program developed at JPL. ACAPS was developed by the naval post-graduate school in collaboration with JPL. The simple model and ACAPS gave locations 1% within each other, a good sign for the team.

This piece was never found, but they determined that its termi-

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Candidates Describe Campaign Platforms

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really push for is, if there are any meetings where decisions are being made, that house presidents are involved," he maintained.

Zdon bills himself as an outsider intent on improving ASCIT's connection with its constituents. "Many people dislike ASCIT or are relatively apathetic because people rarely see their money spent on events that actually affect them," he said. Zdon's communication skills, combined with his plan for more multihouse events, are just the tools he thinks necessary to rehabilitate the BoD's image.

The policy purview is much narrower among BoC chairs, but there are still insiders and outsiders. A one-year BoC veteran, Wyatt cites her motivation for the job. "BoC tends to make people emotionally not willing to do more for it afterwards and yet I still felt excited about the BoC," she explained. "I felt this would be really essential in a BoC chair."

Fellow BoC veteran Effler points to her simple inclination to "do what's right." "I first thought, would I do a good job?" she recalled. "Seeing how the BoC affects me, how hard I try to do what's right—that's why I [ran]." She also noted that her Romanian citizenship may afford her a uniquely international perspective.

Stachelek is the race's dark horse, an Academics and Research Committee representative with no BoC experience. He has linked his candidacy to his pledge to bolster campus-wide respect for Caltech's honor code. "The primary focus of my campaign is to improve both student and faculty trust towards the honor code and to continue to educate the community on its importance to life at Caltech," he explained.

Dominating this year's political landscape is the upcoming renovation of the South Houses, slated to begin this summer and last through next school year, during which students will move into trailers on Avery's North Lawn. Loram calls the question central to the election.

"Clearly there's the issue with the renovations, in which the president will be working with the IHC and housing and others to try and make that transition as easy as possible," he said.

To this end, Farmer and Leedy both plan to focus on preserving house traditions, especially artwork. "I believe that the house system needs to remain intact," said Farmer, adding that some alumni may withhold donations if current murals are abandoned.

Farmer's solution: open communication with the IHC, students, administrators, and trustees, whom he hopes to invite to the houses' formal dinners in an effort to raise sympathies for undergraduate concerns. "Otherwise, you'll have an Avery," he said.

Leedy echoed Farmer's stress on preserving murals. "As president, it's my job to represent what students want and from what I understand, students want to express themselves on these walls, and so I will push for that to the administration," he said.

Leedy also pledged to resuscitate a number of other renovations casualties, most notably DEI, Dabney's entertainment hub, which will be scrapped to make room for a jumbo-sized air conditioner, he said. "I will work with the architects to replace DEI.

And if any other houses have similar causes, I would be willing to do for them, too."

Zdon called renovations-related issues "not that big of a deal," but promised to maintain house community in the trailers. Specifically, Zdon hopes to focus on maintaining upperclassmen's influence on freshmen, which he feels may be muted amidst the move to trailers.

Tied in with renovations is the Faculty Board-approved initiative to open Avery House to freshmen starting next fall, on which there is hardly a diapason of views; all candidates oppose last May's 14-to-1 decision, though to varying degrees.

Zdon, for his part, believes there's still time to remap the Faculty Board's course of action. While acknowledging that some Avery residents support the idea, he also held that "there are a lot of apathetic people there. I think it should've been more carefully decided; I think there's still time to change that."

Zdon is particularly concerned with the plan's implications on other houses' "alleys" within Avery. "The issue with picking frosh is that... it prevents [other houses] from organizing their own groups in Avery," he said. "There are still many people in Avery that feel attached to their houses."

Leedy hopes to glean opinion from the IHC and individual Avery residents—not, he emphasized, the governing Avery Council, which pushed hard for the plan's passage last spring. "It's my understanding that not everyone in Avery is gung-ho about what the council is doing," he said. Although he personally considers Avery unprepared for freshmen, he went on to reiterate that he would ultimately push for students' majority opinion.

Labelling himself "one of the biggest people against it," Farmer expressed disappointment with the outgoing BoD's lack of involvement. Avery, he posited, should remain an option for students dissatisfied with the houses. Eventually, he hopes a new North House, one of the fruits of the far-off renovation of the North Houses, can be a home for Avery residents who want a house.

Besides renovations, the question of whether to institute a "food chair" will loom large over the next president. Specifically, Loram has contemplated delegating oversight of food complaints to the BoD's upperclass director-at-large, whose publication duties would in turn fall to the treasurer, the workload of whom has lightened with the hiring of a separate ASCIT accountant to handle taxes.

With no hemming, no hawing, Farmer came out solidly against the idea, holding that the UDAL-elect may lack passion for food. "The food chair I think is a horrible idea," he said. "You need to get people who are more passionate to do that." He added that Loram's other proposed retaskings require further review.

In contrast, Leedy's approach hinges on division of duty. "I don't think they do very much," he said of the UDAL role. "If there's an office doing very little, they need to be doing something. I would support having the UDAL be the food chair." Leedy also stated support for redelegating publications to the treasurer.

Zdon praised the notion of a food chair, but questioned wheth-

Private Firms, DARPA, Consider More Efficient Fuel Mixture Ideas

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nal velocity was about 20 meters per second and its size was arms-width. Professor Dimotakis noted, "This is about the speed you would have if you jumped at a height of 50 feet. This tells it's not a heavy piece."

The Columbia Shuttle was "doomed from the beginning." It was heavily damaged during the ascent by a spray of foam insulation that came off the external tank. Professor Dimotakis estimated that the spray could cause a maximum of 12 kilo-Newtons of force if the impact was perpendicular to the shuttle. In any case, the damage was disastrous because "these shuttles are not rated to be touched."

Professor Dimotakis then talked about the history of space analysis. He introduced Konstantin E. Tsiolkovsky, a pioneer in the field of aeronautics. For example, he predicted a state of weightlessness and derived the rocket equation that is still used today. He also determined Earth's circular orbit speed (about 8 meters per second) and advocated the use of liquid propellants. He even described the use of airlocks, amazingly similar to the actual airlocks in use today.

Professor Dimotakis also explained the history of Robert H. Goddard, a notable American scientist, who in 1914 obtained the first US patent for a practical multi-stage rocket. He proved in an actual test that a rocket will work in a vacuum but before the actual test, a New York Times editorial soundly criticized him for such a fanciful idea. Goddard lost his

er the UDAL is the right man for the job. "The food committee does need someone in charge; he would be more inclined to actually go forward, to care," said Zdon.

There are also more peripheral election issues. While less known, the burgeoning movement to combine the *little t* and the similar, graduate-produced *Technique* is a key plank of Farmer's campaign. "Having a lot of people who can scour Pasadena not only gives us a better *little t*, but also a better online publication," he said. Leedy and Zdon expressed enthusiasm, but stressed the need for further review.

But in the eyes of many, this election will pivot not on the policy but on the personal. "Qualities that are really important are responsiveness, commitment, being a good mediator, being really good at listening," offered IHC Chair Kim Pependorf '06. "Tremendously, the job of being president is being a liaison... Sometimes, that requires moderating your own personal opinions to represent the student body as a whole."

Indeed, the most storied figures in ASCIT history ran not as policy savants but as well-disposed personalities. It was his softer side that made Baldeep Sadhal '00 the only two-term president this decade; and it was his legendary "Fireside Chats" that came to define the reformist administration of Tom Fletcher '04.

