



# The California Tech

VOLUME CVI, NUMBER 9

PASADENA, CALIFORNIA

NOVEMBER 22, 2004



D. Korta/The California Tech

Charles Phoenix explains how he originally became interested in old slides. Phoenix has written a couple books including best seller *Southern Californialand*, which includes portions about life in L.A.

## Phoenix Displays Eccentricities Of American Lifestyle in Show

By ALEX SIEGEL

If you happened to stroll into Ramo Auditorium last Thursday evening for the most recent Voices of Vision Lecture series, you might have been a little confused. You might have wondered why someone was giving a slide show of families celebrating various holidays in front of a fairly large audience. There happens to be a simple, almost even logical explanation. The man is Charles Phoenix and he's "addicted to old slides." Actually, he's a comedian, entertainer and slide-collector all wrapped into one.

It all began when he was thirty and addicted to Thrift Store shopping. On one fateful day, he no-

ticed a box hidden away in a thrift store. Phoenix remarked that "The contents of that box would change the course of my life forever." Inside the box he found old slides and out of this box Phoenix formed the foundations of a career.

Ever since then, Phoenix has collected countless slides depicting common Americans. He subtly reveals obscure aspects of American culture during the forties, fifties and sixties amidst his humorous remarks regarding hardly noticeable quirks about the slides and the people in them.

Though Phoenix now enjoys a high level of success, it wasn't always that way. The first time he attempted to give a slide show, he

was told that it was "certain that no one would ever want to look at old slides." The audience laughed for they were anxious to do just that.

The lights dimmed and the first of nearly one hundred slides fell into place. For the next hour and a half, the audience entered the bizarre land of America. For each slide, Phoenix had some witty remark or historical fact ready. In accordance with the holiday season, Phoenix began with slides of Christmas festivities. One slide captured an unhappy housewife

*Continued on Page 2, Column 4*

## DARPA Expects New Vehicle to Arrive Soon

By SONIA TIKOO

Dmitriy Kogan sits before a laptop computer, analyzing the distinctive lines of code displayed on the glowing monitor. The CDS graduate student is conversing with the other members of his team, namely Caltech juniors Alex Stewart and Ryan Cable as they collaborate in their ongoing effort to design a completely autonomous vehicle and perhaps win a two million dollar prize for Caltech in the process.

These dedicated recruits, who gather on a near-daily basis in the "Shop" in Guggenheim, are working towards winning the 2005 DARPA Grand Challenge, an annual competition created by the Defense Advanced Research Projects Agency, the premier research and development branch of the Department of Defense in response to a Con-

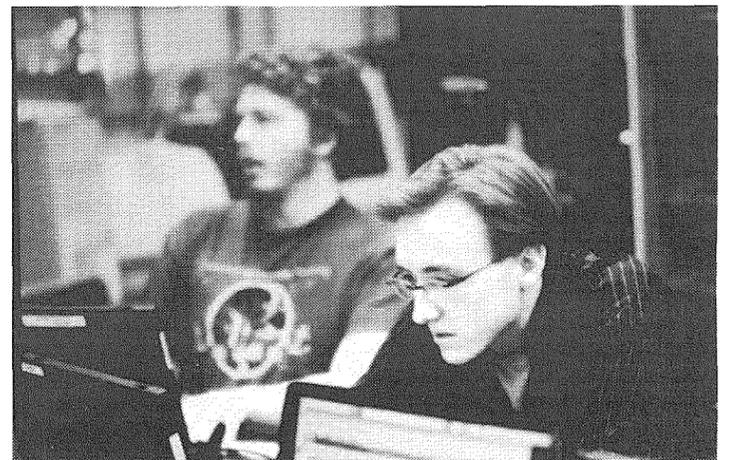
gressional and DoD mandate.

The goal of the project is to challenge teams across the country to accelerate the development of autonomous ground vehicles that would give American forces an edge on the battlefield in future years.

In order to win the challenge, participants must design their vehicle to be completely self-operated and it must traverse a 175 mile course across desert and rugged terrain between Los Angeles and Las Vegas successfully, using only a GPS system for navigation.

In the 2004 competition, which was held in March, the Caltech team's vehicle, affectionately referred to as "Bob," had the fifth best performance out of 15 nationally qualifying teams, traveling 1.3 miles before getting caught in a barbed-

*Continued on Page 8, Column 1*



K. Peng/The California Tech

Ryan Cable, left, and Alexander Stewart look over some of the program that will run Caltech's next automated vehicle.

## Programming Squad Wins Regional Match

By DAVID CHEN

On a cold and foggy Saturday morning, the Caltech ACM programming team headed off for this year's regional competition. After numerous practices, the students, along with coach Ben Brantley, eagerly awaited this opportunity.

The regional competitions are used to decide which teams will be invited to participate in the world competition, which will be held in Shanghai for April 2005. Caltech sent four teams of three students each, with the "Caltech A" team winning this region, as expected, considering the incredible members of the team.

The A team members, who will represent us at the world competition, are Po-Ru Loh (who recently won \$7000 from a Google Code Jam), Hwan-seung Yeo (a freshman who won the International Olympiad in Informatics in 2003) and Howard Liu (a junior studying computer science). This will be the first time for all three members to attend the world championship.

The teams were decided after six two-hour practices, from which the top three scorers were placed in the A team, the next three on the B team, etc. All our teams performed quite admirably. Out of more than 60 participating teams, the B team earned fifth place, the C team 12<sup>th</sup> place and the D team earned 20<sup>th</sup> place. Other top-placing teams included UC San Diego and Harvey Mudd College.

In fact, a majority of the teams were unable to solve any of the seven available problems. The A team managed to solve only five problems, although there were issues with the problem statements. One of the problems was theoretically impossible to solve given the problem constraints, although the judges chose test cases that were not the worst possible.

One problem our teams faced was a shorter training time. Most schools started school earlier, so they had much more time to organize their teams. In fact, our teams had only one practice to-

## Papau New Guinea Summer Trip Chronicled By May's Photographs

By CHRISTINE CHANG

Brightly colored images flashed on the screen, portraying moments captured from a time seemingly long lost. Tribal groups in ceremonial wear dancing to drumbeats, faces caked with vivid red mud, celebrated the initiation of a boy into manhood and wrinkled women sold their handmade crafts in open air markets.

However, staff member Sarah May photographed these pictures only last summer in Papua

New Guinea. May presented her photographs and experiences on Tuesday November 16 as part of International Education Week.

"Several years ago, I saw a photo to exhibit on Papua New Guinea and it stuck in my head," said May. Last year, when she saw an advertisement for a trip to Papua New Guinea, she decided to seize the opportunity. Sponsored by the International Student Program and the Moore-Hufstetler Fund, she embarked on her adventure during last summer.

