

photographe courtesy of <http://blaze.caltech.edu/historians/pictures/>

Adventurous master of disguise Dimitri Kernasovskiy may yet turn Caltech into a party school.

Caltech Scientists Weigh Single Molecule; Molecule Comfortable With Own Body and Lifestyle

by
Robert Tindol

PASADENA, Calif.-Physicists at the California Institute of Technology have created the first nanodevices capable of weighing individual biological molecules. This technology may lead to new forms of molecular identification that are cheaper and faster than existing methods, as well as revolutionary new instruments for proteomics.

According to Michael Roukes, professor of physics, applied physics, and bioengineering at Caltech and the founding director of Caltech's Kavli Nanoscience Institute, the technology his group has announced this week shows the immense potential of nanotechnology for creating transformational new instrumentation for the medical and life sciences. The new devices are at the nanoscale, he explains, since their principal component is significantly less than a millionth of a meter in width.

The Caltech devices are "nanoelectromechanical resonators"--essentially tiny tuning forks about a micron in length and a hundred or so nanometers wide that have a very specific frequency at which they vibrate when excited. Just as a bronze bell rings at a certain frequency based on its size, shape, and composition, these tiny tuning forks ring at their own fundamental frequency of mechanical vibration, although at such a high pitch that the "notes" are nearly as high in frequency as microwaves.

The researchers set up electronic circuitry to continually excite and monitor the frequency of the vibrating bar. Intermittently, a shutter is opened to expose the nanodevice to an atomic or molecular beam, in this case a very fine "spray" of xenon atoms or nitrogen molecules.

Because the nanodevice is cooled, the molecules condense on the bar

and add their mass to it, thereby lowering its frequency. In other words, the mechanical vibrations of the now slightly-more-massive nanodevice become slightly lower in frequency--just as thicker, heavier strings on an instrument sound notes that are lower than lighter ones.

Because frequency can be measured so precisely in physics labs, the researchers are then able to evaluate extremely subtle changes in mass of the nanodevice, and therefore, the weight of the added atoms or molecules.

Roukes says that their current generation of devices is sensitive to added mass at the level of a few zeptograms, which is few billionths of a trillionth of a gram. In their experiments this represents about thirty xenon atoms - and it is the typical mass of an individual protein molecule.

"We hope to transform this chip-based technology into systems that are useful for picking out and identifying specific molecules, one-by-one--for example certain types of proteins secreted in the very early stages of cancer," Roukes says.

"The fundamental problem with identifying these proteins is that one must sort through millions of molecules to make the measurement. You need to be able to pick out the 'needle' from the 'haystack,' and that's hard to do, among other reasons because 95 percent of the proteins in the blood have nothing to do with cancer."

The new method might ultimately permit the creation of microchips, each possessing arrays of miniature mass spectrometers, which are devices for identifying molecules based on their weight. Today, high-throughput proteomics searches are often done at facilities possessing arrays of conventional

New Social Director Has Fun Spring Break Then Springs Into Action

by
David Chen

The new ASCIT Social Director, Dima Kernasovskiy, has lots of exciting events planned for the next year, such as a formal this term, with a jazz band and dance floor. The Social Team expects 400 people to show up, including Caltech students and their dates.

Students will get another opportunity to enjoy the fine art of dancing during a Friday dance-off after an afternoon happy hour. Students will be able to take a break with drinks, snacks, and Non-alcoholic beverages for students under 21.

The dance-off will probably happen in Winnett Center and will be a dry event. The plan is to play different styles of music throughout through out the evening. The Social Team hopes to work with the many dancing groups on campus for this. Dress will range from casual to formal at this major new event that Dima wishes to arrange.

Continuing the annual tradition of buying out a movie theater during opening weekend, Dima plans for all Caltech-affiliated people to watch *Star Wars Episode III*. Students will pay only \$2. Previous movies ASCIT has bought out include *The Matrix* and episodes one and two of *Star Wars*. He has also proposed a costume contest for the event.

The social team is planning a new event, a party with another school. The current proposed school is Occidental, because it is of similar size and we already share many activities, such as our orchestra. This party will take place first term next year. Dima explains, "We already have four big parties this term: Blacker, Lloyd, and Fleming inter-houses, plus the Ricketts party. On the other hand, first term we have only one big party, which is Page Inter-

mass spectrometers that fill an entire laboratory and can cost upwards of a million dollars each, Roukes adds. By contrast, future nanodevice-based systems should cost a small fraction of today's technology, and an entire massively-parallel nanodevice system will probably ultimately fit on a desktop.

Roukes says his group has technology in hand to push mass-sensing technology to even more sensitive levels, probably to the point that individual hydrogen atoms can be weighed. Such an intricately accurate method of determining atomic-scale masses would be quite useful in areas such as quantum optics, in which individual atoms are manipulated.

The next step for Roukes' team at Caltech is to engineer the interfaces so that individual biological molecules can be weighed.

For this, the team will likely collaborate with various proteomics

house." One person alone could not have planned so many events, so Dima has already begun assembling the Social Team. The members include Chris Gonzales, a freshman in Ricketts, Alicia Lyons, a freshman in Dabney, and Rocky Valez, the sophomore in Lloyd who was Dima's former opponent during the race.

One idea that Dima would like to implement is a calendar on DONUT for ASCIT and inter-house events. Given the packed calendar for third term, the Social Team realized that such a calendar would facilitate scheduling of events.

Dima also emphasizes that he welcomes all constructive criticisms, suggestions, and comments. Noting that ASCIT has more money this year from the increase in dues, he said, "Hopefully some of that money I can use to throw more social events." Dima is a junior in economics and is a member of Dabney and Ricketts.

Keeping with the Spring Break theme of this issue, Dima also talked about his pursuits during this week of rest from Caltech. He spent most of his break on a relaxing visit to some friends in Santa Barbara. Dima hails from the San Fernando Valley, but he also visited friends from Caltech who are in graduate school at UC San Diego.

From Thursday to Saturday, however, the break became more adventurous. He went with some friends from Caltech to Lake Havasu in Arizona. "That was a lot of fun because Lake Havasu is a really popular spring break spot, so people from everywhere goes there. [sic]" He noted that unlike at parties in LA, the lake becomes

Continued on pg. 8
labs for side-by-side comparisons of already known information on the mass of biological molecules with results obtained with the new method.

Roukes announced the technology in Los Angeles on Wednesday, March 24, at a news conference during the annual American Physical Society convention. Further results will be published in the near future.

The Caltech team behind the zepto result included Dr. Ya-Tang Yang, former graduate student in applied physics, now at Applied Materials;

Dr. Carlo Callegari, former postdoctoral associate, now a professor at the University of Graz, Austria; Xiaoli Feng, current graduate student in electrical engineering; and Dr. Kamil Ekin former postdoctoral associate, now a professor at Boston University.

Contact: Robert Tindol
(626) 395-3631
tindol@caltech.edu

Neuroscientists Peer into Brains to Divulge Nature of Trust

by

Robert Tindol

PASADENA, Calif.--Whom do you trust? The question may seem distinctly

human and applicable only to a select few humans at that. However, it turns

out that trust occurs in the human brain in pretty much the same way that insect brains learn from obtaining a food award, that is, by a much more primitive system than we previously thought.

Furthermore, the research also suggests that we can trust each other frequently without getting betrayed and

can do it just because of the biological creatures we are.

In a new milestone for neuroscience, experimenters at the California

Institute of Technology and the Baylor College of Medicine for the

first time have simultaneously scanned interacting brains using a new

technique called "hyperscanning" brain imaging to probe how trust

builds as subjects learn about one another. This new technique

allowed the team to see for the first time how interacting brains

influence each other as subjects played an economic game and built

trusting relationships. The research has implications for further

understanding the evolution of the brain and social behavior, and

could also lead to new insights into maladies such as autism and

schizophrenia, in which a person's interaction with others is

severely compromised. Reporting in Friday's issue of the journal *Science*, the Caltech

and Baylor researchers describe the results they obtained by hooking up

volunteers to functional magnetic resonance imaging (fMRI) machines

in Pasadena and Houston, respectively. One volunteer in one locale

would interact with another volunteer he or she did not know, and the

two would play an economic game in which trustworthiness had to be

balanced with the profit motive. At the time the volunteers were

playing the game, their brain activity was continually monitored to

see what was going on with their neurons.

According to Steve Quartz, associate professor of philosophy and

director of the Social Cognitive Neuroscience Laboratory at Caltech,

who led the Caltech effort and does much of his work on the social

interactions of decision making by employing MRIs, the results show

Merchandise Stunts, Low-Budget Space Research Hold Hope of Vaccum-Exploded Jar-Jar

by

John Powell

Star Wars toys to fly to the edge of space.

On April 9th, the droid R4-G9, a Wookiee Warrior and General Grievous will travel where no Star Wars toy has gone before: to the edge of space.

For this mission, these Star Wars action figures will trade in their

spaceships for a balloon. This flight, called "Away 26", is a high altitude balloon research mission flown by JP Aerospace. It will be

launched from the Black Rock desert in Nevada. The vehicle is a carbon fiber and foam diamond carried aloft by a single large helium-filled

balloon. The balloon will reach a height of over 100,000 feet, nearly twenty miles high. Away 26 will test telemetry systems for high altitude airships and platforms.

R4-G9, Wookiee Warrior and General Grievous are from the "Sneak Preview" action figures for the upcoming "Star Wars: Episode III" movie.

Videos clips from previous JP Aerospace missions to the edge of space can be found online at www.jp-aerospace.com.