This year, said Loram, is no exception. "There are three key qualities: being charismatic; being driven; and having a vision. You deal with so many people—alumni, administration, trustees, graduate students. You want to represent undergraduates well and have people think well of you, because if they think well of you, they think well of undergraduates in general."

professorship, but Charles Lindbergh helped him receive financial assistance from the Guggenheim Foundation. The New York Times apologized to Goddard in 1945.

There are three shuttles left in our fleet today. Discovery has made 22 voyages, Atlantis 21, and Endeavor 19. The shuttles were originally rated to carry a payload of about 25 tons to low-earth orbit, but after Challenger, they were downgraded to 22.7 tons. When shuttle flights are resumed this June, they are expected to be downgraded to 16-18 tons.

In terms of launching capability, there are only two firms capable of such large enterprises. Boeing can launch from 2.5 to 23 tons, and Lockheed-Martin can launch from 7.3 to 19 tons. In addition, Professor Dimotakis noted that Russia, France, and soon China can launch such massive space shuttles.

He emphasized that our launching capability is the primary limiting factor for any future large-scale space mission. Discussing a hypothetical manned mission to Mars, he noted that any shuttle would have to be launched in space, so we would have to construct a 500-600 ton spacecraft in space. He estimated that in order for us to accomplish that, we would need to loft 700-840 tons to LEO, the equivalent of up to 42 successful Delta 4 Heavy launches.

Since NASA proposes that we first send supply missions before the first manned mission, we would possibly need to build additional spacecraft. Thus, Professor Dimotakis estimated this would require 100-150 launches, equivalent to \$100-150 billion with today's technology, just to launch the equipment and shuttles.

Showing a graph of payload costs per kilogram, Professor Dimotakis emphasized the high cost of sending any instrument to space. In particular, the current US average is \$22,000 to send each kilogram to LEO. Since gold is only valued at \$14,000 per kilogram, he joked that the "space program has achieved the dream of the philosopher's stone... this will turn anything to twice the value of gold."

This high cost can be explained by our payload efficiency. Almost all launches have allowed at most 1.5% of the take-off weight to be the payload weight. He noted, however, that the Saturn 5 had a remarkably high rate of 4.2%, since this was a disposable launch vehicle.

While it has remained inefficient to launch payloads into space, Professor Dimotakis expressed optimism that each kilogram of future payload may be able to do more. "Perhaps one kilogram of new payload, by nanotechnology for example, can do what 100 kilograms did before." He also noted that we don't know how to similarly reduce the weight of people so this would remain a stumbling block "if we insist with having people."

Professor Dimotakis described two exciting new launch technologies. The first development is being explored by the chairman of aeronautics at Stanford, whose group is working on hybrid rockets. These new hybrid rockets would use solid fuels such as paraffin and liquid oxidizers such as liquid oxygen, a cheap source of fuel at eight cents per pound. Dimotakis noted that such a hybrid combination was used by Rutan to win the X-1 Prize.

Such a hybrid rocket would offer numerous advantages, the primary being cost. Besides the fuel being

cheaper per pound, the storage of such items would be easier, compared to current solid-fuel rockets which are essentially tons of high explosives that require expensive maintenance. In contrast, a hybrid rocket could be left in a warehouse like any other item. In addition, the valve between the liquid and solid interfaces allows throttling of the burn-rate, to optimize the efficiency of the thrust.

Another idea, being explored by DARPA, is code-named RASCAL for Response Access, Small Cargo, Affordable Launch. The plan is that a plane that could travel at high mach would bring an expendable two-stage rocket high up, and the rocket would detach and fly to LEO. The plan is to loft 50-130 kilograms to LEO at any time (unlike the lengthy process required today to launch a shuttle), and at a cost of \$20,000 per kilogram lofted. The main advantage, however, is security since we only have two launch sites today and RASCAL would allow any runway to be a launch site.

Professor Dimotakis also offered an opportunity for audience members to ask questions. The first question asked why our technology has not improved. Professor Dimotakis explained that we require a breakthrough, which we have not accomplished in the past 20 years. When the shuttles were first designed, they were required to accomplish multiple objectives such as carry payload, carry astronauts, be reusable, etc. As such, the shuttle was not terribly efficient at any task. In contrast, the Saturn 5 was a throw-away, but Professor Dimotakis stated that with our low launch frequency, re-usability may not be enough of an advantage.

Another person questioned the necessity of space travel. While space exploration may be a separate issue, there is no doubt that we have become dependent on access to space. Nonetheless, there are differences between the technologies required for exploration and access to only LEO, so we must choose how to allocate our resources.

There were other questions in regards to the possibility of air-breathing engines, ion propulsion engines, and possibly alternative launch methods (such as catapults that Jules Verne imagined). Nonetheless, Professor Dimotakis explained that these alternatives did not provide the proper thrust to leave Earth. The presentation, held in Baxter Auditorium, was part of the Ernest C. Watson Lecture Series.

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Super Bowl XXXIX: The Patriots vs. The Eagles for the Ring

Why the Philadelphia Eagles Will Win

By HAMILTON FALK

Almost everyone in the country assumes that the New England Patriots are one game away from their third Super Bowl victory, and being crowned a dynasty by the collective sports world. Everyone likes to talk about how they already won two Super Bowls, and how Tom Brady is undefeated in the playoffs. I'll agree that winning two Super Bowls is more impressive than four straight NFC Championship games, but neither time did the Pats show the domination of the glory years like the 49ers or Cowboys, or the Steel Curtain Pittsburgh team.

The best team in the history of professional football only won one Super Bowl, but did it convincingly, not with a game winning field goal. So maybe if this game comes down to a last minute kick, the Patriots will win it because they are "clutch." Nevertheless, it is possible that the game will come down to a four point margin, and a 26 yard drive by Brady won't be enough.

Both the Eagles and the Patriots had excellent regular seasons, but while the Eagles lost only to the Steelers and in games where they rested their starters, the Patriots were beaten soundly by the Dolphins on Monday Night Football, in a game that pretty much dropped them out of the race for home field advantage for the playoffs. Of course the Eagles can be argued to have a not so glorious past as well, so I'll break down other reasons the Eagles can and should win this game.

Coaching

The coaching for both teams is brilliant, but most of the credit seems to go to Belichick. Not only does Eagles Head Coach Andy Reid not get as much credit as the sweats-wearing New England coach, even the Patriot coordinators are underestimated. And those two coordinators are headed out of the Patriots organization, to coach at Notre Dame (Offensive Coordinator Charlie Weis) and the slightly less prestigious Browns (Defensive Coordinator Romeo Crennel). The Patriots insist that this won't be a distraction, but a late season loss to Miami (3-13) just after Weis accepted his new job seems to say otherwise.

The Eagles coordinators are a similarly talented group, defensive coordinator Jim Johnson is especially well respected as both bold and clever, blitzing so creatively that 17 players have recorded sacks this season. Philadelphia's offensive coordinator Brad Childress has designed one of the league's best offenses, running a West Coast hybrid that has turned RB Brian Westbrook from a division I-AA player to one of the most dangerous offensive threats in the NFL. Clearly the coaching on both sides is excellent (not a Martz or Tice in this group) but the Eagles may have the edge here. Andy Reid has never lost when given a bye week to prepare, and Belichick has two coordinators who will be leaving the day after the big game in Jacksonville.