Traveling with a tour group, she visited multiple villages along the Sepik River and also saw a celebration in the highlands. Because of the diversity of the landscape, multiple cultures have evolved largely isolated and independent from each other. On the island, she was greeted with a land relatively unchanged by modern culture. "I saw a strange mix of ancient tradition and modern technology," May said.

Along the Sepik River, she observed a way of life which centered around the wide, flat stretch of water. "The river is their life," she said.

Because of erosion and floods during the wet season, the people build their houses on stilts and often need to rebuild and reform each year. Despite this, however, they still take the time to plant decorative flowers at the foot of the long flight of steps to their doors.

Their religious houses, called Haus Tambarans, are also build on long stilts. Only men are allowed on the sacred grounds and large stones are placed to signal when a person is approaching the grounds. In Palambe, a village along the Sepik, the stilts of the

*Continued on Page 8, Column 3*



A. Green/The California Tech

Staff member Sarah May, with one of the pictures she took, traveled to Papua New Guinea over the summer.

*Continued on Page 7, Column 4*



## 'Retro' Holiday Slides Bring Back Memories

Continued from Page 1, Column 3

who appeared to have run out of red Christmas tree ornaments. Another showed a mom whose hair was so puffed up that Phoenix remarked that she looks like "Carol Brady on steroids."

A Grandfather was caught giving his granddaughter a giant, stuffed, pink dog. Under a Christmas tree, a husband boasts a wide grin as he eyes his new drill, while his wife doesn't seem as pleased with her new iron. "In the foreground a murder is taking place," joked Phoenix as a slide showing a brother pointing a cap gun at his little sister appeared.

Phoenix continued on to some of the other notable holidays as his "Retro Holiday Slide Show" continued. The audience went into hysterics over a slide depicting an elderly man asleep on a chair after having been covered in confetti. This was followed by a woman dancing with a cigarette smoking skeleton.

Next were slides of some of the past Rose Parades. One float of a giant yellow head with a big red nose and pointy pink ears Phoenix dubbed "the ugliest float of all time." A float titled "Our First Quarrel" was a house including crooked pictures, broken windows and upturned furniture. Phoenix laughed, "You don't see many domestic violence floats anymore," he said.

After an exhausting first half, it was time for an intermission. Phoenix answered the audience's questions during intermission. He admitted that many of the slides he received from his adoring fans, he had to discard. "Really, there are just so many pictures of dirt."

The lights dimmed once more and the comedy and culture began again. "Don't you think you'd be more comfortable on the dining room table," Phoenix remarked at a slide of a man awkwardly trying to carve a Halloween pumpkin from the seat of his armchair. Phoenix announced his bewilderment at another slide as to why a beauty salon would make a giant, balloon pig to represent itself in a parade. He also showed a few slides of funny looking Christmas trees, one made entirely out of toilet paper and another floating on a swimming pool. When

he had finished his performance, Phoenix quickly exited and let the effect of his slides sink in.

Though perhaps not the most culturally enlightening or the most humorous of performances, Phoenix certainly has found some median between the two. His shows have been praised for their uniqueness from coast to coast, by the New York and Los Angeles Times. One of his books, titled *Southern Californialand*, has even appeared on the L.A. Times best seller list. Phoenix attracts a cult-like following from his fans, many of whom anxiously await his "Slide of the Week" to arrive by email. If you're interested in browsing through some bizarre slides of American families from the forties, fifties and sixties, you can visit his website at [www.godblessamerica.com](http://www.godblessamerica.com).

It is the unusual nature of his performances that makes Charles Phoenix stand out among other entertainers. Some leave satisfied to have had a good laugh, others having gained a deeper understanding of American culture and others, perhaps, are just content to have found some way to reminisce about memories of their past.

### The California Tech

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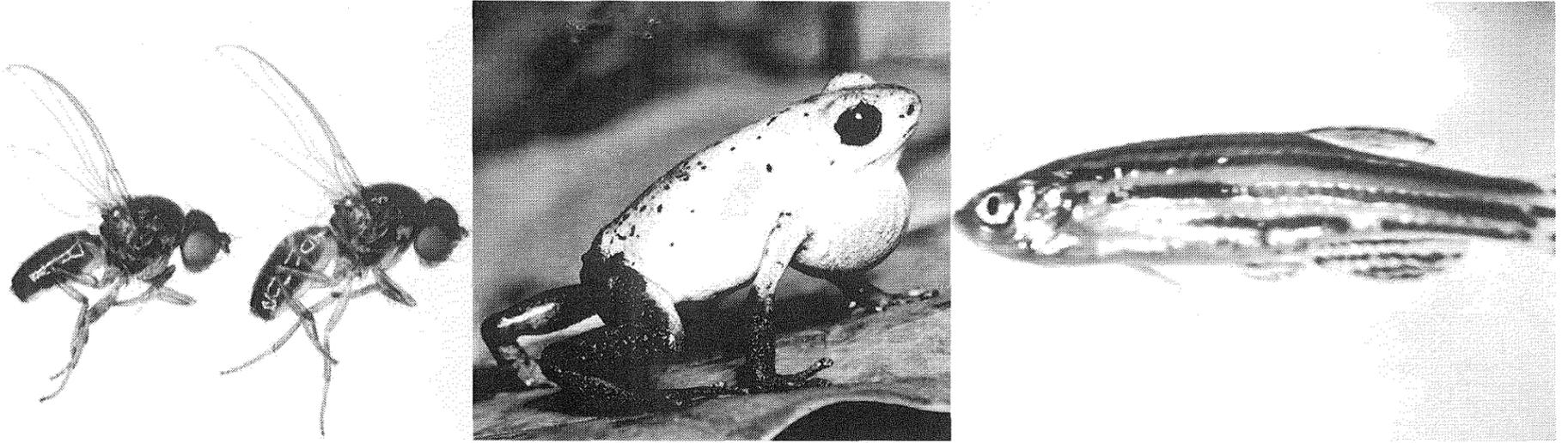
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Phoenix's slide show contained many images of Americans celebrating the holidays during the mid-1900s, featuring iconic gifts like the red bicycle or dolls.

D. Kortz/The California Tech



According to research published by Fraser group, flies, frogs, and fish all share a fundamental process dubbed oriented cell division that are critical for an embryo to grow to have the correct size and shape. Professor Scott Fraser led the research using advanced imaging tools to follow the progress cell divisions in and embryo of a zebrafish.