Upon landing, the figures, 'droids and Wookiees alike, will be sold on

eBay. The proceeds will go to

that trust involves a region of the brain known as the head of the

caudate nucleus. As with all MRI images of the brain, the idea was to

pick up evidence of a rush of blood to a specific part of the brain,

which is taken to indicate evidence that the brain region is at that

moment involved in mental activity.

The important finding, however, was not just that the caudate nucleus

is involved, but that trust tended to shift backward in time as the

game progressed. In other words, the expectation of a reward was

intimately involved in an individual's assessment of trustworthiness

in the other individual, and that the recipient tended to become more

trusting prior to the reward coming--provided, of course, that there

was no backstabbing. Colin Camerer, the Axline Professor of Business Economics at Caltech

and the other Caltech faculty author of the paper, adds that the

study is also a breakthrough in showing that game theory continues to

reward researchers who study human behavior.

"The theory about games such as the one we used in this study is

developed around mathematics," Camerer says. "But a mathematical

model of self-interest can be

Student Faculty Conference to Settle Whether Twelve-Unit Statics Course With Weekly Laboratories, Term Paper Written for Target Audience of Religious Fundamentalists to Be Requirement for All Majors.

Student Faculty Conference on April 12

"Man, this class sucks."

"You know what sucks more? This other class I'm taking where you have to stand on your head and recite the periodic table."

Classes may not be that bad yet, but students already frequently complain about classes. Whether the class is interminable, the sets herculean, or the TA's as unreachable as distant galaxies, everyone has opinions on academics at Caltech. Every two years, however, everyone has an opportunity to voice these opinions at the Student Faculty Conference (SFC), a day-long conference that provides a forum for student representatives and faculty to discuss issues that are important. In the past, many SFC recommendations have been incorporated into actually changes.

This year, committees composed of dedicated students and faculty have been working hard all year to identify problems with academics, the Honor Code, and quality of life. During SFC, committees present their findings, including survey results, and recommendations.

Media Expert Explains How Adverts Devour Children's Brains

by

Deborah Williams Hedges

PASADENA, Calif.-- Do television, commercials, and the media negatively influence children?

Dr. Susan Linn, Ed.D., cofounder of the Campaign for a Commercial-Free Childhood and author of *Consuming Kids: The Hostile Takeover of Childhood*, will speak about the effects of media and commercial marketing on children.

The event will take place on Wednesday, April 13, at 7 p.m., at the California Institute of Technology Ramo Auditorium.

The event is free and open to the public. No tickets or reservations are required. Linn is associate director of the Media Center of the Judge Baker Children's Center at Harvard University, and an instructor in

psychiatry at Harvard Medical School. She has written extensively about the effects of media on children. The presentation is sponsored by the Child Educational Center,

Caltech, and the Jet Propulsion Laboratory, and cosponsored by Bank of America, the Chandler School, and KidSpace Children's Museum, in recognition

of the National Association

for the Education of Young Children's Week of the Young Child.

For more information, call the Caltech ticket office, (626) 395-4652.

Media Contact: Deborah Williams-Hedges (626) 395-3227

Man With Too Much Free Time Identifies Days

by

Sid Hendrickson

Having been wished a happy Pi day (3/14) by my son, I wished him happy Square-Root-of-Ten day a couple days later (or would have if I had remembered to). The Ides of March were happily nestled in between. This brought to mind other Identified days, days that represent some number or mathematical concept.

Along with May Day and April (Fools) Day, January, February, March, June, July, August, September, October, November and December Days were brought to mind. Of these, the only one whose day of celebration is uncertain is March Day which variously occurs after Feb. 28 or Feb. 29. Check your calendar for its occurrence in any given year.

The only of these days that is a holiday is in January, and is also called New Years Day. That immediately brought to mind Old Years Day which is not usually

Attendees also have a chance to pose questions or comments to the committee. Professors usually cancel class so that both students and faculty are able to attend sessions throughout the day.

This year, SFC will be held in Ramo Auditorium and at other lecture halls around campus on April 12 (Tuesday). More detailed locations and times will be announced soon. The committees are:

1. Core Curriculum
2. Quality of Life (Workload, Student Morale, and Student-Faculty Interactions)
3. Honor Code
4. Humanities and Social Science (HSS)
5. Physics, Astrophysics, and Applied Physics
6. Biology
7. Mechanical and Aerospace Engineering
8. Electrical Engineering/ECE, and Computer Science
9. Chemistry and Chemical Engineering
10. Geology and Planetary Science (GPS)
11. Mathematics and Applied Computational Mathematics (ACM)
12. Environmental Science Engineering (ESE), Computational Neuroscience (CNS),

for the Education of Young Children's Week of the Young Child.

For more information, call the Caltech ticket office, (626) 395-4652.

Media Contact: Deborah Williams-Hedges (626) 395-3227

Man With Too Much Free Time Identifies Days

by Sid Hendrickson

Having been wished a happy Pi day (3/14) by my son, I wished him happy Square-Root-of-Ten day a couple days later (or would have if I had remembered to). The Ides of March were happily nestled in between. This brought to mind other Identified days, days that represent some number or mathematical concept.

Along with May Day and April (Fools) Day, January, February, March, June, July, August, September, October, November and December Days were brought to mind. Of these, the only one whose day of celebration is uncertain is March Day which variously occurs after Feb. 28 or Feb. 29. Check your calendar for its occurrence in any given year.

The only of these days that is a holiday is in January, and is also called New Years Day. That immediately brought to mind Old Years Day which is not usually

To highlight some of the topics of discussion:

- Establishment of HSS minors.
- Establishment of a bioengineering concentration in E&AS (Committee #12).
- Establishment of an Honor Code representative in each division.
- Changes to the Conduct Review Committee.
- Option-specific issues.
- Much, much more!

This is a great way to find out about issues that directly affect you. The entire SFC, is open to all student, faculty, administration and staff. Everyone should attend.

a holiday. Some claim that Old Years Day is not well defined and hence there is uncertainty when it actually occurs.

One of the most interesting of the Identified days is Identified Day. Brought into existence by its bootstraps, it exemplifies circular logic.

In contrast, Unidentified Day exemplifies self-referential, self-contradictory logic. It is the only day on which its exemplary event/concept does not occur! (Or does it? If it's Identified, then it's not actually Unidentified, but if it's not Identified ...)

It's not known when these days actually occur, although there is speculation that Old Years Day may be Unidentified Day.

E- and I- Days have been identified as being on either 4 or 3 days before Tax Day (again, check your calendar), and not on the standard timeline but near the year 0, respectively.

Readers with comments can contact the author at sid@foxinternet.com or his daughter, Sarah, who recently graduated from Blacker, at sbair@mit.edu.

Adam G. Craig Robert Morell
News Director Circulation

The Caltech
Caltech 40-58, Pasadena, CA 91125
editorial desk: (626) 395-6153
advertising desk: (626) 395-6154
editorial e-mail: tech@tech.caltech.edu

VOLUME CVI, NUMBER 21

Tammy Yee Wing Ma Vi Tuong Tran
Managing Editor Business Manager

Adam G. Craig Robert Morell
News Director Circulation

The *Tech* is published weekly except during vacation and examination periods by the Associated Students of the California Institute of Technology, Inc. The opinions expressed herein are strictly those of the authors and advertisers.

Letters and submissions are welcome; e-mail submissions to tech@tech.caltech.edu as plain-text attachments, including the author's name, by Friday of the week before publication. Sorry the *Tech* does not accept anonymous contributions. The editors reserve the right to edit and abridge all submissions for any reason. All written work remains property of its author.

The advertising deadline is five p.m. Friday; all advertising should be submitted electronically or as camera-ready art, but the *Tech* can also do simple typesetting and arrangement. All advertising inquiries should be directed to the business manager at business@tech.caltech.edu. For subscription information, please send mail to "Subscriptions."



photo courtesy of blaze.caltech.edu

Ricketts Senior Galen Loram, having retired after many long months of industrious leadership as ASCIT president, is not long for this world of Caltech. Goodbye, and Happy April Fools.

I must admit it is a bit strange to not have to wake up before eight to throw boxes of donuts out on the Olive Walk, to wander out there and see the telltale boxes lined up and their contents already devoured, to get the email from "ASCIT President" and not have written it myself, but enough ramblings.

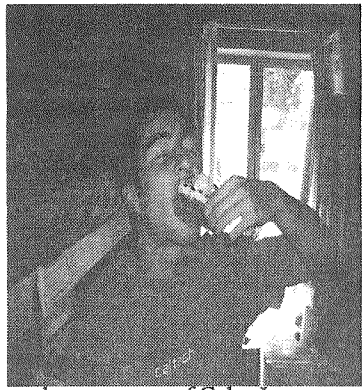


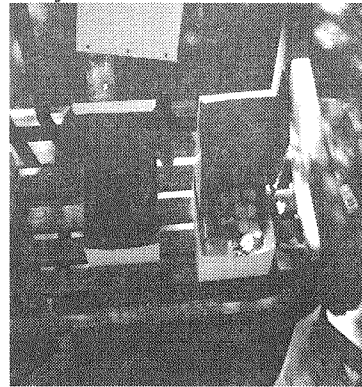
photo courtesy of Galen Loram

I just wanted to thank all of you who gave me a chance to serve you as Student Body President and as VP/BoC Chair the previous year. When I showed up here as a socially awkward, tall kid in horribly-fitting black clothes, the thought I would be giving presentations, running meetings, and hopefully helping steer the direction of the institute a little bit was absolutely inconceivable. I thought I was an extra-large, which resulted in my having to walk as if I had been riding a horse in order to prevent my pants from falling down after losing the freshman five. I had yet to discover the joys of a belt. Also, I hereby send out a big thank you to all of you undergrads, grads, faculty, and staff with whom I have had the pleasure to work. Through the many good times and the rough, it has been a ride. So thank you: you have been awesome.



photo courtesy of Galen Loram

Yet the reason I wanted to write this was for a little laugh for us all, as I do not have email spamming privileges anymore. No more seven page long emails, just seven page long tech articles, will you receive from me. The happy coincidence of my first day of being done as ASCIT President, a Friday, and April 1st was too much to pass up for a little mini-prank. A couple of weeks ago, I had visited this little bakery called "Three Dog Bakery" that sells treats for dogs in Old Pasadena. They are quite like a normal bakery for humans in that they sell cookies, pastries, and cakes, but these confections are for dogs: they lack dangerous ingredients like chocolate and wheat and are all vegetarian-friendly. They have names like "Great Big Bone," "Lick and Crunch," and "Drooly Dream Bars." After checking that they were suitable for human consumption, even if they do not taste so great, I could not up pass it. They taste a bit bland, as lots of folks could tell you now.