Special Teams

Special teams are another area where the Eagles have an edge. Both teams have excellent kicking games (it seems all you need to get to the Super Bowl is a pro bowl kicker), but the Eagles punter is having a great year, averaging more than 40 yards per kick. David Akers is also unlikely to

kick the ball out of bounds in the final minutes of the game, allowing Tom Brady to stage a drive starting at the 40, as the Panthers did last year. More important are the coverage teams. While the Patriots have a solid team, the Eagles sport one of the best in the league. Ike Reese made the Pro Bowl as a special teamer, and Philadelphia rarely gives up the big play. Neither team will count on returns to score, but a battle of field position should favor Philadelphia.

Offense

On offense the Eagles would clearly have the advantage passing if it weren't for the injury that kept superstar receiver Terrell Owens out of the first games of the playoffs, and will likely slow him if he does play in the NFL championship. As it is, the Eagles are still probably the better passing team, with Donovan McNabb spreading the field and throwing with great accuracy this year. Brady is well known to be an excellent pocket passer, but he has no great receiving backs or tight ends to make up for poor receivers. The ground game will probably favor the Patriots, with Corey Dillon having an excellent year, but here the Eagles can counter with a more diverse game on the ground. Dillon can pound the ball inside, and runs with great power, but his back up (Kevin Faulk) is little respected, and Brady is rarely a threat to run. For the Eagles Brian Westbrook runs with great quickness and up field speed, Dorsy Levens (who won a Super Bowl with Green Bay) can push for tough yards, and of course Donovan McNabb can always take off and run, shedding lighter defenders with both his size and speed, to pick up extra yards when an open man doesn't make himself available.

Defense

Both teams have great defenses, tied for second in the league this year in points allowed. Of course, the Eagles would likely have been first had they not rested their starters for the last two games. New England's defense must depend on its linebackers with injuries in their defensive line and secondary, but they have some of the best and most intelligent 'backers in the league. The Eagles can boast stars all over the field on D, with three Pro Bowlers in the secondary, Jeremiah Trotter playing like a mad lumberjack at linebacker, and Jevon Kearse giving quarterbacks nightmares at DE. The Eagles run defense, a major problem early in the season, has improved vastly with the insertion of Trotter into the line up, and with more rotation of Hollis Thomas and Sam Rayburn as big run-stuffing defensive tackles to compliment the quicker and more athletic Corey Simon and Darwin Walker. Pass defense has never been a problem, with hard hitting safeties Lewis and Dawkins roaming the field assisting Sheldon Brown and Lito Shepard, both of whom have been among the best in the NFL this season. The Patriots are among the best in the league at generating turnovers. The Eagles are too. The Patriots play an excellent scheme that confuses opposing offenses. So do the Eagles. This game could be a great one for defense.

Other factors aside, the Eagles will win this game because they deserve to. The Red Sox won a World Series, Phil Mickelson won a Major, why shouldn't the Eagles win a Super Bowl? The Patriots have done it before, are professional about it, are just a little bit boring. The Eagles are exciting, backed by a city full of pain and love for the team, a team with colorful players, a team that's suffered through injury, a team anyone could love.

February 6, 2005 - The Patriots' Day

By HARRISON STEIN

Even though I'm a fan of teams that play football the right way, I have to admit that I'm getting sick of the Patriots winning the Super Bowl so often. When New England came into the Louisiana Superdome after the 2001 season and stunned the heavily-favored, high-flying St. Louis Rams, the Patriots gave the NFL a jolt of fresh air. Super Bowl XXXVI was one of the five greatest championships in NFL history, made even sweeter by the fact that an underdog team with very little talent exposed a far better team because the Patriots were able to play together as one giant unit. However, since that fateful night, New England has accumulated better players, coach Bill Belichick has devised even craftier schemes, and New England has taken the National Football League by storm.

Ever since the advent of a tight salary cap ushered in an era of massive roster turnover and intense parity, no NFL team has been able to consistently dominate until now. New England has maintained its stranglehold on the league because the players have been able to overcome personnel changes without scurrying from the underlying game plan. The coaching staff, led by defense-extraordinaire Bill Belichick is easily the best in the league, and even after two Super Bowl victories, the team is hungry for more. The Patriots might not always be the most talented team on the field, but they are always the best prepared and always the most cohesive unit.

Unfortunately, as a fan of no particular team besides the lowly Chicago Bears, I'd like to see some new blood at the top of the NFL food chain. I have nothing against Patriots' golden-boy quarterback Tom Brady or their no-name, yet devastatingly effective defense, but I'd like to see a new king of the jungle. Just as I preferred the upstart Panthers in last year's barnburner of a Super Bowl, I will root for the underdog Eagles in Sunday's game. Nonetheless, as much as my biased colleague will disagree, I don't think the boys from Philadelphia have much of a shot against the pride and joy of New England.

Offense

The Eagles and Patriots run similar offenses, predicated on strong running and precision passing. Tom Brady and Donovan McNabb are arguably the two greatest big game quarterbacks in the NFL and both have had career seasons. Brady's receivers are considerably better than those of his counterpart, especially with Terrell Owens at less than full capacity, but Donovan is far more mobile and is a more electric quarterback. 1600 yard rusher Corey Dillon was the second most important addition to an NFL team this season (behind Owens) as he fit perfectly into the Patriots engine. New England has won in the past despite having a sub par running game, but with Dillon on board, their only exploitable weakness has been removed. On the other hand, Eagles running back Brian Westbrook is probably his team's most important player right now, as he has shouldered the load since Owens' freak injury. Equally as gifted as a receiver and rusher, Westbrook is a touchdown threat every

They want it more, the City of Philadelphia needs it more, and there is no reason the game needs to come down to a last minute field goal. That is why the Philadelphia Eagles will win the Super Bowl.

The Pick: 28-20 Eagles

time he touches the ball. Still, the specter of Terrell Owens hangs over this game more than anything.

Advantage: If Owens is hurt--Patriots. If Owens is reasonably healthy--Eagles.

Defense

The Eagles run a blitz-happy, risky, opportunistic defense led by brilliant innovator Jim Johnson. Last week, the Eagles shut down Michael Vick to the point that he was a detriment to his offense. The Eagles defense has controlled nearly every opponent this season, and their Pro Bowl secondary will hassle Tom Brady all day. Nevertheless, New England has the strongest defense in recent memory. Two weeks ago, the Patriots were a relative afterthought because everyone had jumped on the bandwagons of the league's two hottest teams--the Pittsburgh Steelers and Indianapolis Colts. The Patriots simply destroyed the Colts by battering their record setting quarterback Peyton Manning who only led his team to three points. Last week, they set the tone of the game by intercepting Ben Roethlisberger's first pass, the first of many impact plays in a scintillating performance. And, lost in the Terrell Owens injury shuffle is the fact that New England's defense has been missing its best player, Richard Seymour, for a month and he's coming back for the Super Bowl.

Advantage: Patriots

Special Teams

Both teams have excellent special teams, including booming punters, exciting kick returners and intelligent coverage teams. The X-factor, however, might be field goal kicker. As great as Eagles kicker David Akers has been throughout his career, he has never faced the pressure that his counterpart Adam Vinatieri has quelled. Vinatieri made three of the most famous pressure-packed field goals in post-season history (the 45 yard kick in the snow to tie the game against Oakland, and the last-second kicks to win Super Bowls XXXVI and XXXVIII). Which kicker would you rather have on the field with the game on the line?