## Oriented Cell Division Critical In Many Developing Organisms

By MARK WHEELER

PASADENA, Calif. - Oriented cell division is a fundamental process in developing organisms, whether you are a worm, a fruit fly--or a human. As an embryo begins to grow, cells divide again and again, from the single fertilized egg to the countless cells present at birth.

These cell divisions are not haphazard; instead, they are often precisely oriented, playing an important role in building an embryo of the right size and shape, and with the right body "parts"--the control of cell division also plays a central role in placing cells in the proper positions to build organs that will contain the correct cell types.

The orientation of cell divisions has been well studied in invertebrates, especially in the *C. elegans* (worm) and *Drosophila melanogaster* (fruit fly), but relatively little has been known about oriented cell division in vertebrates. Now for the first time, researchers at the California Institute of Technol-

ogy report that the molecular machinery that underlies oriented cell division in invertebrates serves a similar but twofold purpose in the development of the vertebrate embryo.

For one, it is responsible for orienting cell division, or mitosis. For another, it's responsible for the movements that elongate the round egg into the vertebrate body plan; that is, the shape of the particular animal. The research appeared in the August 8 edition of the journal *Nature*, and is currently online.

The researchers are recent graduates Ying Gong '04 and Chunhui Mo '03, working with Scott Fraser, the Anna L. Rosen Professor of Biology and director of the Biological Imaging Center. Using the zebrafish, a card-carrying vertebrate, as their animal model, the researchers first marked certain cells with fluorescent proteins.

Then, using a four-dimensional confocal microscope, they were able to follow the motions of these cells in real time, as the body plan of the zebrafish took

shape during development, or gastrulation. The researchers found that cells in dorsal tissue divide in an oriented fashion, with one of the two daughter cells from each division moving towards the head, and the other towards the future tail. They were able to determine that such oriented cell division is a major driving force for the extension of the body axis--the growth of the embryo into the animal's final shape.

By combining their advanced imaging tools with molecular biological techniques, the researchers were able to show that the driving force for these oriented divisions is the Wnt "pathway," a ubiquitous cascade of specific proteins that trigger cellular function. Research over the past decade has shown that the Wnt pathway controls the patterns, fates, and movements of cells in both vertebrates and invertebrates.

One major branch of this biochemical communication network is the planar cell polarity (PCP) pathway. In previous work from the Fraser

lab and their collaborators, the PCP pathway has been shown to guide the tissue motions that convert the spherical frog embryo into the familiar shape of the elongated tadpole.

This is a key process in the life of the frog, termed convergent extension. Each cell attempts to "elbow between" the row of cells to its left or its right. "This simple motion has a profound effect on the length and width of the embryo," says Fraser; "think of a band marching shoulder to shoulder on a football field. If half of the rows of marchers merged with the adjacent row, the band would be half as wide and twice as long."

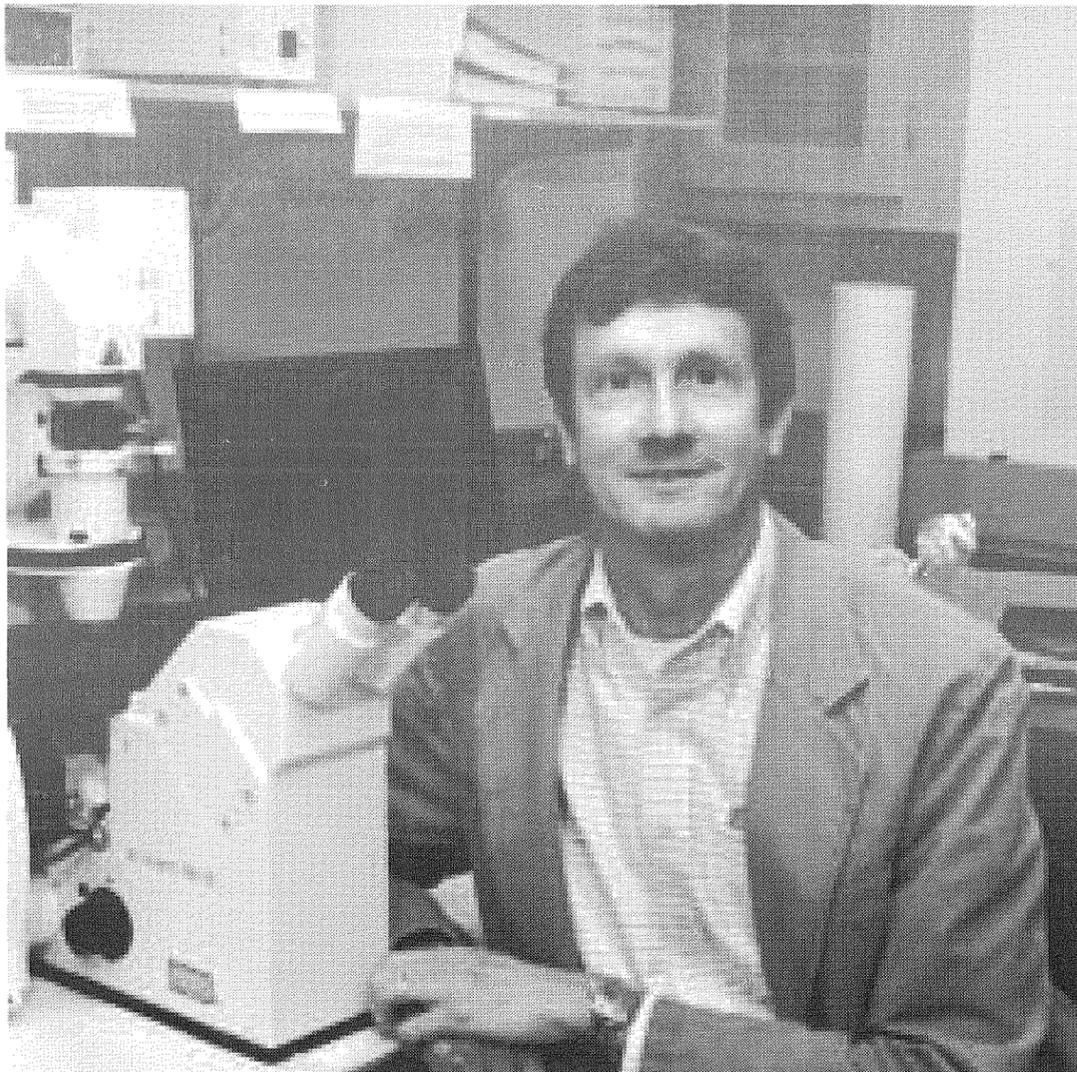
The trio of researchers explored the effects in fish embryos of altering the many proteins in the Wnt-PCP signaling pathway, including some of the potential signals and co-receptors (proteins called Silberblick/Wnt11, Dishevelled, and Strabismus). They were expecting to see an alteration in the convergent-extension motions. Instead, what they found was a major alteration in the orientation of cell division.