Setting up camp next to the normal Friday morning donuts, I staked out a spot with a digital camera, two boxes of doggie pastries, and a big smile. People would drop by; I would offer them a little desert, and they would happily accept. After a bite or two, the choice quotes of the day were from Dima and Igor. After demanding a "Drooly Dream Bar," Dima got suspicious of my uncontrollable laughter and decided he would not take a bite. I finally relented and told him it was dog food, and he promptly replied, "Oh, I've always wanted to taste dog

food" and bit into the bar. Igor, who after enjoying one of the little pastries decided to go for the Dog-Bone shaped cookie, not knowing they were dog food proclaimed, "You know, this tastes a bit like a real dog bone."



photo courtesy of Galen Loram
How he knows that, I do not want to know. Then I would make sure to take a picture or two, so drop by www.its.caltech.edu/~galen/dogfood to see a few pictures of your classmates, students, sons, daughters, or other acquaintances eating a bunch of dog food, and, if you got a "pastry," happy April Fools!

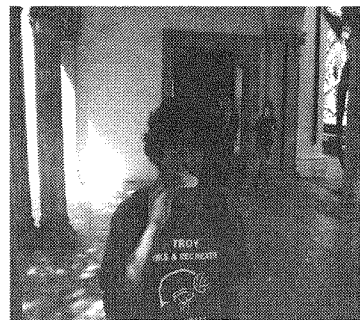


photo courtesy of Galen Loram

The Incident Report: Verifiable by Gunnar Ristroph

Caltech Security is harmless and not to be feared. They do a great job of keeping hell-raising students out of trouble with the Pasadena Police. They run off bums who are looking to steal recycling from dumpsters and occassionally laptops from buildings. They are on the scene when someone gets hurt or something is on fire. They have no more authority than you have as a citizen, except that

they can give you parking tickets. They cannot search your room; they cannot search your car; you do not have to answer their questions.

They have not carried guns in several years. Security guards walk around taking notes. And if you are up to

something interesting, they might take notes about you. They might

write up these notes in the form of an Incident Report. Then they will file your Incident Report away in a drawer somewhere, but, before

they do, they might send copies to some people. They will send a copy

to Facilities Management if a dumpster was on fire, but if you were involved, they might also send a copy to the Dean.

The Dean is the most powerful person in a student's life at Caltech.

Besides his immense author-

Picking through the Information Super-Rubble

by
Luke Breuer

Ten years ago, industry experts told computer users to imagine a world of universally accessible networks of information. Today, the Internet only partially fulfills that promise. Searching the Internet is like shopping in a flea market: it is often hard to find what you want, and even if you find it, its quality is unpredictable. One solution is to include metadata, data that describe the content of websites.

For instance, imagine shopping for a laptop. You google the phrase "buy laptop" and get approximately ten million results. Fortunately, the first few results seem promising: "Laptop buying guide," "Compare prices and ratings," and "Buy Laptop." Contrast this with a hypothetical search on the *semantic web*, getting results such as "Laptop reliability vs. price," "Battery life," and "Technical support ratings." While each of Google's top ten results is an individual web page, the top ten results of the *semantic web* search are compilations from thousands of websites, each of which specifies the name,

ity in academic matters, he is the ultimate

enforcer of Caltech's policies and has sweeping powers to impose

punishments and kick you out of Caltech.

Sadly, deliberations by the Dean lack the key elements of modern forms

of justice. Any principles of civics, law, or justice that may be

familiar to you do not apply.

You are not entitled to notice of any accusations. The Dean may say

that you have "violated Caltech's policies" but you may not be told

exactly what you allegedly did and how it violated a particular

policy. You have no right to face your accuser. You may be prevented

from seeing evidence against you.

You may appeal the Dean's decisions to the Vice President for Student

Affairs, but she only "reviews the process". Further decreasing the

chance of a successful appeal, the general standard for a successful

appeal is that the Dean was arbitrary and capricious.

The process depends entirely upon the fairness of the Dean, which can

be a rotten deal for both alleged violators and accusers. Students

who find themselves in trouble must practice good legal habits.

Leave a paper trail: keep every letter or email communication and take

careful and exhaustive notes. Insist on tape recording every meeting.

Dean Revel will refuse to allow you to tape record a meeting with

continued on pg. 5

price, and other relevant data on a specific laptop. Metadata on every web site enable this by telling the search engine where to find each piece of information about the laptop, in effect giving semantics, or meaning, to the data.

Before Google introduced its *pagerank* technology, search engines typically only used the most basic data available: plain text. Google greatly advanced searching technology by counting hyperlinks as well: the more pages link to a site, the more useful it is likely to be. Processing anything more than the text and hyperlinks in a typical website is a task only a sophisticated AI or person can do. Semantic web solves this problem by inserting information that is invisible to the user into websites. For an online store, this invisible information, or metadata, may indicate the store's location, what it sells, and how much items cost. If hundreds of stores were to use metadata, then a *semantic search* could return results from all the stores at once, organized based on item type, price, and availability.

One of the largest obstacles to the semantic web approach is volume. Without sufficient data described with metadata, semantic searches cannot return enough useful results. The first Google result contains data compiled from multiple sources; a semantic search would require hundreds if not thousands of sources to outperform Google. The net result is that very few website developers include metadata: it simply does not benefit them.

The solution is to inject the necessary activation energy by providing enough seed data and metadata to make semantic searches useful. Once the value of the semantic web approach is evident, more web designers will react by participating in the semantic web. This is the goal of WebMark, an online collaborative effort to store and describe websites. Once a WebMark member finds a good website, she adds a link to WebMark along with a short description and some keywords. Others looking for what he found can first search WebMark and make use of the research it has already done.

I and others have populated WebMark with links to other websites in order to demonstrate its usefulness. Search for almost any class you are currently taking: type the abbreviation with no spaces, (e.g. "ee52"), press enter, and you will find either the course website or a list of course websites including the one for which you searched. Use this small example to experience the value of semantic web. Then register an account and start adding websites with the appropriate metadata. With your help, the value of semantic web will grow exponentially.

<http://labreuer.caltech.edu/webmark>

Getting Angry With and At Angry Little Asian Girl

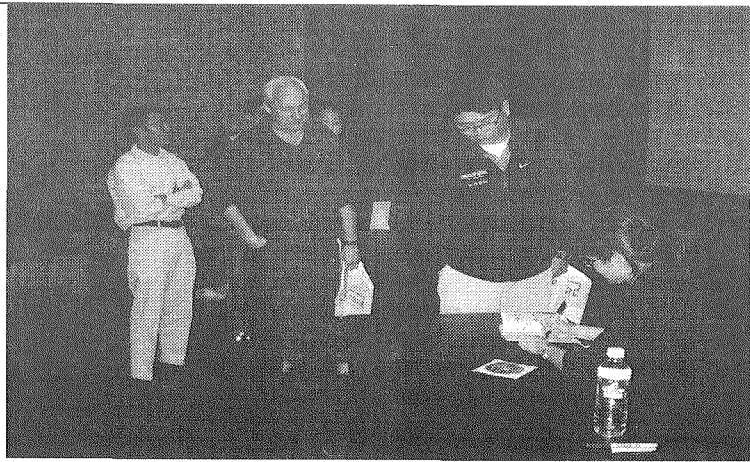
by Meng-Meng Fu

What's a girl got to be angry about? Apparently myriad slights. Last Thursday, cartoonist Lela Lee wrapped up Women's History Month at Caltech. Lee gave a talk centered on her animations and comic strip, Angry Little Asian Girl. Lee's alter ego is Kim, a six-year-old with a big mouth and no fear of speaking her mind.

After graduating from Berkeley with a degree in

her shocked parents, and eats cereal.

There is also the case of Pat, a little boy who desperately wants to be a girl, because girls wear prettier things and do not have to get jobs when they grow up. Kim then rants about all the terrors of being female, namely childbirth, PMS, and the monthly visitor. She also adds being ripped off by



The line for her autograph demonstrates the breadth of her fanbase. photo by Michael Chang

the vulgarity of the language but rather the fact that Kim is angry at her friend and not at the little boys, belying any sense of female solidarity.