Advantage: Slightly Patriots

Coaching/Intangibles

After losing three consecutive NFC Championships, the Eagles' season was vindicated by merely reaching the Super Bowl. Coach Andy Reid is a master motivator so the Eagles will not fold under the bright lights of the Super Bowl. On the other hand, Bill Belichick is the best coach in the NFL and the Patriots have played the entire playoffs with a purpose. Their performances against the Colts and Steelers were the two most impressive efforts in the NFL this season. New England expects to win this game, and they will. And with the victory, the Patriots will become the first NFL dynasty in the new millennium.

The Pick: 31-16 Patriots

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Drafting the Little Children

By SIMON QUE

With ongoing U.S. involvement in Iraq, many Americans are understandably concerned about the possibility of Congress reinstating the military draft to give the war effort a steady supply of young men and women. However, another type of draft already lies under their very noses. This draft is an educational rather than military draft, and it targets kids at a much younger age than conscription does.

That's right, this draft is known as compulsory education. Modern compulsory education at the state level first appeared in Massachusetts in 1852, promoted by the statesman Horace Mann. In the decades that followed, other states adopted the idea one by one. In many communities, it was resisted as parents defended their offspring from predators of the state. Yet today, compulsory education exists in every state as something taken for granted.

Education and military service have more in common than many people seem to realize or admit. Consider the words of Leon Trotsky: "We can't oppose compulsory military training by the bourgeois state just as we can't oppose compulsory education by the bourgeois state. Military training in our eyes is a part of education." Both impart important skills of mind and body that may be essential later on in life,

in the workplace and in the wilderness. But both also have their negative sides.

What was the rationale for mandatory education? The Prussians instituted compulsory education in the early 19th century, a system that Horace Mann greatly admired. It no doubt inspired his American brand of compulsory education.

According to writer John Taylor Gatto, Prussian education had five goals: "1. Obedient soldiers to the army; 2. Obedient workers to the mines; 3. Well subordinated civil servants to government; 4. Well subordinated clerks to industry; 5. Citizens who thought alike about major issues." "Well subordinated" and "thought alike" are words that describe subservient slaves, not independent minded, free people. It was social engineering designed to psychologically castrate or lobotomize the populace and make them subservient, productive citizens who existed for the benefit of the state and for the common good.

Like compulsory military service, compulsory education serves to enrich the state's interests at the expense of individual liberty. Both are generally promoted for reasons of keeping order: one guarantees a strong standing army, the other a servile, docile populace. Ronald Reagan, an opponent of the draft, once wrote, "[conscription] rests on the assumption that your kids belong to the state. If we buy that assumption then it is for the state—not for parents, the community, the religious institutions or teachers—to decide who shall have what values...in our society." The same can be said of compulsory education, because that's exactly what education is: the shaping of children's values. Instead of treating children as unique and valuable individuals to be raised individually by parents, the state uses compulsory education to reduce them to a resource to be manipulated through indoctrination.

One person, attempting to highlight the difference between schools and the military, said that education is aimed at imparting values of independence and democracy, and that "the military is basically telling you to follow orders and shoot people, and those aren't compatible." Yeah, right! Schoolchildren, like soldiers, must follow orders from teachers and administrators. Go look at a public or private school's list of rules and rules and more rules. You will find many rules against insubordination. In high school, I got detention and a trip to the

assistant principal's office just for disobeying a teacher, without actually having done anything inherently bad. For all the claptrap taught in many schools about "self-esteem," rarely promoted are the concepts of self-reliance, self-respect, and self-defense. Students are told to not fight back when attacked, and not encouraged to intervene when other students are being bullied, instead relying on teachers to come to the rescue. One "model student" in Michigan who got straight A's was even marked for suspicion by the administration when he stepped out of line with convention by flatly refusing to agree to an oath of pacifism declaring that he would not defend himself with force against physical attack, having earlier fought back against an attack by bullies. Apparently, maintaining social order and uniformity is more important than developing self-respect in children. Such is the way that schools train kids to blindly follow orders and become members of society who don't rock the boat. "Well subordinated" and "thought alike" are the results of the values that children inevitably pick up from spending twelve years in schools. At least they're not being ordered to shoot people.

Isn't it possible to just fix the rules in schools? I doubt it. When dozens of children are herded together into a classroom under one teacher, there is less of the one-on-one interaction that is common between children and their parents. Teachers and administrators, faced with huge student-teacher ratios of 30-to-1 or higher, cannot afford to give much freedom to the kids lest they run out of control. Thus it is almost inevitable that large schools will develop rules regulating just about every aspect of student behavior in a blanket approach to

suppress the unruly. It is also impossible to teach solid concepts of right and wrong in a public school because of the various ethnic and religious backgrounds from which children come, without protest from some group of parents. Thus, in order to control the kids, strict, unquestioning, inflexible adherence to the rules is taught, either in word or in action, in place of good moral judgment.

How about teaching kids the values of freedom, individualism, personal responsibility, critical thinking, etc? Horace Mann and his ilk are dead. Their education system can now be steered toward other purposes, right? Maybe, but not toward the above concepts. Ideas have consequences, as the following example demonstrates. After learning about individualism, Emerson, and Thoreau in literature class during high school, one student took it to heart. The consequence was that he became more critical of and less compliant with what others, including teachers and administrators, expected of him. Once he disobeyed orders because he thought it was more important to borrow a graphing calculator for the AP test the next day rather than blindly obey a teacher. Other times, he resisted going along with a class activity because it was geared toward "teaching to the test" rather than toward actual learning, and held no academic value for him, a student who truly desired to learn more. Another time, knowing that it was against the rules to use the school library's computers for non-school-related purposes, he sat down and pulled up a video game page to flaunt the rules. Now, imagine hundreds if not thousands of students like him running around in a school, bending what they thought were unreasonable or intolerable rules. The administration would go bonkers! Thus it is highly unlikely that a curriculum that emphasized individualism, self-reliance, critical thought, and anti-authoritarianism would receive the approval of educators who wanted to keep order in the school. And even if it were, it would probably not take root in the minds of students if they

were not allowed to put it into practice.

Sure, there are ways to opt out of undesirable schooling by enrolling one's children in good private schools or home schooling them. But the mandatory education laws still stand. When they allow parents to choose alternatives, they will inevitably set restrictions on just what exactly can be used to satisfy the mandatory education requirement. In other words, parents must choose from state-approved alternatives. Though the restrictions may be lax right now, political pressures could tighten them gradually. Many home schooling parents in California have already been harassed by officials on grounds of "truancy," despite the legality of home schooling in California. The government thus has the final say in what sort of education children must have, often over the will of "parents, the community, the religious institutions or teachers."

It is interesting to note that for three decades following the enactment of the first compulsory education law in America, most Massachusetts communities resisted, sometimes with arms. (Later, the state sent in its militia to seize the children by force and send them to school. The same happened in Prussia as well.) Sadly, those days of resistance are gone, and today most parents are all too willing to give up their children to the vultures. Even as many Americans oppose the military draft, which grants the government control over the bodies of the youths, few have stood up for ending compulsory education, which grants the government dominion over children's minds at an early age. They should remember Vladimir Lenin's ominous promise: "Give me four years to teach the children and I will sow the seeds which will never be uprooted."

How can anyone tolerate compulsory education, a system that started out by marching children away from their parents at gunpoint into government indoctrination camps? Perhaps it has already done its job of creating a complacent populace that cannot readily recognize this diabolical system for what it is.