When they blocked the Wnt pathway, cell division did not take place along the head-tail axis, but randomly. In normal fish embryos, the oriented divisions lengthened the body axis by nearly twofold. With randomization, though, a short and

squat embryo was created.

Given that the same PCP pathway is involved in controlling cell division in the invertebrates, *C. elegans* and *Drosophila*, and the vertebrate zebrafish, the results suggest that the pathway has an evolutionary conserved role. That is, that across a wide variety of animal species, such pathways share a common function, perhaps reflecting a common origin in the biological past.

"The amazing thing about these studies is that they show that the many varied mechanisms that can create the long and narrow body plan of a fish, frog, or fly come under a common molecular control mechanism," Fraser says. "Work in frog embryos from John Wallingford (formerly of UC Berkeley, currently at University of Texas, Austin) and Richard Harland (UC Berkeley) have established a link between these motions and neural tube defects (such as craniorachischisis and spina bifida). Our new experiments have already prompted a new round of collaborative experiments to determine if the same molecular pathway controls convergent extension, cell division, or both in mammals. The answers to these questions promise new insights into the underlying cause for some of the devastating birth defects seen in humans."



Courtesy of quad.bic.caltech.edu

Professor Scott Fraser leads the Magnetic Resonance Imaging Center at Caltech and oversaw the research that characterized oriented cell division for vertebrates.

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# Gay Unions: 'License' to Benefits?

## Licenses Wouldn't Guarantee Gays Benefits of Marriage

By SIMON QUE

After reading my article about civil marriage last week, one reader sent me an e-mail message in response. She writes:

"The protection of certain rights, conferred by society on any family, is *not* a privilege. It is completely unacceptable that in a modern society, we can even think of denying any loving family these rights.

"While your article is internally consistent, I find some of your assumptions to be at variance with reality. You seem to believe that none of the 'privileges' conferred on a couple by the granting of a marriage license are necessary to a couple's happiness or ability to function. I must very strenuously object.

"A non-exhaustive list of these 'privileges' includes hospital visitation rights; the right to custody of a partner's biological or adoptive children; the ability to be taxed as a family unit, rather than as individuals—note that in most cases, this actually constitutes a tax penalty; the ability to be included under the partner's health insurance plan; the right to make decisions pertaining to care and end-of-life maintenance for a partner who is no longer able to make these decisions [himself]. These are vitally important!"

These are thoughtful objec-

tions and I am glad that the reader brought them up, but I don't think they are enough justification for civil marriage.

First off, the above benefits and protections are not absolutely necessary for a couple's happiness. Different people have different levels of happiness. Some manage to stay cheerful regardless of their circumstances. Others are perennially gloomy. It varies from person to person how many benefits are needed to be happy. There is no universal standard of what benefits it takes for a person to be happy. It is thus unrealistic to expect public policy to be designed to make sure everyone can be happy given the amount of legal protection they receive.

And it would not be the end of the world if civil marriage were abolished. The operation of the legal system and private policies aren't contingent upon whether there is civil marriage, and marriage licenses don't come with a package of benefits themselves. A marriage license is just a sheet of paper that offers no inherent protections and benefits. The benefits are conferred through laws and policies that happen to use the marriage licenses but can function without them. In and of itself, a marriage license does not automatically guarantee such benefits.

### Hospital Visits

As an example, consider this: suppose that a hospital were to grant visitation permission based on marriage licenses and that licenses were then granted to gay couples. Now, if the hospital wanted to continue to recognize marriage as between a man and a woman exclusively, they would just change their policies to recognize only marriage licenses between a man and a woman. Conversely, if a hospital wanted to grant visitation permission to gay couples without licenses, then it could simply change its policies to recognize gay couples in other ways, such as issuing a special form for visitation permits. The same applies for health insurance groups. The choice of whether to recognize a couple as married in these cases ultimately belongs to individuals and private organizations, not to the state. This is their right of voluntary association.

### Filing Taxes

As for the tax code, it does not constitute a penalty, as the writer mistakenly asserts, if a couple doesn't have a marriage license and must file individually. Because people are first single and then married, they first have to file taxes individually anyway. If

a gay couple doesn't get to file together, they still file as individuals. There is no loss, no extra burden placed upon them when they enter a union. There is no actual penalty but instead, a lack of a bonus. There is a lack of an increase of convenience, not a decrease in convenience, hardly a real penalty.

there are adoption rules but I did not address them. Instead I addressed how adoptions ought to take place rather than how they do take place under the law.

The one issue where it gets unclear is end-of-life and post-disability decisions. Ideally, the decision-making powers should belong to whomever the disabled wants to have it. Since the disabled might not have the capacity to communicate his or her wishes, it gets tricky. Some people write wills early on for this. But for those who don't write their wills, should there be a legal default as to who gets to make the decisions and who gets the property? How should inheritance rights be recognized legally? I've suggested a less arbitrary alternative based on the interaction between two people. But it's a complicated issue and I don't have a definite answer.

In any case, by applying principles as a basis for how the laws ought to be written, I didn't even need to be aware of what the existing custody laws actually were, because if they weren't as I thought they ought to be, then I would object to them irrespectively of the civil marriage issue. For example, I applied the principle of free association to child custody laws.

My reader asks, "Do you agree that it is wrong when a child who has been raised by two loving parents is ripped away from *both* by the death or incapacity of one?" My answer is yes, because it is wrong to forcibly remove a child from any parent, whether biological or adopted, against the child's will. My objection is independent of whether I know the current laws and of what types of couples can receive marriage licenses. But it doesn't mean that civil marriage is necessary to protect children's rights.

More generally, it is also unrealistic to expect to be fully informed of the laws in order to make judgments of public policy. Laws change over time. What they say today might not be what they say tomorrow. And sometimes the set of laws over a society becomes very large. For instance, according to Internet journalist Joseph Farah, "federal government regulators issued 4,148 new rules in the 71,269-page Federal Register in 2003." That's at the federal level in one year alone. There are more laws at the state and local levels, and accumulated over time. How is anyone supposed to keep up with that amount of legal mumbo-jumbo?

A corollary is that since those who write new federal laws probably don't know all of the existing ones in and out, there could easily be inconsistencies and contradictions in such a large volume of laws. By the way, those are two valid criticisms of the legal code right there that I've brought up without needing to know what the laws actually say.