Lee admits that early on she discovered that her work had struck a nerve, not only in the angry Asian female population, but among people of all genders and races. She believes that this is because all people have faced some type of discrimination or humiliation. This may be true, but, unfortunately, Lee's cartoons and comics fail to recognize the subtle



photo by Michael Chang

Lela Lee made a name for herself by adopting attitudes perpendicular to common expectations of Asian women.

rhetoric, Lee began creating cartoon animations with self-assessed "grade school artistic ability." The focus of her work is definitely not the illustrations but the words. Take for example Kim's first day of school. Kim arrives to find that her entire class consists of blonde little school children. When the teacher comments on Kim's ability to speak English well, the little girl calls the teacher an ignoramus. She then leaves school, goes back home to

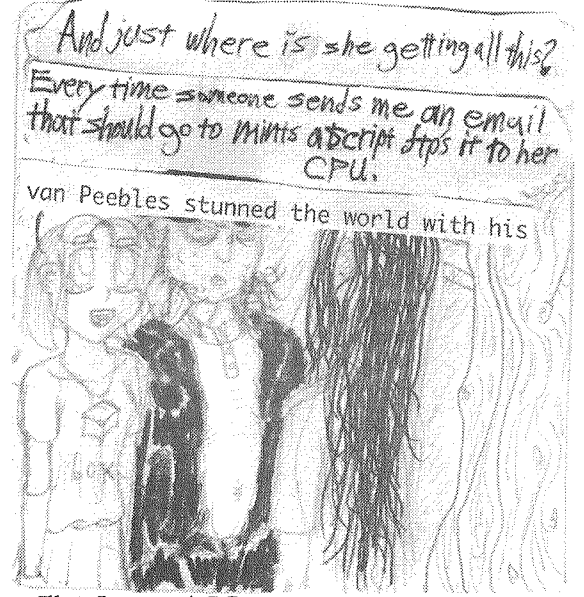
car mechanics and craving chocolate pizza all the time.

Though most of Kim's outbursts are clever, some are just mean. At the park, three boys greet Kim's friend Sally and tell her how pretty she looks. Sally wonders, "Gee, I don't know why the boys didn't say hi to you." Kim lashes out at Sally, calling her purported friend a slut and stating that the boys only acknowledged Sally out of interest in sex. In this case, the disturbing part is not even

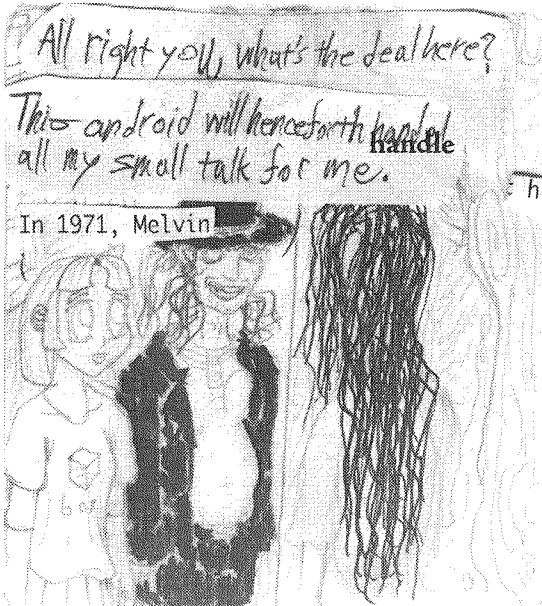
We Love Coquettish KaliTech Bread Life



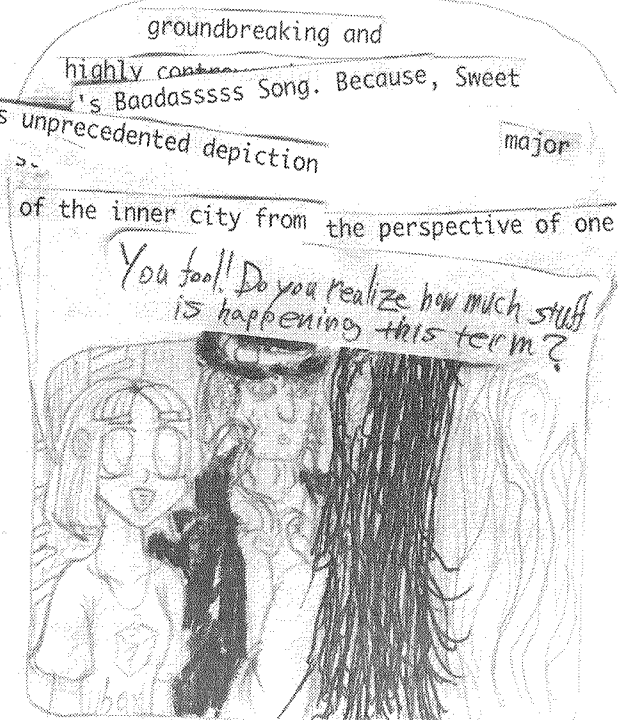
Text: Terry Anne Yen, Candace Seu, Rex Mayreis,



Ill. & Layout: AGC



Rosemary Laranaga, Margaret Moral, and AGC



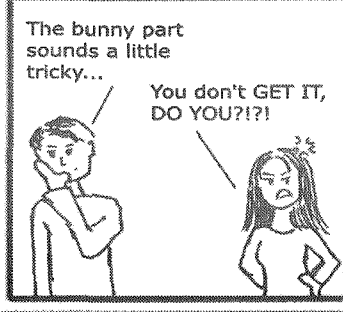
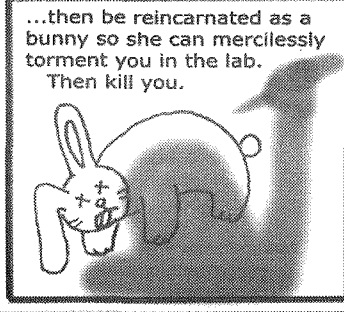
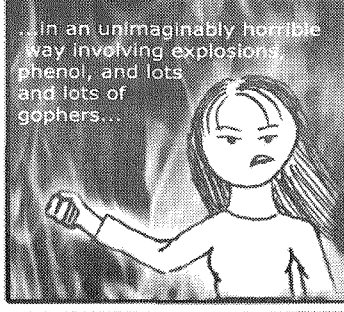
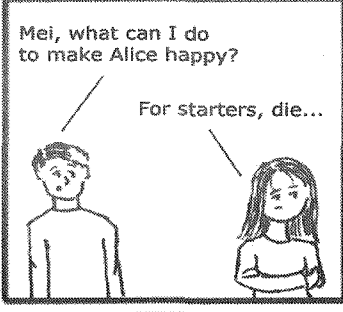
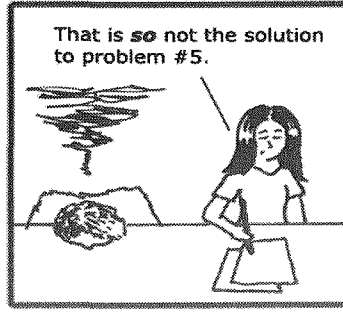
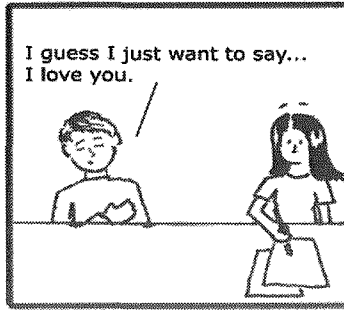
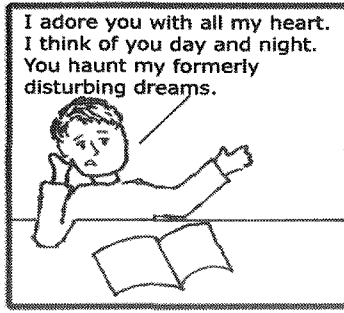
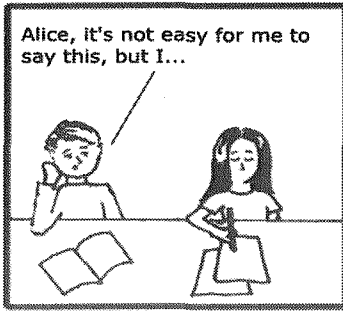
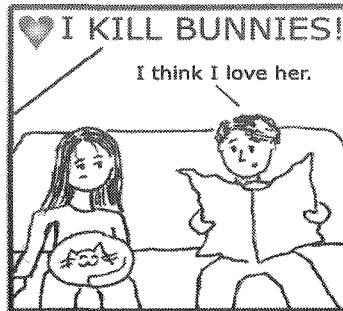
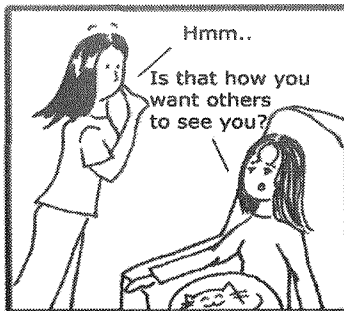
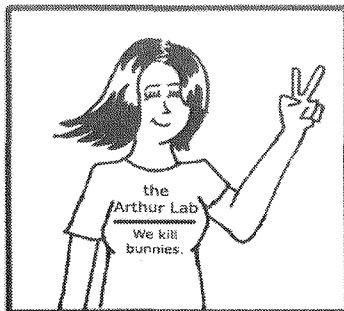
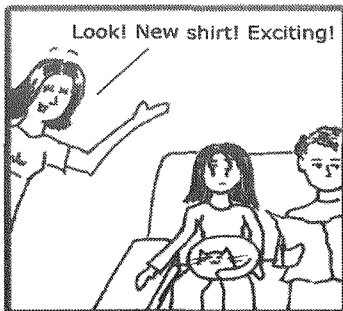
intricacies of racial and gender issues. Her work is geared solely toward shock value and keeps stabbing at the same old Asian or female stereotypes.