Using Science in Diplomacy: My Experience as the Beckman Political Fellow

By REBECCA ADLER

In the areas of science and technology the pace of change often seems faster than our ability to grasp its ramifications. While it is accepted that scientific advancement is something to be embraced, there are relatively few scientists who are involved in applying new scientific findings to the development of current governmental policy.

As the recipient of the 2004 Beckman Political Fellowship, I was given the opportunity to work as an intern in the office of the Science and Technology Adviser to the Secretary of State (STAS), at the Department of State under the direction of the Science and Technology Adviser to Colin Powell, George H. Atkinson, and the Deputy Director of the STAS office, Andrew Reynolds.

Created in September of 2000, STAS is the newest division of the U.S. State Department. This office serves both an advisory and educational role to legislators and diplomats, as well as a role in the formulation of sound science-related policies to guide our country. The objectives of this office, to develop scientific and technical cooperation on an international basis, in governmental, industrial, and in academic circles, were reflected in the day-to-day operations.

I had exposure to the diverse groups of people that interact to form Foreign Policy. During my time in Washington, D.C. it became increasingly obvious that the scientific and technological advancements taking place all around us offer many great opportunities, but they also present challenges that come from the need to make choices that lie at the intersection of science and politics.

One focus of the United States Government is to prevent terrorism, and many

Continued on Page 6, Column 3

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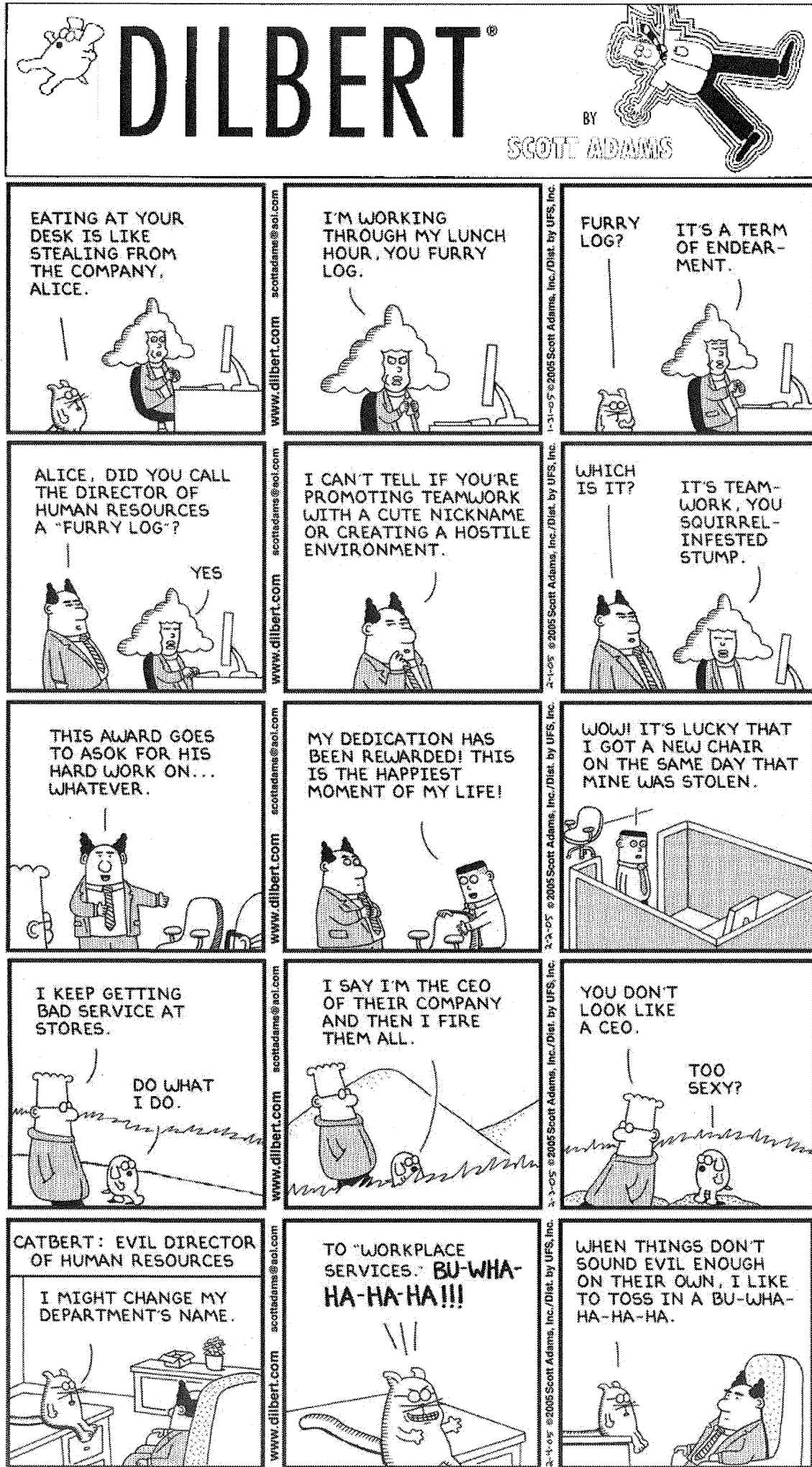
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Spending a Summer with the Science and Technology Adviser to the Sect. of State

Continued from Page 5, Column 4

government bureaus and agencies take part in terrorism prevention. STAS is involved in an ongoing effort to use science and technology on the forefront of foreign policy and therefore hosted a U.S.-Japan preparatory meeting for a second workshop on "Science and Technology for a Secure and Safe Society" to discuss priority areas to improve safety and security for the mid-and long terms, and to develop plans for future bilateral cooperation. This meeting was widely regarded as a success. In the past, other domestic priorities and cultural differences have held back Japanese engagement. This meeting, by using science and technology as the ice breaker and starting with science, rather than diplomacy, created a productive environment for further cooperation and facilitated movement from general ideas to specific plans. As a re-

sult, U.S. governmental agencies are now establishing a wide range of specific cooperative programs with Japan. This meeting serves as an example of how issues in S&T can be used to leverage effective foreign policy.

My experience as a Beckman Political Scholar demonstrated to me the progress that can be made using science as a starting point for discussion of complex foreign policy issues, and that scientists can, in some cases, make positive contributions to policy. Unlike politicians, scientists share a common approach to problem solving and the desire for broad based collaboration. In the words of George H. Atkinson, "We must start with the science and move toward the policy--if we start with policy we will never get to the science." Scientists as diplomats can play an important role in foreign policy given sufficient independence from political pressures. As more issues involving

science and technology become prominent on the international stage, science will become an increasingly important part of diplomatic discourse.

The Beckman Political Internship will be available again this summer. The internship, supported by friends of Arnold O. Beckman, will pay a stipend of \$5,000. It allows a selected intern to spend the summer working in the office of a politician or a government agency and to see from the inside the process of government. The applicant is expected to make arrangements with the appropriate political persons or organizations. The internship is open to any Caltech undergraduate who intends to be a student next year. If interested, submit a proposal describing where and how you would use the stipend along with one faculty recommendation, to the Deans' Office, 210-87, or email machang@caltech.edu, by MONDAY, MARCH 28, 2005.

BoC Chair Statements Michelle Wyatt

"Why do you want to be BoC chair?"