In any case, much of the potential justification for legally recognizing marriage in civil law seems to hinge on arguments of utility and convenience, since marriage licenses are not absolutely crucial for hospital visits, insurance coverage plans, inheritance, etc. The government should hand out licenses so it would be easier for hospitals to grant visitation permits? Even when it comes to inheritance and end-of-life decisions, there are other possible ways of handling such cases without forging a link between government and marriage. Such a link that entangles marriage, an institution of great importance in society, with the legal code, which can potentially grow into a 70,000-page monstrosity that no one can expect to fully grasp, ought to be avoided if possible.

**"A marriage license is just a sheet of paper that offers no inherent protections or benefits."**

But more practically, the difference between being taxed as a family unit and as individuals is the difference between filling out one form and two. If the forms are easy to fill out then the difference is trivial and not even worth bringing up. If the forms are a pain to fill out, then the tax code should probably be revised so that taxpayers won't have to waste their time with tons of paperwork.

### Child Custody

From a legal perspective, the choice should be between the child and the adoptive parent. If the child is willing to be adopted, then there ought to be no legal barrier against this choice regardless of their actual relationship. Again, this is the right of free association at work. Any judgments by others on this adoption should be made through social means, not legal means.

### End of Life and Post-disability

How should the will of the incapacitated be recognized legally? A possible alternative—should the current system be scrapped along with civil marriage—would be to recognize the will of the incapacitated through consideration of such practical factors as length of co-residency, financial interdependence, sharing of resources and possessions, etc. These are tangible, measurable criteria, unlike a somewhat abstract concept of legal marriage. Most people would probably agree that the above factors are reasonable for determining end-of-life or post-disability legal issues. After all, if two people are willing to live together for extended periods of time and share their resources and possessions, they would probably be willing to entrust each other with critical decisions.

On the other hand, getting a marriage license form the state requires no actual interaction between them, just the filling out of forms. It is a much more superficial criterion. There are possibly other criteria that can also be used to sort these issues out legally and preclude the need of a marriage license as a default.

The reader goes on to write, "From the tone of your article, it seems as if you may not have been aware of some of these legal issues. While I do not condone the writing of articles when one is not fully informed as to the issues addressed, I would be prepared to accept ignorance as a reason for some of your more outrageous statements."

To be honest, I was only partially informed of the legal issues, not fully informed. But it's not always necessary to be aware of what laws there are before making statements about civil marriage. More important are what underlying principles one applies to the various legal issues. In the case of child custody, I knew that

## PILED HIGHER AND DEEPER

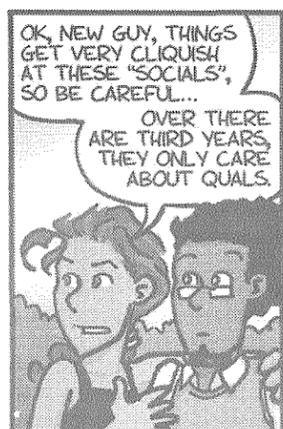
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## ASCIT Minutes

November 11, 2004

Present: Ryan Farmer, Mengmeng Fu, Galen Loram, Shaun Lee, Kelly Lin, Kim Pependorf, Claire Walton, Corinna Zygourakis

Absent: Ann Bendfeldt

Guests: Bart McGuyer, Isaac Garcia-Munoz

Introduction:

1. Call to Order, 12:05 PM

Open Positions:

2. Because ASCIT Secretary Corinna Zygourakis will be studying abroad next term, the BoD is looking for an interim secretary. If you have any questions about the position, email corinnaz@caltech.edu.

Sign-ups will be posted this upcoming Monday, November 22, outside of the coffeehouse, and will come down the following Monday, November 29, at 5 PM.

Money Requests:

3. Claire Walton motions to reimburse Lizz Felnagle \$150 for little ff Happy Hour expenses. Vote: 5-0-0 (approved).

4. Kim Pependorf motions to give \$75 to CCF for making milkshakes for those who have received blue slips. Vote: 6-0-0 (approved).

Other Business:

5. After a brief interview, the BoD names Bart McGuyer and Issac Garcia-Munoz as the new jamroom managers. Vote: 5-0-0 (approved). Kim discusses a new policy to encourage pranks around campus. In order to improve communication with security and the grounds staff, students should let their house president, the IHC chair, or Tom Mannion know beforehand that they intend to perform a prank in a certain area. This will ensure that Caltech staff does not immediately clean up pranks before anyone can see them. Furthermore, students should always leave notes at the site of their pranks.

7. Kim notes that Caltech will implement a zoned parking system next year. As a result, students will have a parking area in the new parking structure under the athletic field, where they will not be required to move their cars every two weeks. However, it is unclear whether students will retain parking spaces in the Holliston parking structure or other places on the northeast side of campus. Students with opinions or concerns about the parking situation should contact <<galen@caltech.edu>>.

Upcoming Social Events:

8. Kim and Claire discuss plans for an Interhouse Party in January 2005. This event will most likely occur on the Olive Walk and will be funded by ASCIT. However, it will need party chairs, additional funding, and enthusiastic participation from each of the seven houses.

9. The next ASCIT midnight donuts will be on Wednesday, December 1. Hope to see you there! Meeting adjourned 12:50 PM. Respectfully submitted, Corinna Zygourakis

## ASCIT Minutes

November 18, 2004

Present: Ryan Farmer, Mengmeng Fu, Galen Loram, Shaun Lee, Kelly Lin, Kim Pependorf, Claire Walton, Corinna Zygourakis

Absent: Ann Bendfeldt

Guests: Preetha Sinha, Emma Schmidgall, Andrey Evtimov

Introduction:

1. Call to Order, 12:12 PM

Open Positions:

2. Because ASCIT Secretary Corinna Zygourakis will be studying abroad next term, the BoD is looking for an interim secretary. If you have any questions about the position, email <<corinnaz@caltech.edu>. Sign-ups will be posted this upcoming Monday, November 22, outside of the coffeehouse, and will come down the following Monday, November 29, at 5 PM.

Money Requests:

3. Preetha Sinha requests \$500 interhouse funding for Pageis party this upcoming Friday. Vote: 5-0-0 (approved).

4. Andrey Evtimov asks to take a professor out to lunch at the Ath. The BoD asks him to return when he has picked a specific professor and fellow student with whom to each lunch.

Other Business:

5. BoD approves resolution to post sign-ups outside of the Coffeehouse, instead of SAC 33, as this seems to be a more convenient and accessible location for most students. Vote: 5-0-0 (approved).