Lee also failed to address any issues specific to the Caltech campus. In light of recent controversy and comments regarding the adequacy of women in science, when asked what advice or comments she had for angry little Caltech girls running around in this three-to-seven campus, Lee referred to one of her comic strips in which the little girl knew the answer to the teacher's question but doubted herself, and didn't raise her hand. Lee's message to Caltech girls is, "Raise your hand."

This may not be enough for women dying of AIDS in Africa, women around the world who have no rights, and women in this country fighting for equal representation in government and academia, but it is just a cartoon, good for a couple of laughs, guffaws even. Check out more Angry Little Asian Girl comics at www.angrylittlesiangirl.com.

Irrational Exuberance

Zhiyun Guan
zguan@caltech.edu



Make my ears stop leaking science!

by Jeffrey Phillips

Midterms are always a turning point for me. I have soaked up a great deal of useful knowledge up to that point, but thereafter the sponge in my head starts squirting back, leaking down my ears, and creating those nasty stains on my shoulders. People stare at me, eyes glazed with incomprehension, when I try to explain that my brain-sponge is full and the rest of my knowledge is leaking out, so I have started wearing corks to keep it all in. [We do not end our sentences with prepositions, but I just tacked one on.]

The trouble with those plugs is that while, with constant readjustment and daily changing, I can keep in what little useful science is left up in my addled mind, I find it very hard to hear what my profs are saying. This is unfortunate because my profs are oblivious to the corks in my ears, and continue showering me with new concepts I can never hope to catch. I've tried bringing jars to catch the runoff, but they just crowd my scribbled notes and half-read texts on my bookshelf. Sometimes I ease one of the corks when it seems like something important is going on, say, when a prof stops mumbling to the board and actually turns around to face his class, but all I can make out is the sickening gurgle of several important memes trickling from my super-saturated brain-sponge.

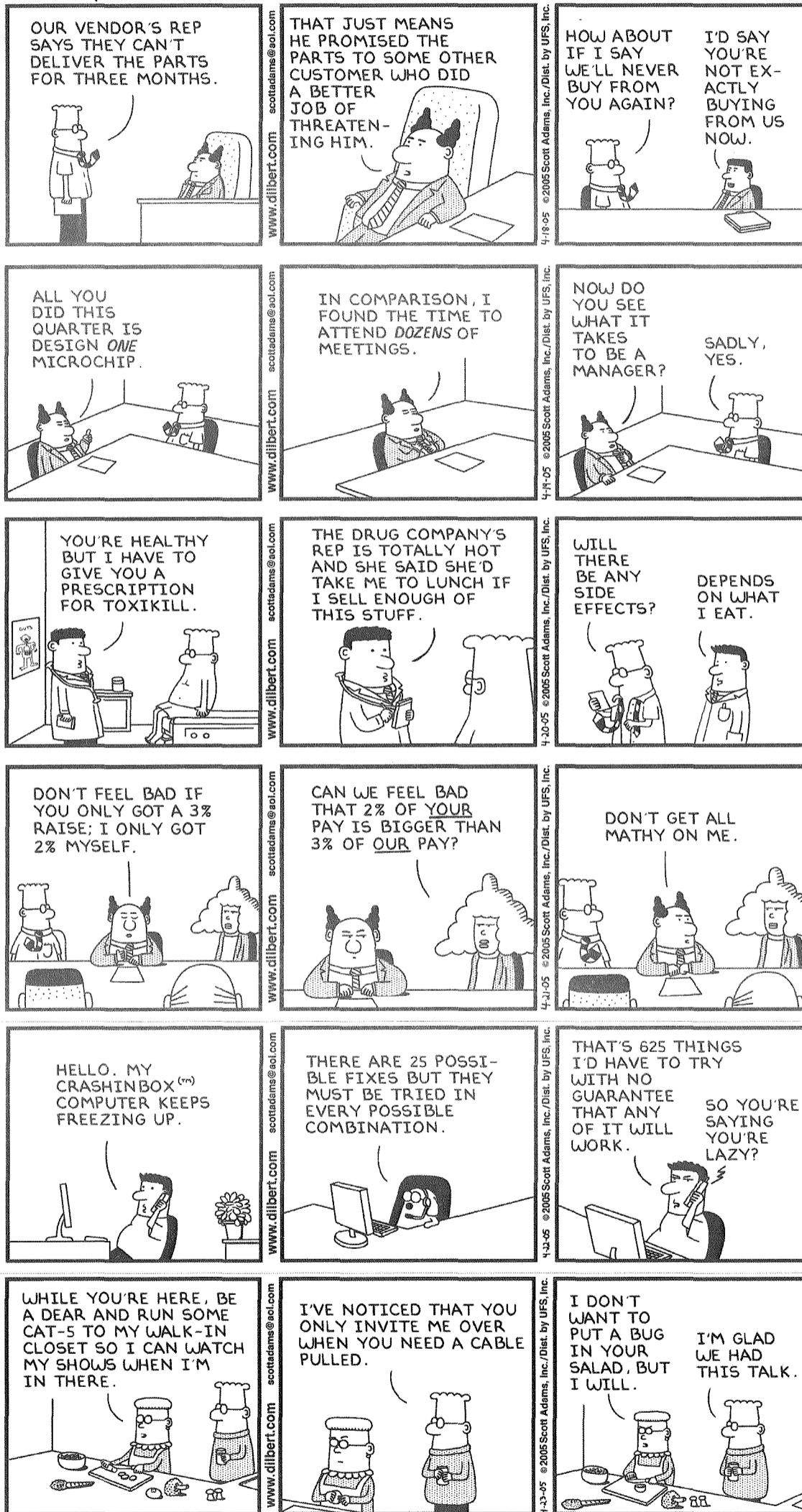
My old high school friends who went to other competitive schools say they work hard and play hard. The Techer way means working hard and... working harder. I am not the first Techer to ask, with all this work, when can I find time to think? "How does having work prevent people from thinking?" my editor asks. I shall redirect his question to every frazzled Techer up past 3 am frantically trying to finish three sets before the sun comes up so they can sleep uneasily for two or three hours before that damned chem lab forces their bleary eyes open again. Other schools have dead weeks, but we get a couple days of study period, which straddles a weekend, during which most exams have already been handed out. The

Letter from the Editor: We Apologise for the Bliss

and hope that you have enjoyed the delay that has kept from you the knowledge of what this first California Tech of the term. My inexperience with InDesign and with Macintosh computers in general slowed my progress at times to a mere scraping of worn and bloodied fingers against the keyboard, but even then did I find strength and rejuvenation in the zeal with which both students and faculty have contributed to this issue. An unfortunate mishap occurred when the walls of one of our comics burst due to abnormally high word balloon pressure. The unbound word balloon raged rampant across the page until it exhausted its supply of content trying to breach a blockade around the borders of the page. I encourage interested parties to contact tech@ugcs.caltech.edu for text from affected features, and I apologize most humbly to any paying advertisers whose advertisements do not appear in this issue due to a file corruption. For redress by refund or free advertising next issue, please email business@tech.caltech.edu, but I hope to hear from everyone who reads this issue. Finally, I could fill an entire article with thanks to Kevin Bartz, Matthew Ealker, and Tammy Ma for guiding me along the tortuous, detail-strewn path to a completed California Tech.

Because It's There...

Dilbert by Scott Adams



choice is ours to split two weeks between exams, exam reviews, merciful sleep, and what little spring break we get, before coming back to run the whole ten week gamut all over again.

Teachers are workaholics. We Teachers attend Caltech in order to acquire workahol. My editor suggests that even if the administration prevented the professors from assigning work at all, students could meet in secret to assign each other difficult and time-consuming homework sets and tests. That is sad, but true. It is time to get serious about curbing this bittersweet masochism, and we can't do it alone. I plead to the registrar, the profs, the administration, the Powers that Be: give us some time to sober up from all that workahol. Shorten classes by two weeks, and tack these on the end of the term as a full week before and after final exams: one to let the knowledge trapped in my sponge ferment into something worth squeezing out onto a blue book and one after the exams are dead and buried (no zombies, please), to let me hang out around the "world's best playground for math and science." Let me hear an inspiring talk, build a catapult, write a fucking poem, have a poetic fuck, or just let me see the sun and try to remember how much I once loved "the joy of finding things out." Then, and only then, will I be fit to take a week of vacation without my parents' seeing me more and more haggard with every visit.

"Eight weeks is too short!" I heard a professor cry. I haven't stuffed my ears with post-midterm corks, so I can still hear him, and in reply I say, "Ten weeks is too short! And yet Tech profs manage to fit semester-long treatments into ten week courses through some ungodly feat of prestidigitation." A shorter term forces the profs to cover less, and the departments to accept a curtailed curriculum. With only three weeks of class stuffed into my head by midterms, I could leave out the corks for a bit longer, and with only three more to plod through before some sweet relief for my aching mind, I might just make it all the way through, abandoning the corks altogether. If I had the time to learn a little bit less, a lot better, the time to internalize things rather than over-saturating my sponge for an exam only to have the excess and more dribble out the next day, I would be a more effective scientist, and a happier person. So take this plea to heart, you who determine the term schedules, and save me the pain of explaining these dribbled brain stains on my shoulders.

him, but insist anyway. If forced into a secret meeting, take notes on paper. After the meeting, give involved parties a copy of your notes and ask him to review and correct them. If you don't, then you will disagree about what someone said in the meeting when it comes up again. Good legal habits will serve you well for life, whether you are at the mercy of the Dean or at the mercy of a jury of your peers.