This is the question I have been asked over and over again since I began to consider the idea. Every time I get asked and every time I ask this of myself, I come up with a different answer. Because I would be good at it. Because the Honor Code is important to me. Because I have ideas about ways we could make the Honor System stronger and better for the students. Because I know I would put this job first and devote everything I have to it. Actually, the last one is not exactly true. My motivation for being BoC chair is not the job itself, but the people. I want to do it for my fellow BoC reps, in whom I have found an amazing group of people. I want to do it for the students who follow the Honor Code, so that we can continue to enjoy the privileges we get from it. I also want to do it for those who break the Honor Code and get BoC'ed. They deserve to have a BoC chair willing to put aside ev-

erything to make sure their case gets heard fairly and quickly. I know I can be that person.

A good ASCIT VP must be more than just BoC chair. As a BoC rep, I have tried to be a person who others could come to talk to if they had questions about the Honor Code or even if they just needed someone to vent to. I have realized that we could make the Honor Code easier for students to follow if we worked with the professors to make sure their collaboration policies are clear and reasonable. In my experience, professors are very open to feedback from students about their policies, and I can be a tool for students unwilling to approach the professors themselves. Through cases I have also seen the weak points in the Honor System, so I know the problems that need to be fixed. Most of all, though, I know that I could do a good job as ASCIT VP and BoC chair because I am willing to devote everything I can to this position.



L. Tran/The California Tech

Anamaria Effler

Before coming to Caltech, when I first read about the Honor Code, I thought people were kidding. Other schools take countless precautions to prevent students from taking unfair advantage of one another or the school system. In my high-school they would check girls' skirts for sewn-in cheat sheets; and students are accompanied by a teacher to the restroom in the middle of an exam. When I got to Caltech, it wasn't like that. Everyone was simply expected not to cheat. And amazingly enough, it worked.

We all know the advantages of an Honor Code like Caltech's. It provides a level of freedom that benefits people of all styles of learning. It is important for every member of the Caltech community to preserve this freedom. People devote large amounts of their time to maintain and improve the Honor Code (and a Teacher's time is definitely precious). As the Ricketts BoC Representative for this school year, I have done my best to accomplish this.

I tend to put all my heart into what I do, regardless of how difficult it turns out to be. I am a junior Physics major, and it is definitely harder than I imagined. Nevertheless, my passion for Physics made me decide to go on and do my best.

So you might ask what qualities I have that would make me a good choice for the job. Well, aside from the dedication I previously mentioned, I have the experience of having been on the Board since the beginning of the school year and understand the intricacies of the BoC. Also, as a Physics major, I'm rational and impartial; I think things through, weighing all sides of a problem and ultimately reaching the best solution. Last but not least, I am an international student which can provide the Board with a slightly different perspective (and a funny accent). One more point of view on a situation can be essential in solving a case.

In my opinion, these qualities combined make a good candidate for the BoC chair. Now it's your turn to pick the best one.



Courtesy of A. Effler

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Caltech students, faculty, staff and family are urgently needed to join the cast of *Measure for Measure* Lords, Attendants, Officers, and Citizens of Vienna

Eight Performances (Feb. 18-Mar. 5)

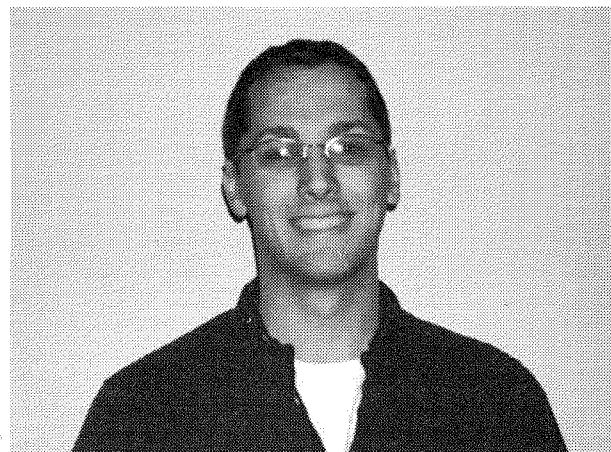
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ASCIT Election President Statements

Ryan Farmer

Freshmen in Avery. South Hovse renovations. School spirit. Alumni. Inter-college social events. Student-faculty interaction. All of these are important issues that will affect undergrads next year. ASCIT needs to step up to the plate and deal with issues that will affect Caltech for years to come. Presently, many see ASCIT as a piggybank that doesn't take initiative. I will change that image and work to unify the undergraduates. To do that, I will focus on several key areas—the success of last year's



L. Tran/The California Tech

soccer game BBQ should be followed with a BBQ every term for a different sports team. Secondly, there will be continual support for student-sponsored projects that the Moore-Hufstедler Fund will not support on a yearly basis such as One Act plays, Shakespeare Read-a-thons, and various music/

DJ events. Also, I plan to promote increased cooperation with previous graduates by working closely with the various alumni associations on campus to encourage alumni involvement in student life by inviting them to House dinners, campus events, and encouraging networking opportunities. This not only benefits students (in terms of connecting with Caltech's past and job opportunities), but provides alumni a connection to their alma mater. Lastly, should the campus desire it, I'd like to see an inter-school party—the renovations make this very possible.

I am a firm believer in the House system. However, I recognize a need for some other groups on campus to have another House. While many, including myself, disagree with the idea of freshmen in Avery, there is nothing that can be done about it. While the decision came at a tumultuous time of renovations and possible plans for a fourth North House, I believe that with careful planning and working

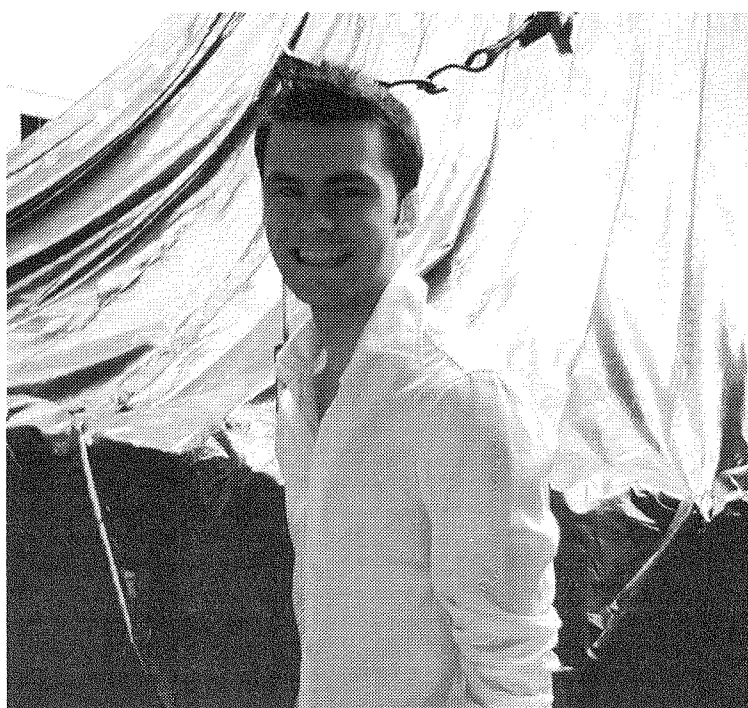
with the Faculty Board, there can be an eventual future resolution that allows Avery to continue to be a choice for upperclassmen that do not wish to be associated with the on-campus houses and allow the existence of an eighth House. During my term, I will work with the IHC and Faculty Board to ensure a smooth transition to having freshmen in Avery but work to increase the undergraduate voice on the Faculty Board to ensure that we are heard when it comes to upcoming decisions that concern our future.