6. BoD approves the change in function of the readers and alternates on the Admissions Committee, as proposed by Head of Admissions Rick Bischoff. This change gives reader and alternates the ability to be part of the committee process when it comes time to making the actual decision. Vote: 5-0-0 (approved).

7. Ryan Farmer and Kim Pependorf agree to take charge of the ASCIT lights. They will consider repairs to fix the lights and to purchase new lights as well.

8. BoD names Travis Bannerman as the third jamroom co-manager. Vote: 5-0-0 (approved). BoD approves the appointment of Kim Pependorf and Tammy Ma to the Workload/ Morale/Student-

Faculty Interactions Committee and the MechE/Aero Committee of the Student Faculty Conference, respectively. Vote: 5-0-0 (approved).

10. Kim notes an upcoming meeting on Monday, November 22, at 4 PM to discuss gender issues on campus and what needs to be done to make people aware of these issues. This meeting stems from the Gender Task Force, which was created in response to the GSC-WEST gender harassment survey of last year. The goal of this task force is to come up with a gender education program for the campus.

Upcoming Social Events:

11. The next ASCIT midnight donuts will be on Wednesday, December 1. Hope to see you there! Meeting adjourned 12:57 PM.

Respectfully submitted, Corinna Zygourakis

### The Monticello Foundation and Robert and Delpha Noland Summer Internships 2005

The Deans' Office is accepting proposals for the Monticello Foundation and the Robert and Delpha Noland Summer Internships. Three to five Caltech undergraduate women (current freshmen, sophomores and juniors) will be given an opportunity to participate in research projects outside the Caltech-JPL community for ten weeks during the summer. Each student will receive a \$5,000 stipend. Applicants are required to identify the projects in which they wish to participate. All arrangements with the principal researcher will be the responsibility of the student.

Interested? Identify a sponsor for your experience at a research facility for a ten-week period. In a short essay, describe your project, and submit it to the Deans' Office,

210 Center for Student Services, along with two faculty recommendations.

Proposals are due Tuesday, March 1, 2005.

### Five World Premieres to be Presented by Pacific Serenades During its 19th Season

Pacific Serenades, one of the nation's foremost chamber music ensembles, will present five world premieres along with classical masterworks repertory during its 19th season which opens on Saturday, January 8, 2005. Winner of the prestigious Chamber Music America/ASCAP Award for Adventurous programming, Pacific Serenades features many of the West Coast's most distinguished musicians, including principals of Los Angeles Chamber Orchestra, the Los Angeles Philharmonic and the Long Beach Symphony. Founder-Artistic Director Mark Carlson has commissioned 76 new chamber works for the ensemble since its inception in 1982, more than any other group of its kind in this country.

The 2005 season offers three performances of each of four different programs between January and May. The concerts will be presented at the UCLA Faculty Center, the Neighborhood Church in Pasadena and at private homes (in locations ranging from West L.A. to the San Gabriel Valley). The five new works, commissioned by Pacific Serenades, are by well-known Los Angeles composer Maria Newman, the versatile Ian Krouse, artistic-director Carlson, award-winning Peter Knell, and prolific composer Miguel del Aguila. Works by Debussy, Shostakovich, Vaughan Williams, Haydn, Boccherini, Schumann, Mozart and Poulenc are also featured during the sea-

son.

"This season is a kind of mosaic," says Artistic Director Carlson, "with music of varying colors, styles and temperaments that fit together to create a most intriguing whole." The first concert series is Saturday, January 8, Sunday, January 9 and Tuesday, January 11; the second is Saturday, February 12, Sunday, February 13 and Tuesday, February 15; the third is Saturday, April 2, Sunday, April 3 and Tuesday, April 5; and the fourth is Saturday, May 21, Sunday, May 22 and Tuesday, May 24. Saturday performances are at 8 p.m., each at a private home; Sunday performances are at 4 p.m. at Pasadena's Neighborhood Church; and Tuesday performances are at 8 p.m. at the UCLA Faculty Center in Westwood.

Program One (January 8, January 9 and January 11), entitled "Such harmony is in immortal souls" (Shakespeare), features the world premiere of Maria Newman's new work for flute, harp and string quartet; Debussy's Sonata for flute, viola and harp; Shostakovich's String Quartet No. 10 in A-flat, Op. 118; and Vaughan Williams Folk Songs for cello and harp. Musicians are Mark Carlson, flute; JoAnn Turovsky, harp; Phillip Levy and Connie Kupka, violin; Roland Kato, viola; David Speltz, cello. The January 8 Opening Night concert will be held at the home of Harvey and Ellen Knell (the classic Blacker House) in Pasadena.

"The exotic sounds of Debussy's Sonata for flute, viola and harp and the deeply expressive Shostakovich String Quartet," says Carlson, "added to the lively colors of Maria Newman's new work for flute, harp and string quartet, will make for an absorbing opening program."

## Chillies, Coconuts and the Culture of Indian Dance

By IRAM PARVEEN-BILAL

*Namaste* from India! I am about to end my first quarter of a fellowship that is not only teaching me how to cope with distance and time but is also giving me lessons I hope never to forget in life. My life is in a freeze frame and I've been allowed to walk around, observe everything else for a year, and compile my recollections for the Caltech community to share.

1. When in India, *never* scream out on the roads that you are Pakistani!

2. Always plan to bargain and heckle with people on prices of things. Whether it is a taxi or a hotel, people are out there to take your money. It is a safe bet when you are buying on streets to play hardball: demand a quarter of asking price and, when they turn you down, walk away. Don't be surprised if the shopkeeper suddenly relents and calls you back.

3. Be prepared for a new Hindu festival almost every month. If you are hungry for culture, thanks to the religion, you won't have any trouble finding it.

4. The reason Hindus put a dot on their forehead has to do with maintaining cool in the most active part of your brain, which is believed to be in that spot.

5. Breaking coconuts, hanging mango or banana leaves, lime and green chillies and making powder patterns on your doorstep are examples of customs Hindus consider auspicious.

6. Most culture comes from religion in India. Because there is an overwhelming majority of Hindus here, Hinduism is the seed for this culture. Watch out for the difference of language, dressing styles and arts of the sec-

ondary religions here, Islam and Christianity. It's very interesting how often members of these other religions discourage their children from dancing. Their reluctance stems from their view of traditional dance steps as Hindu rituals rather than, as we perceive them in Western culture, art or choreography in their own right.

7. It's a common mistake and slip of tongue to assume Indian equals Hindu. This is a very sensitive topic as Hindus are a huge majority and in effect, Hinduism permeates every aspect of the country. Still, there are other sects in pockets of India.