Promoting an Event?
Need give away items?
for..... Fund Raisers,
Meetings/Seminar handouts
Recruitment items, Awards

Call 213-689-4662
"If you can imagine it, we can create it."

ROSEBUD Marketing Group
110 E. 9th Street Suite A-444
Los Angeles, CA 90079

www.RosebudMarketing.com E-Mail: mjd1903@aol.com

Less edited versions of all text available on request from tech@ugcs.caltech.edu.

VERTS THAT LOOK LIKE COMICS

Interfolio is the nation's leader in electronic portfolio services and works with over 50 colleges and universities across the country to offer this valuable service to their campuses. A student or alumni portfolio can include letters of recommendation, curriculum vitae, writing samples, dissertation abstracts, teaching certifications, student evaluations, and more. Interfolio accepts and stores almost any type of information from paper files to electronically uploaded documents. More than 50 types of electronic files are automatically converted to Adobe Acrobat (PDF), including text and picture file formats. Additionally, Interfolio will scan paper documents and add them to a file holder's portfolio.

I wonder if they give me a merit scholarship.
Do you have any merits?
I can eat my weight in Ramen in a day.
It's probably in the mail now.

With only Hawaii, Hawaii, solo albums often Hawaiian
International in 2002, Jake has gone on to become winning "Best Instrumental Album" for the past most prestigious music awards, and becoming producers appreciate his talent as well: this last year's national tour with Bela Fleck and the four strings and two octaves, traditional three-chord songs, show everyone that the surprising takes on old standards, and music to include elements of jazz, "Revenge"; I realized that

The Caltech Hawaiian Club thus proudly announced Jake Shimabukuro this week at Caltech, en route to Little Tokyo (April 8 at 8pm, http://www.jacc.org). The concert is free and open.

For more information about Jake and Interfolio, Inc., visit <http://www.jakeshimabukuro.com/> 877-77-FOLIO

On Saturday, April 13, at 8:00 PM, Mary Z. Cox and her husband, Bob, will perform in Dabney Hall. This will be a night of traditional Hawaiian music. Mary plays Clawhammer Banjo and Mountain dulcimer and has won numerous contests and awards in the Southwestern United States. Bob plays guitar. Student tickets are \$5 and in accompaniment with Bob on guitar. Other musicians and from the Caltech ticket office, 395-4652.

Learning to play the ukulele is compulsory for fourth as a kid's instrument, like Jimi Hendrix-like wrong. The Caltech soundboard are willing.

I say thee nay! The Eukalaliens shall carry the day!

When I heard Jake no more compelling a larger public performance at the JACCC in Avery Library at 8pm on Thursday, April 7, to all Caltech community members as space permits, his music, please visit

graders in Hawaii, eagerly looks forward to hosting Jake frequent guest at Hawaii school Alliance for Arts Education and the available

Halt. It is futile to resist the forces of Banjog.

For somebody to work the If you have experience, or contact: Margaret Moral, Caltech's Career Center, 392-223-3358 ext. 350 626-3955-6361

Interfolio Development Center, ability to ever view the contents of tech savvy, Interfolio also accepts

As Hawaii's Goodwill Ambassador, I am pleased to announce that I will be performing at Caltech on Saturday, April 13, at 8:00 PM. This will be a night of traditional Hawaiian music. Mary plays Clawhammer Banjo and Mountain dulcimer and has won numerous contests and awards in the Southwestern United States. Bob plays guitar. Student tickets are \$5 and in accompaniment with Bob on guitar. Other musicians and from the Caltech ticket office, 395-4652.

Each year, the Scholarships and Financial Committee Aid recommends a number of the most freshmen for Upper Class Merit Awards. Upper Class Merit Awards are based on outstanding scholastic achievements demonstrated by exceptional academic performance, independent research, and extracurricular activities since beginning academic studies at Caltech. They are not based on financial need. The level of awards is determined by the caliber of the applicants. Approximately \$1,000 will be awarded this year. Last year, the Committee recommended a total of 50 Upper Class Merit Awards. Awards ranged from \$19,002 (3/4 tuition) to \$33,348 (full tuition/room/board).

All eligible students are encouraged to apply. Applications and recommendation forms are available online at: www.finaid.caltech.edu/UpperClassMeritAwardWinter2005.html or in the Financial Aid Office at 414 South Holliston Avenue, Room 110.

The deadline for submitting the completed applications to the Financial Aid Office is: 5:00 pm on Friday, April 8, 2005

No Late Applications will be considered.

Caltech Partners with Interfolio to Offer Electronic Portfolio Services

WASHINGTON, DC -- April 3, 2005-- Caltech students and alumni now have a simple way to create and manage educational or professional portfolios. A file can include letters of evaluation, curriculum vitae, committee letters, certifications, and more. These documents are then used to support applications to graduate schools, professional schools or jobs. By storing confidential letters of recommendation, writing samples, dissertations, teacher or peer evaluations or other materials in one place, all documents are easily available when applying. Students can have faculty submit letters of recommendation to a file now, while their work is easily recalled, and then use the letters as part of an application at any point in the future.

While traditional portfolio or credentials files have been paper-based and difficult to manage, Interfolio files are maintained electronically and are available anytime, anywhere from a standard web browser. Caltech students and alumni control everything: adding documents, deleting documents, or delivering documents to an institution where to apply and when. Interfolio becomes as simple as telling Interfolio where to apply and when. Interfolio does all the work! Interfolio can send documents electronically to participating institutions or mail them to any location in the U.S. or around the globe. All delivery requests are processed within one business day and priority service is also available.

In an application, recommendations received, they do the documents, these letters via

Interfolio maintains the confidentiality of all closed letters of when these letters are

Can Interfolio Make these into a good resume for me?

hypocrisy, van Peebles

capable of so much more classical pieces and Shimabukuro, a native of Hawaii

With only Hawaii, Hawaii, solo albums often Hawaiian

International in 2002, Jake has gone on to become winning "Best Instrumental Album" for the past most prestigious music awards, and becoming producers appreciate his talent as well: this last year's national tour with Bela Fleck and the four strings and two octaves, traditional three-chord songs, show everyone that the surprising takes on old standards, and music to include elements of jazz, "Revenge"; I realized that

The Caltech Hawaiian Club thus proudly announced Jake Shimabukuro this week at Caltech, en route to Little Tokyo (April 8 at 8pm, http://www.jacc.org). The concert is free and open.

For more information about Jake and Interfolio, Inc., visit <http://www.jakeshimabukuro.com/> 877-77-FOLIO

On Saturday, April 13, at 8:00 PM, Mary Z. Cox and her husband, Bob, will perform in Dabney Hall. This will be a night of traditional Hawaiian music. Mary plays Clawhammer Banjo and Mountain dulcimer and has won numerous contests and awards in the Southwestern United States. Bob plays guitar. Student tickets are \$5 and in accompaniment with Bob on guitar. Other musicians and from the Caltech ticket office, 395-4652.

Learning to play the ukulele is compulsory for fourth as a kid's instrument, like Jimi Hendrix-like wrong. The Caltech soundboard are willing.

Each year, the Scholarships and Financial Committee Aid recommends a number of the most freshmen for Upper Class Merit Awards. Upper Class Merit Awards are based on outstanding scholastic achievements demonstrated by exceptional academic performance, independent research, and extracurricular activities since beginning academic studies at Caltech. They are not based on financial need. The level of awards is determined by the caliber of the applicants. Approximately \$1,000 will be awarded this year. Last year, the Committee recommended a total of 50 Upper Class Merit Awards. Awards ranged from \$19,002 (3/4 tuition) to \$33,348 (full tuition/room/board).

All eligible students are encouraged to apply. Applications and recommendation forms are available online at: www.finaid.caltech.edu/UpperClassMeritAwardWinter2005.html or in the Financial Aid Office at 414 South Holliston Avenue, Room 110.

The deadline for submitting the completed applications to the Financial Aid Office is: 5:00 pm on Friday, April 8, 2005

No Late Applications will be considered.

Caltech Partners with Interfolio to Offer Electronic Portfolio Services

WASHINGTON, DC -- April 3, 2005-- Caltech students and alumni now have a simple way to create and manage educational or professional portfolios. A file can include letters of evaluation, curriculum vitae, committee letters, certifications, and more. These documents are then used to support applications to graduate schools, professional schools or jobs. By storing confidential letters of recommendation, writing samples, dissertations, teacher or peer evaluations or other materials in one place, all documents are easily available when applying. Students can have faculty submit letters of recommendation to a file now, while their work is easily recalled, and then use the letters as part of an application at any point in the future.

While traditional portfolio or credentials files have been paper-based and difficult to manage, Interfolio files are maintained electronically and are available anytime, anywhere from a standard web browser. Caltech students and alumni control everything: adding documents, deleting documents, or delivering documents to an institution where to apply and when. Interfolio becomes as simple as telling Interfolio where to apply and when. Interfolio does all the work! Interfolio can send documents electronically to participating institutions or mail them to any location in the U.S. or around the globe. All delivery requests are processed within one business day and priority service is also available.