My experience as ASCIT Treasurer last year gave me insights into how to effectively use ASCIT to represent the undergrads and work with the administration while my involvement in my House has helped me to understand that there is a great diversity of views and needs on this campus. As President, it would be my job to represent the undergraduate body as a whole. Everything I do as President would be with a mandate from the undergraduates as a whole, but I would keep in mind the needs of the minority opinion. I will fairly represent and inform undergrads when it comes to interactions with the administration and faculty and work to unify us through additional ASCIT sponsored events. As President, my door will always be open to new ideas and suggestions—I'm merely part of your voice as we enter into a year of dramatic change.

Warner Leedy

Every year brings with it a few key issues, and there are certainly some big ones this year -- frosh in Avery, the renovations -- and I'm willing to fight for us students on all of them. But what sets me apart from the other candidates? Well, the president's primary job is to be the liaison between the students and the administration. As a friendly and responsible person, I know that I'd do this job well and with the students' best interests in mind, even if that means omitting my personal opinion to the administration to better reflect the students as a whole. Another facet of the job is assertiveness. For example, in large meetings with the administration, they will not necessarily ask the ASCIT president how the students feel about a given issue. It is the job of the ASCIT president to speak out on our behalf when necessary in these meetings, and I'm not afraid to do that.

One of the main points of my platform is to make more accurate the portrayal of the student body that ASCIT gives the administration. As only one person, it's difficult for the ASCIT president alone to get an accurate image of the students' views. If only we had a committee of representatives from each house who could help the president figure these things out -- but wait! That's the IHC. Talk to someone on the IHC, and you'll learn that the relationship between ASCIT and the IHC is not so hot right now. However, as the two major governing student bodies, that really shouldn't be the case. They currently meet with the administration separately and, because the groups rarely agree, the administration often has no idea what to think. What if, by mending relations between ASCIT and the IHC, they began to meet with the administration jointly? This is one of my primary initiatives, as achieving it would be a big positive step in closing



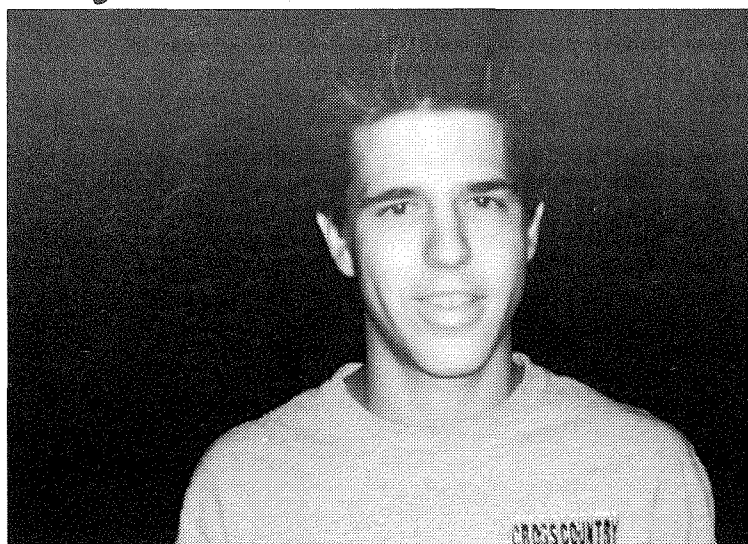
Courtesy of W. Leedy

the gap between what the administration thinks we want and what we actually want.

In short, I want to make your views have more of an influence

on the decisions of the Caltech administration. The job of the ASCIT president is to be on the students' side, and that's exactly what I plan to do.

Billy Zdon



L. Tran/The California Tech

Trade, Businesses To Suffer With Oil Gone

Continued from Page 1, Column 2

declaring the winner to be Robert Moses, one of New York City's most powerful men. He planned an Interstate Highway System and since it was built, "every county within fifty miles of an Interstate Highway has shown population growth and every county outside of fifty miles has shown population decline."

Suburbia was built on the expectation of cheap fossil fuels, but North America has already reached its peak capacity and is now on the decline. Most of the world's oil is located in the Middle East and many people speculate that the Middle East has just about reached its own peak in oil production.

The geologist Marion Hubbert is credited with the discovery of his curve, called the Hubbert's curve, which is able to predict the peak in oil production. The peak of oil production is the true end of the oil age, as opposed to when the oil itself runs out. Hubbert predicted the peak production of oil in the United States to occur in the early 70s by fitting data on oil discovery to his curve. In 1971, he was proven correct when oil peaked in the U.S. and become no longer viable source of energy, as it escalated in price, losing its practicality.

Hubbert predicted the global peak in oil to be in the late nineties, but as of yet, it has not occurred. Many modern scientists feel that it will occur sometime in this decade and that the consequences will be devastating. The film focused on suburbia's dependence on oil, and that once we reach the Hubbert's peak, suburbs will begin to disappear.

The film brings up many possible economic consequences, though difficult to imagine, of the end of the oil age. Most of these consequences point to doom, but some offer a slight bit of hope. The fifty years of stability in the United States has made Americans unable to change their way of life. Once oil peaks, the supply lines to China could be cut off, trade itself could become too costly for other countries.

The United States is not self-sufficient in the products that it makes and relies on trade to survive. Food production requires pesticides and fertilizers which require natural gas, as well as massive transportation across the country, all of

which would become expensive or even impossible should we run out of oil. The everything stores like Walmart that have entered towns and destroyed small businesses would no longer be possible, and in an age without oil, we would need the small businesses to come back in order to survive. The more pessimistic economists predict an "economic depression that in this case never ends."

The political consequences that the film imagines are even more frightening. The stress on the populace could lead people to elect maniacs who promise oil without regard for their means of getting it. Some even think this struggle for the attainment of oil through war has already begun, pointing out the present Administration's presence in Iraq, one of the world's most oil-rich countries. Though in the context of a war on terrorism, Vice President Dick Cheney said that this "war may never end. At least not in our lifetimes." The films alludes to the possibility that the U.S. is ahead of the game in securing oil for Americans before the oil peak hits. Of course, there isn't really any hard evidence for this, only what can be extrapolated from current actions and policies.

According to the film, it would take more time than we have to form a new energy source capable of fully replacing oil. Hydrogen is merely a means of storing energy, and actually takes more energy to create than it gives off. Solar power is the only current source of energy that could conceivably replace oil, but the film predicts that even solar power could not meet the amount of oil that we would need to run the world. The lack of a source of power could lead to a new American lifestyle.

A new style of city planning known as New Urbanism, with walkable cities, is already replacing the current commuter suburbs. Perhaps communities will be responsible for creating their own local energy sources from wind or solar power, instead of relying on the states for their energy. The only possible benefit of the end of oil that the film points out is that a sense of community, which was lost in the commuter suburbs, may return in an era where one's daily movement is restricted to how far they can walk.

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Protesters Slighted by 20% Rise In Tuition Prices Over Two Years

Continued from Page 1, Column 3

always depended on the generosity of benefactors." Golub stated that as a Caltech student, he felt free to pursue his academic interests without worrying about limitations on what he could study or whether he could garner funding for his efforts. "Thanks to SURF, I feel that freedom now. After all, students get to research in any department. We have great liberty in exploring and experimenting with our ideas, and thanks to you we can do all of this even while undertaking even very ambitious and abstract projects."

The ceremony was later highlighted by speeches from Carl Larson, Caltech graduate and member of the Campaign Leadership Committee, as well as closing remarks by university president Dr. David Baltimore.