*"In such a religious culture as India, art must be viewed as religious in order to be embraced."*

8. Even if you attempt to blend in, which you can't if you are not brown, be prepared that every second person will come up and ask you where you are from and think it is their right for you to answer. They are shocked when you give them the look that they are being nosy.

9. If you say no to a beggar on the street, be prepared to get cursed by him openly.

10. If you are a girl, get used to staring. It is their right to stare. Take it as a compliment: you are beautiful!

11. Buy things, convert and be happy on dollar power. Needless to say, not out of your Watson funds!

12. India is *big*. People seem to have more of a state spirit than a national spirit. They will always talk about their states and their state languages. People with really different backgrounds are put together under one banner. They mostly share one way of dressing and one religion. The north and south, as they do in many countries, seem to have issues with each other. Being Pakistani, I go with the north as it is more familiar to me.

13. From what I feel, the north is politics, colour, fun, films, image building, TV channels and what you see of India in modeling and fashion. The south is what you mostly see India in terms of IT, nerds, tourism and classical art forms. Their music and dance styles are very different from the North, or so they assert.

14. People of the south are generally more educated and it is safer there for women to travel alone. The north has a lot more "bindaas"—which means, they have fun, tease, live life. In general, the north is a lot less conservative so the eve-teasing is higher too. The south is strict, follows rules and is proud to be that way.

15. Tourism in India is big and their tourism departments are very organized and helpful so if you want to stop in a major city and be shown around, just go to the nearest tourism department and ask for a city tour.

16. Tourist visas cannot be extended in India until you leave the country, so make sure when you come for a Watson that your visa is valid for the whole time you need it—provided you come under a tourist visa, which is the easiest to get. Make sure you know the dif-

ference between duration of entry and duration of stay because in India they see them as being the same, which means a visa is not just a gateway to entry.

17. *Lonely Planet* is the Quran for travel in India. Buy it!

As far as my project, in a land where art, politics and life are all tied to Hinduism, I am discovering that religion is the reason behind dance. However, I am enjoying seeing how much people have progressed out of religion and how much artists have begun to open up into the world. After almost four months, I am glad to say that art is plentiful here.

Still, what troubles me is that mostly, the reason for its existence is that Hinduism counts for art as a way of worship. In my research, I hope to address whether artists can really be a part of organized religion. To be a true artist, one must clear oneself of all mental reticence and thereby transgress the societal boundaries that may confine one's thoughts, feelings and soul. The deep individualism of this perspective is sure to clash with the traditionalism and communalism of widely accepted religions. In such a religious culture as India, art must be viewed as religious in order to be embraced.

Such is the case with dancing. Even though they are lucky that their religion encourages this art, there are still points where freedom is restricted. The religion frowns, for instance, upon male dancing. As a result, one will find few male dancers in India. Through dance one may achieve spiritual value and hence, it is easy to see how it could be taken as a form of worship. In light of this, one comprehends why some religions obfuscate dance inside its own little "burqa."

# CERN Collaborators Break Data Transfer Land-Speed Benchmark

By ROBERT TINDOL

PASADENA, Calif.-Scientists at the California Institute of Technology (Caltech) and the European Organization for Nuclear Research (CERN), along with colleagues at AMD, Cisco, Microsoft Research, Newsys, and S2io have set a new Internet2 land-speed record. The team transferred 859 gigabytes of data in less than 17 minutes at a rate of 6.63 gigabits per second between the CERN facility in Geneva, Switzerland, and Caltech in Pasadena, California, a distance of more than 15,766 kilometers. The speed is equivalent to transferring a full-length DVD movie in just four seconds.

The technology used in setting this record included S2io's Xframe/E 10 GbE server adapter, Cisco 7600 Series Routers, Newsys 4300 servers utilizing AMD Opteron processors, Itanium servers, and the 64-bit version of Windows Server 2003.

The performance is also remarkable because it is the first record to break the 100 petabit meter per second mark. One petabit is 1,000,000,000,000,000 bits.

This latest record by Caltech and CERN is a further step in an ongoing research-and-development program to create high-speed global networks as the foundation of next-generation data-intensive grids.

Multi-gigabit-per-second IPv4

and IPv6 end-to-end network performance will lead to new research and business models. People will be able to form "virtual organizations" of planetary scale, sharing in a flexible way their collective computing and data resources. In particular, this is vital for projects on the frontiers of science and engineering, projects such as particle physics, astronomy, bioinformatics, global climate modeling, and seismology.

Harvey Newman, professor of physics at Caltech, said, "This is a major milestone towards our dynamic vision of globally distributed analysis in data-intensive, next-generation high-energy physics (HEP) experiments. Terabyte-scale data transfers on

demand, by hundreds of small groups and thousands of scientists and students spread around the world, is a basic element of this vision; one that our recent records show is realistic."

Olivier Martin, head of external networking at CERN and manager of the DataTAG project said, "As of 2007, when the Large Hadron Collider, currently being built at CERN, is switched on, this huge facility will produce some 15 petabytes of data a year, which will be stored and analyzed on a global grid of computer centers. This new record is a major step on the way to providing the sort of networking solutions that can deal with this much data."

The team used the optical networking capabilities of the LHC-net, DataTAG, and StarLight and gratefully acknowledges support from the DataTAG project sponsored by the European Commission (EU Grant IST-2001-32459), the DOE Office of Science, High Energy and Nuclear Physics Division (DOE Grants DE-FG03-92-ER40701 and DE-FC02-01ER25459), and the National Science Foundation (Grants ANI 9730202, ANI-0230967, and PHY-0122557).

CERN, the European Organization for Nuclear Research,

has its headquarters in Geneva, Switzerland. At present, its member states are Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, and the United Kingdom. Israel, Japan, the Russian Federation, the United States of America, Turkey, the European Commission, and UNESCO have observer status. For more information, see <http://www.cern.ch>.

The DataTAG is a project co-funded by the European Union, the U.S. Department of Energy, and the National Science Foundation. It is led by CERN together with four other partners. The project brings together the following European leading research agencies: Italy's Istituto Nazionale di Fisica Nucleare (INFN), France's Institut National de Recherche en Informatique et en Automatique (INRIA), the UK's Particle Physics and Astronomy Research Council (PPARC), and Holland's University of Amsterdam (UvA). The DataTAG project is very closely associated with the European Union DataGrid project, the largest grid project in Europe also led by CERN. For more information, see <http://www.datatag.org>.

# Farley Accepts Job As GPS Division Chair

By MARK WHEELER

PASADENA, Calif. - Probably the only experience the nonscientist has had with the so-called noble gases is the helium found in balloons. But Ken Farley, a geochemist at the California Institute of Technology, has roamed the earth looking for trace amounts of these gases—argon, helium, krypton, neon, xenon, and sometimes radon—that provide clues to the evolution of the earth's interior and atmosphere.