In an application, recommendations received, they do the documents, these letters via

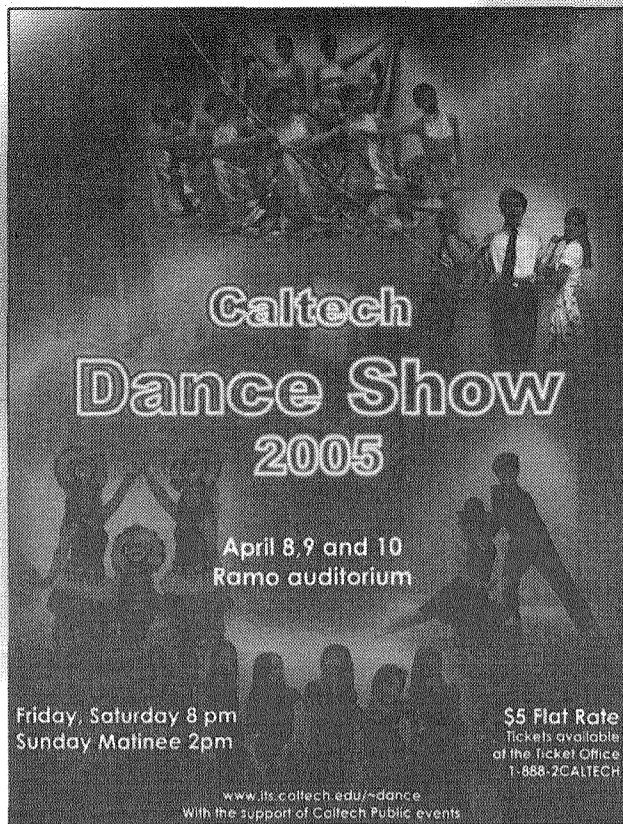
Interfolio maintains the confidentiality of all closed letters of when these letters are

Can Interfolio Make these into a good resume for me?

Caltech Dances, Even if You Do Not

by Rachel Yohay

Can Techers dance? Judging from what I have seen in two and a half years of inter-house parties, my answer is a resounding "no." Partygoers roughly fit into two categories. Wallflowers, smugly enjoy the atmosphere from the sidelines and maybe poke fun at the brave souls trying their luck on the dance floor. Every weekend, these guys fight for their right to party moderately. Contrast them to category number two: scientists by day, shameless booty shakers by night who balance their deficit of ability with redoubled effort. Their concoction of moves ranging from "the sway," in which a dancer shifts his weight from right leg to left, sometimes in step with the music, to "the drowning man," a frantic flailing of every limb, sometimes in step with the music, is a jelly for which no one is ready. Missing are people who can ably move their bodies to the music and genuinely enjoy themselves. The success of last



poster courtesy of Rachel Yohay, who probably got it from one of the event organizers she mentions in the article.

year's campus-wide dance show proves that, while this middle ground may be absent from undergraduate parties, it thrives among the greater Caltech community. In 2004, the Caltech Dance Troupe called on any interested members of the community to assemble dancers, choreograph pieces, and perform them. The result was the Caltech Dance Show, which featured graduate students, undergraduates, and Caltech employees, and

exhibited a wide variety of styles, including salsa, belly dance, and modern. Both performances out sold, prompting the show's organizers to stage it again this year.

The Second Annual Caltech Dance Show, which will run April 8-10, should be even better than last year's show. Fourteen dance numbers and an intermission will bring the length of the performance to about ninety

continued on pg. 8

Women's Water Polo Team Hosts Classic in Rain at Risk of Getting Wet.

by Mikle Rupp

The Caltech Women's Water Polo team hosted its annual Caltech Classic this past Tuesday with teams from Washington & Jefferson, Macalester College, Chapman University, Occidental College, St. Francis and the University of La Verne all attending.

Despite unhelpful weather which led to some delays, they event was a success for the Women's Water Polo program, as teams from all over the country had the opportunity to play each other.

In their first match, Caltech lost a heart-breaking 7-6 match to Macalester College in sudden-death triple-overtime. Sophomore Preetha Sinha had two goals and four steals to lead Caltech.

In their second match, Caltech fell to Washington & Jefferson, 11-3. Sinha and Seniors Beth Dorman and Natalie Kruk each managed to score goals against an impressive W&J defense. Senior Goalkeeper Delia Davies had seven blocks and four steals.

For the season, Sinha continues to lead the team in scoring with 13 goals. She also leads the team in steals (26) and errors drawn (16).

Davies has been extremely impressive in goal, with 108 blocks on the season. She also second on the team in steals with 25.

Senior Beth Dorman's totals include 11 goals, 15 steal, five assists and ten errors-drawn.

The team plays next this Wednesday at Chapman University. Their next home match is this Saturday against Cal Lutheran. The match begins at 10:00 AM.

Golf: Munoz shoots 89 in loss to Redlands

The Caltech Golf team lost a SCIAM match to the University of Redlands, 305-380 on Monday.

Sophomore Isaac Munoz led Caltech with an 89. Munoz's score is the lowest produced by a Caltech golfer this season.

Freshman Aaron Hoffer (93), Freshman Torrey Spink (97) and Junior Stuart Ward (101) rounded out the Caltech lineup.

The team plays next Monday, April 4th against Occiden-

tal College. They will host the match at the Annandale golf course. The match begins at 12:30 PM.

Women's Tennis Recap: Losses to Lewis & Clark; Westmont

The Caltech Women's Tennis team lost matches to Lewis & Clark College, 1-5, and to Westmont College, 0-9, this past week.

Junior Jennifer Hsiao was once again Caltech's standout player. Hsiao won Caltech's sole point in the Lewis & Clark match, winning at #1 singles. Hsiao also had an impressive performance against Westmont, taking Westmont's #1 singles player to brink before falling short in a 6-2, 7-6 (7-4) result.

The team's record currently stands at 4-6, with five matches still remaining on the schedule before the SCIAM Conference Championships.

Their next match comes this Friday at the University of La Verne. Their next home match is Saturday, April 2nd against the University of Redlands. The match begins at 2:00 PM.

Men's Tennis sweeps Cabrini; falls short against Westmont

The Caltech Men's Tennis team picked up their third win of the season this past Wednesday with a dominating 7-0 victory over Cabrini College.

Junior Britton Boras won his match at #1 singles, 6-0, 6-3. He also teamed up with Senior Parth Venkat to win at #2 doubles, 8-4.

Juniors John Howard and Derek Chang easily won their match at #1 doubles, 8-1. They each won their singles matches with Howard winning at the #2 spot, 6-3, 6-2, and Chang winning a 6-3, 3-6 (10-4) slugfest to preserve the sweep.

The team's record now stands at 3-6. Their next match will be this Friday, as they host the University of La Verne. The match begins at 2:00 PM. They will be playing Occidental College at home on Saturday morning, in a match scheduled to begin at 9:30 AM.

Baseball drops two games to Bethany

The Caltech Baseball team lost two games this past Saturday in a double header at Bethany College in Santa Cruz, California.

Freshman Shawn Surdyk lost the first game, 12-0. He had two strikeouts in seven innings.

Senior Isaac Gremmer started the second game for Caltech. Gremmer had four strikeouts in a 7-0 loss.

Senior Felipe Torres had two hits in the first game, and a hit and a walk in the second game.

Friday's game against UC Santa Cruz was cancelled due to rain. No makeup date has been scheduled as of yet.

Caltech's record now stands at 1-7 with six games left on the schedule.

The team plays next as they host club team Dodgertown West in a double-header this Saturday starting at 10:00 AM.



photo courtesy of Professor Rex Mayreis
Mary and Bob Cox play banjo.

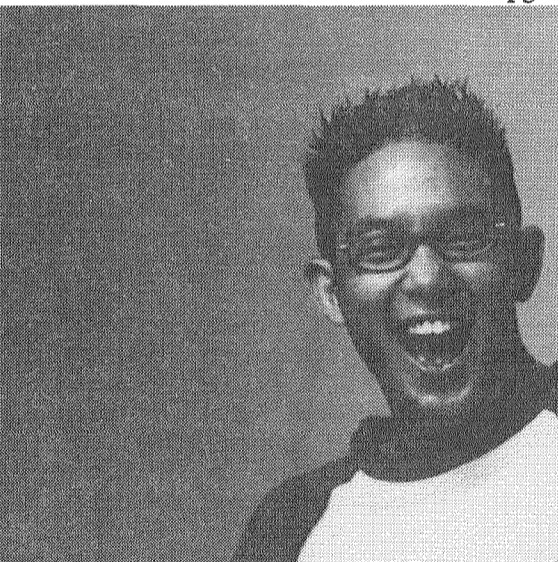


photo courtesy of Candace Seu
Jake Shimabukuro Plays Eukalele

Always Natural, Always Fresh!

Sharky's WOODFIRED MEXICAN GRILL

- 100% Natural Caltech Great Chicken Tender
- 100% Natural Beef (No Hormones or Antibiotics)
- 100% Caltech Organic (No Pesticides)
- 100% Protein Grade Fish

Pimp Not Pumped! Drug Free Cows? Don't Panic, We're Organic! Just Killer Fish!

New In... NOW ACCEPTING THE CALTECH STUDENT ID CARD!

PASADENA
841 CORDOVA ST.
BETWEEN LAKE & HUDSON
ACROSS FROM LA-TRINGS
(626) 568-3500

VALIDATED UNDERGROUND PARKING AVAILABLE
PLEASE CALL FOR CATERING AND FUNDRAISING!

Bring this offer to receive...
FREE LARGE SODA WITH PURCHASE OF ANY MEAL

Good until 2/28/05
Pasadena location only. One coupon per customer per visit. Not valid with other offers. Limit one offer per coupon.