Appropriations for the money raised thorough the *There's Only One Caltech* effort have been published. \$71.1 million has been allocated towards funding undergraduate financial aid, graduate, postdoctoral, and SURF fellowships. Faculty projects and research will be granted an additional \$141 million. Construction plans are underway for the new Cahill Center for Astronomy and Astrophysics, campus center, chemistry and chemical engineering building, a new Information Sciences building, Instrumentation, and the South Houses renovation project, and the fundraising for these specific projects is still in the works.

Yet not all of the Caltech community was in as celebratory a mood as those involved with the fundraising campaign.

Prior to the start of the festivities, a sizeable group of Caltech undergraduates with representatives from all Houses gathered in front of Beckman Auditorium bearing signs, red ribbons, pamphlets, and an oversize banner of the Crippling Depression rendition of President Baltimore holding bags of money to protest the recently

announced hike in undergraduate tuition, room, and board fees slated for the 2005-2006 school year.

Protestors cited statistics documenting the raise in fees from \$31,460 in 2003 to \$38,050 in 2005, which marked a 20.9% increase over two years compared to a 3% consumer price index inflation rate within the United States economy. Other students were disgruntled by the prospect of South House residents being forced to live in trailers next school year during the renovations, while even more students simply expressed discontent with day-to-day issues regarding Caltech undergraduate life.

"Basically, what I'm unhappy about is that recently they've been increasing tuition costs at a rate far greater than inflation. People made their decisions on where to go to school based on how much cost it came here. It would be great if for four years, they could make a guarantee of how much you'd have to pay. They could adjust it for inflation, but at least we'd know how much we'd be paying instead of worrying about them

what to do with it all, and at the same time, they're raising tuition for the people that can afford that. I think it's unconscionable for a school to do this, and I think this reflects a general trend that tuition is increasing at a rate much greater than inflation [...] schools are becoming more bloated and inefficient, and as a result, we have to pay more for less."

ASCIT president, senior Galen Loram was present at the protest to observe and answer student questions regarding the fund-raising campaign and the tuition hike. "I certainly understand people's concerns over the tuition raise, and especially the terrible juxtaposition of the billion dollar mark and the increase. Yet it's always hard to respond when things are organized so quickly," Loram commented. "From the students that I've gotten a chance to talk to, once I sort of explained where this all comes from and why there is this raise, they understand it - whether or not they agree with it. The letter that was sent out was pretty vague about the reasons, so it's not surprising that people wonder where it's going and why we need it."

Loren continued, "I'm glad that the folks in the administration are working to organize a meeting, which will be Tuesday at lunch in Winnett in which any student who has any questions or concerns can be able to come and talk to the people who are the drive behind these decisions. That said, I do appreciate that everybody is being respectful and they're not trying to block anybody. Everybody is acting in a way that it is an intellectual discourse. I also hope that it ends up having the effect of getting both people in the

administration and those of us in student government to do our best to improve the lines of communication. It certainly served as a wake-up call to me."

Students are strongly recommended to contact either Tom Mannion or Margo Marshak at the Caltech Student Affairs department if they have further questions.



K. Peng/The California Tech
Protesters raise a likeness of President Baltimore originally published in *Crippling Depression*.

jacking up the cost by seven thousand dollars within a few years," commented junior Michael Villet.

Junior Ramen Shah elaborated, "We're here today because Caltech's doing something that's kind of angering to students that aren't on financial aid. They're celebrating that they have so much money that they don't know

Dance Concert Helps Tsunami Relief Effort

By BRIAN ZHOU

On Sunday, January 23, 2005, Caltech's Beckman Auditorium hosted *Lahari*, a benefit concert organized by the Caltech Tsunami Relief Effort. An enthusiastic crowd of several hundred delighted in a marvelous afternoon of classical Indian dance. On display was more than just the elegant choreography of world-class performers, but also the spirit of human compassion as dancers, organizers, and spectators united in support of tsunami victims.

Lahari, a Sanskrit word meaning "great wave", captured on many levels the essence of the dance spectacle. Moderator Ramesh Srinivasan, a post-doc at Caltech, welcomed the audience to the Caltech campus and introduced the program with heart-felt words. The devastation of the tsunami tragedy, he said, both demonstrated "the frailty and preciousness of human life and the strength of the human spirit."

Srinivasan praised the Caltech community for contributing nearly \$10,000 prior to the event and thanked President David Baltimore for his donation of \$20,000 on behalf of the institute. All in attendance then stood for a moment of silence for reflection and prayer.

The afternoon's program centered on the dance tradition of Bharatanatyam, which dates back nearly two millennia and has survived through the oral teaching in the temples of South India. Four dancers from the Arpana Dance Group (ADC) took the stage under the cover of darkness to perform two intricately choreographed pieces. The first was a spiritual selection dedicated to the elephant god Vigneshwara in hope that he may clear the path to recovery of all obstacles for families devastated by the tsunami. The spirited dance demanded both the broad sweeping motion of the arms and the pounding of the feet and precise finger positions, eyebrow inflections, and neck movements. The dancers wore a ring of bells, almost tambourine like, around each ankle, and their stomps and taps created a highly rhythmic and energetic beat. ADC Director Ramya Harishankar described, "Pure dance is an expression of pure joy."

The second dance group to perform was the highly acclaimed mother-daughter duo of Ramaa and Swetha Bharadvaj. The two

moved with a truly uncanny coordination that can only reflect the connection between mother and daughter. In one piece, mother Ramaa revolved around daughter Swetha, who traced a wide circle on the stage with incredible speed. While in this great arc, Ramaa continually removed and replaced a sprig from a pot held by Swetha; each time throwing her arms out as if to offer the sprig to the heavens. The tandem charged the audience with a final piece, *Moksha*, that featured the tossing of scented rose petals.

The concert concluded with the eight-member Shakti Dance Company (SDC), who performed two numbers. This larger group offered a different dynamic from the previous performances. Precise weaves of the three senior dancers, attired in white, among the five junior dancers in gold and side-stepping entrances and exits dazzled the crowd. The climax number *Tillana*, or "Thrillana" as termed by the dancers, captivated the audience with its kinetic energy. Director Viji Prakash individually recognized her dancers and praised all of the event's performers for selflessly dedicating their time to this benefit concert. Revealing the efforts of the dancers who made the most difficult moves seem effortless, she explained, "It takes many years of dedication, many years of passion." "We are honored, happy, and touched to be invited...to show the world that we care."

After the dances, moderator Srinivasan retook the podium to the backdrop of an emotional slideshow. As pictures of tearful children and toppled homes flashed behind him, Srinivasan outlined the next steps of recovery process. Money raised from *Lahari* was to be divided among three groups: UNICEF, Asha for Education, and Architecture for Humanity. Indeed, Srinivasan urged the audience to open their wallets and hearts to the collection tables outside Beckman.

The organizers and behind the scenes contributors to the event also deserve tremendous credit and thanks. Many campus groups, most notably the Organization of Associated Students of the Indian Subcontinent (OASIS), the Caltech Y, and the International Students Program, with the support of various campus services joined to make *Lahari* possible. Chief organizer Shankar Kalyanaraman, a graduate student, describes the effort. "We basically put up posters around Caltech and Artesia," he says, and explains that he was put in touch with the dance groups through various friends. Indeed, *Lahari's* tremendous success and the eventual renewal in the aftermath of the tsunami will owe to the work and compassion of many dedicated persons.

ASCIT Presidential Debate

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