Fire Up! Fire-Roasted Gourmet PIZZA

345 S. Lake Ave. #213
Pasadena, CA 91101
(626) 585-5500
Nakha, Thakur, Joe

10% discount with ID Card
Reservations and Catering

Red Brick Pizza
Fire-Roasted Gourmet Pizza™

Renting big Rooms Temple City
\$550/mo-1 year lease move in ASAP
Females preferred, non-smokers, include utilities, laundry, whole house, quiet neighborhood, nice big backyard, pool
Annie 626) 712-4770 after 7pm

Afterschool Program Needs
Graduate Student To Teach Math
From April 30th
3:30-6:30 MON-FRI
\$20+/HOUR Health Insurance available.
Contact 626 232-3480
Kristianne@alumni.usc.edu

Eat at Joe's.

continued from pg. 1
very quiet at night. "It's very sunny, all these girls walking around in bikinis, and everyone has a boat. [sic]"

He described the numerous boats parked along the shore lines, with people blasting music from them and dancing on the boats. Some of the boats belonged to locals who lived there and others were rentals. Dima elaborated, "We found out that if you want to rent a really nice boat, you have to rent it more than a year in advance, because the guy said that all the boats are already rented for the next Spring Break."

The next part of the adventure was to reach Copper Canyon, setting of rumors of wild shenanigans. The lake is only a couple miles wide but is very long, and Copper Canyon happened to be on the far side of the lake.

Undaunted by the lake, the group attempted to traverse the it "in our own boat, which consisted of a blow-up raft, which one of the guys bought for \$50 from Walmart when he was 12." After blowing up the raft and reading the

continued from pg. 2

overly simplified. These results show

that game theory can draw together the social and biological sciences

for new and deeper understandings of human behavior. A better mathematical model will result."

The game is a multiround version of an economic exchange, in which

one player (the "investor") is given \$20 and told that he can either

hold on to the money, or give some or all of it to the person on the

other end of the game 1,500 miles away. The game is anonymous, and it

is further assumed that the players will never meet each other, in

order to keep other artifacts of social interaction from coming into play.

The person on the receiving end of the transaction (the "trustee")

immediately has any gift that he receives tripled. The trustee can

then give some or all of it back to the investor.

In ideal circumstances, the investor gives the entire \$20 to the

trustee, who then has his money tripled to \$60 and then gives \$30

back to the investor so that both have profited. That's assuming that

greed hasn't made the trustee keep all the money for himself, of

course, or that stinginess or lack of trust has persuaded the investor to keep the original investment all to himself. And this is

the reason that trust is involved, and furthermore, the reason that

there is brain activity during the course of the game for the experimenters to image.

The findings are that trust is delayed in the early rounds of

instructions, they realized they would be 100 pounds over the limit. The raft was also leaking, so they patched it with duct tape.

They bought some floating cushions so that, if the raft popped in the middle of the lake, they would at least have something on which to float. With two plastic oars to propel them, the four of them took off in this one meter-radius circular raft. They had to make sure that the two oars pushed simultaneously to keep them going straight.

"We didn't see anything at all because the lake is pretty huge. People were passing us in boats, looking at us like we're crazy. [sic]" They landed on an island and explored for awhile before rowing a bit more. Of course, they grew extremely tired, and "we were nowhere where we wanted to be. We decided we would flag down a boat and see if we could get a tow."

After numerous boats had passed, one group eventually pulled over their boat and talked to Dima and his party. They threw over a rope, so Dima put the rope through a hole in the raft but decided against tying it.

the

game (there are 10 in all), and that the players begin determining

the costs and benefits of the interchange and soon begin anticipating

the rewards before they are even bestowed. Before the game is

finished, one player is showing brain activity in the head of the

caudate nucleus that demonstrates he has an "intention to trust."

Once the players know each other by reputation, they begin showing

their intentions to trust about 14 seconds earlier than in the early rounds of the game.

The results are interesting on several levels, say Camerer and Quartz. For one, the results show the neuroscience of economic

behavior.

"Neoclassical economics starts with the assumption that rational

self-interest is the motivator of all our economic behavior," says

Quartz. "The further assumption is that you can only get trust if you

penalize people for non-cooperation, but these results show that you

can build trust through social interaction, and question the traditional model of economic man."

"The results show that you can trust people for a fair amount of

time, which contradicts the assumptions of classical economics,"

Camerer adds.

This is good news for us humans who must do business with each other,

Quartz explains, because trustworthiness decreases the incidental

costs. In other words, if we can trust people, then the costs of

transactions are lower and simpler: there are fewer laws to encumber

us, fewer lawyers to pay so

"I was holding on the raft for dear life, and all I could see was a wall of water. It was really fun, but it was really scary." The guys on the boat were drunk and were playing with Dima by slowing the boat and then suddenly accelerating.

Eventually the hitchhikers decided to let go of the rope. Stuck on the lake, however, the big boats zooming by would leave wakes that dangerously rocked their raft. They realized that they had to get to land, so they furiously paddled back to shore. In addition, two of the guys jumped off the raft and kicked to speed up the process.

"After this epic power struggle, we landed at this place really far from our car, so two of us had to wait for awhile while the other two went to fetch the car." The next day they just rented a jet ski to reach Copper Canyon.

While half the usual number of boats bobbed on the water, because it was windier and cooler than normal, they had a fun time at the canyon. Dima also mentioned a burger boat that went around the lake, selling microwave-cooked hot dogs and hamburgers.

as to ensure that all the documents

pertaining to the deal are written in an airtight manner, and so on.

"It's the same as if you could have a business deal on a handshake,"

Quartz says. "You don't have to pay a bunch of lawyers to write up

what you do at every step. Thus, trust is of great interest from the

level of our everyday interactions all the way up to the economic

prosperity of a country where trust is thought of in terms of social

capital."

The research findings are also interesting in their similarity to

classical conditioning experiments, in which a certain behavioral

response is elicited through a reward. Just as a person is rewarded

for trusting a trustworthy person--and begins trusting the person

even earlier if the reward can honestly be expected--so, too, does a

lab animal begin anticipating a food reward for pecking a mirror,

tripping a switch, slobbering when a buzzer sounds, or running

quickly through a maze.

"This is another striking

demonstration of the brain re-

using ancient

continued from pg. 2

ward the PongSat student education

program. The figures will experience temperatures of -90F, vacuum and speeds of over 600 mph on descent.

"It's a chance for the characters to stretch their legs before their debut in 'Star Wars: Episode III, Revenge of the Sith,'" said John Powell, President of JP Aerospace.

In addition to the celebrities, this flight will carry 140 student experiments.

Away 26 is the eighty-sixth mission flown by JP Aerospace. JP Aerospace is a volunteer-based space program which builds and flies low-cost space systems.

Photos and videos are available at www.jp-aerospace.com.

Away 26 Mission Details:

- Mission Type: Unmanned High Altitude Balloon
- Maximum altitude: 110,000

minutes. Representatives of such styles as jazz, belly dance, hula, salsa, musical, traditional Chinese, modern jive, and hip hop will dance on stage, judging from last year's show, the dancers will perform in each style confidently and gracefully. According to Stephane Lintner, a graduate student in ACM and one of the show's organizers, there will even be

centers for new purposes. That trust rides on top of the basic reward

centers of the brain is something we had never anticipated and

demonstrates how surprising brain imaging can be," Quartz notes.

And finally, the research could have implications for better

understanding the neurology of individuals with severely compromised

abilities to interact with other people, such as those afflicted with

autism, borderline personality disorders, and schizophrenia. "The

inability to predict others is a key facet of many mental disorders.

These new results could help us better understand these conditions,

and may ultimately guide new treatments," suggests Quartz.

The other authors of the article are Brooks King-Casas, Damon Tomlin

and P. Read Montague (the lead author), all of the Baylor College of

Medicine, and Cedric Anen of Caltech. The title of the paper is

"Getting to Know You: Reputation and Trust in a Two-Person Economic Exchange."

Contact: Robert Tindol (626) 395-3631

feet

- Vehicle weight 25 pounds
- Total Flight Time: Four hours

- Additional payload: 140 student experiments

- Flight systems include: Command control telemetry system, Dual GPS tracking, Live video downlink, digital still camera and environment measuring sensors.

Contact: John Powell
2530 Mercantile Dr. Suite I, Rancho Cordova, CA 95742, USA

Tel: (916) 858-0185
Email: jpowell@jpaerospace.com

R4-G9, Wookiee Warrior, General Grievous, Star Wars: Episode III,

Revenge of the Sith, and Star Wars are trademarks of Lucasfilm Ltd.

Lucasfilm Ltd. is not affiliated with JP Aerospace.

comedy and some live music, as well as a few surprises at the end. He awaits with particular enthusiasm the "Big Spender" number from the musical *Sweet Charity*. Its choreographer created the very popular "Roxy" number from the musical *Chicago*, and it features sophomore Cecilia Yu, the event's other organizer. Musicals don't appeal to everyone, but the range of styles on display and the three months' rehearsal put into each piece, almost everyone will find something delightful.

Most impressive of all is that many of the performers were beginners just a few months ago.

Through diligent participation in the Caltech Dance Troupe, the Salsa Club, and other dance organizations on campus, these beginners have

learned to do complicated dance moves and overcome shyness in order to perform

in front of an audience. In Lintner's experience with the Salsa Club, he has observed that rehearsal of the same

moves over and over forces dancers to be quick on their feet. He has seen tremendous

improvement in the dancers, and expects them to be in top form for this weekend's show.

Lintner notes that "most [students] are very talented, not just in science." I still

doubt that all Techers can dance, but this weekend the ones who can, the ones who

are naturally graceful and the ones who have dedicated the time and effort to learn the

steps well, will be shaking it onstage for our entertainment.

I urge the wallflowers and wannabes alike to see some good dancing at the 2005

Caltech Dance Show before resuming their usual positions at Blacker's inter-house party.

To the dancers: break a leg!

The California Tech
Caltech 40-58
Pasadena, CA 91125