For the immediate future, though, Farley may be staying a bit closer to his Caltech home as he now takes on an additional role as the new chair of the Division of Geological and Planetary Sciences.

Of Farley, Caltech Provost Paul Jennings said that he and President David Baltimore "feel very fortunate that a colleague of Ken's caliber has agreed to assume this administrative responsibility. He is highly respected by his colleagues for his integrity and conviction, his broad scientific interests, and his understanding of the issues within the division. We look forward to working with him as he takes on the duties of division chair."

Farley joined the Caltech faculty as an assistant professor of geochemistry in 1993, and was appointed professor in 1998. In 2003 he was named the W. M. Keck Foundation Professor of Geochemistry. As a scientist, he is interested in the noble gases because they do not form chemical bonds with other elements. As a result, their concentrations in marine sediments, rocks, minerals, and seawater preserve information on the nature of geochemical processes and the timescales over which these processes have

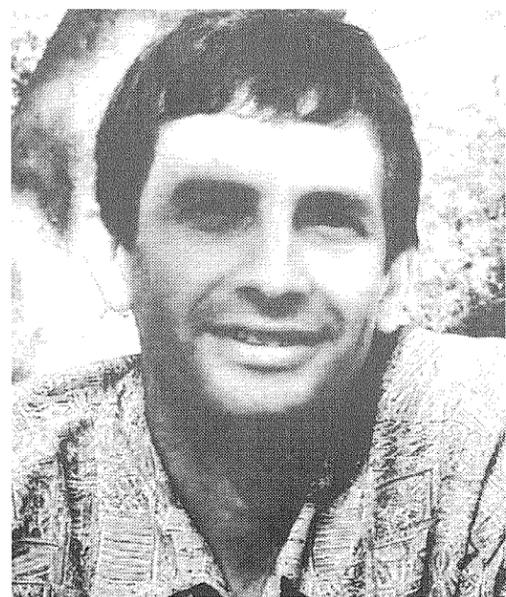
operated. To conduct his research, Farley and his students have traveled afar, from California's Sierra Nevada to Robinson Crusoe Island off Chile.

George Rossman, the professor of mineralogy and divisional academic officer who led the search committee for the position, calls Farley "a young, dynamic scientist."

"We all feel Ken has strength of conviction and is willing to support positions of principle rather than those of convenience. He is able to reach decisions quickly after learning the facts."

"Many find him a scientific colleague who takes an interest in their work, collaborates freely on problems of mutual interest, and who is available for scientific discussion."

In a note to the division Jennings also thanked Ed Stolper for a decade of excellent and dedicated service as division chair, and more recently as acting provost. "The Institute and the Division



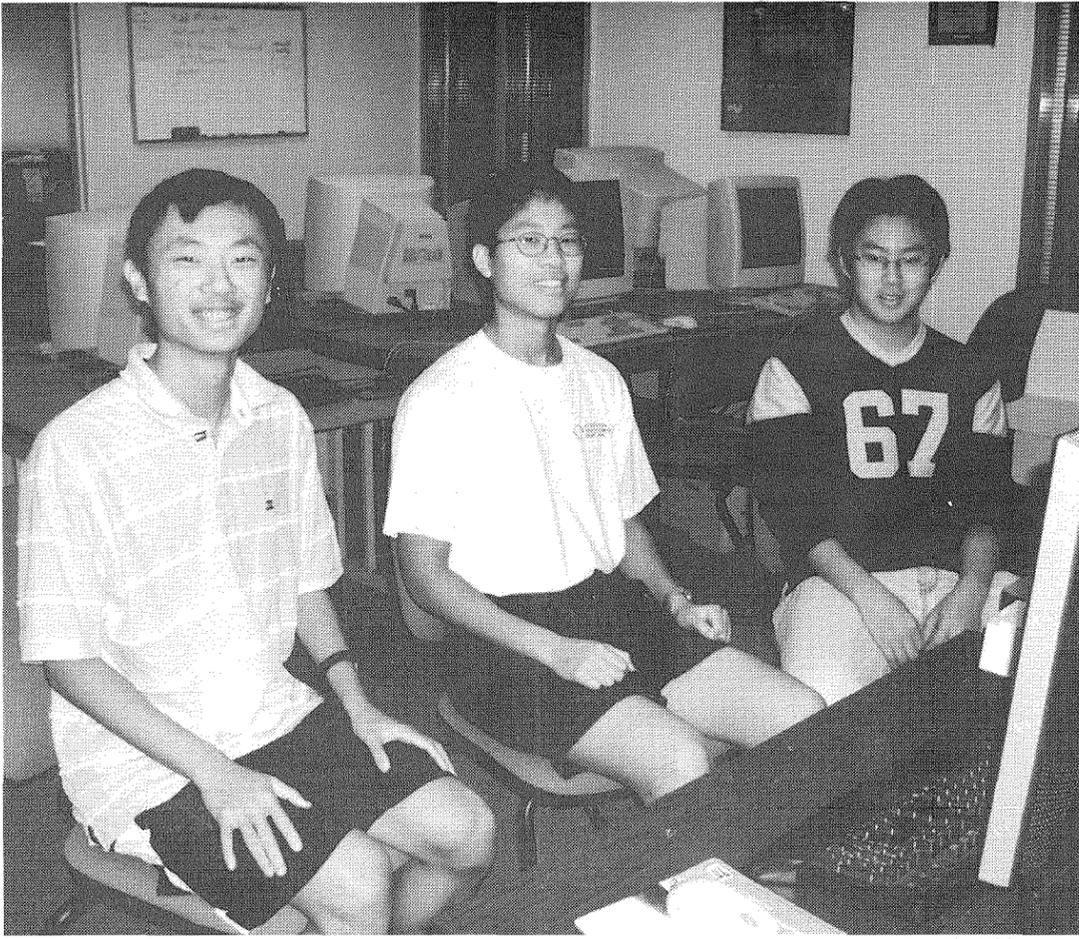
Courtesy of gps.caltech.edu

Professor Ken Farley

have profited greatly from his vision and dedication," says Jennings. Stolper will return to full-time teaching and research.

Farley begins his tenure as division chair September 1.





Howard Liu (left), Po-Ru Loh (center), and Hwan-seung Yeo make up the team that will compete at the world championship of the ACM programming competition.

L. Tran/The California Tech

## Coders To Compete In World Championship

Continued from Page 1, Column 2

gether as teams (the previous contests were to decide the teams), but most teams were able to work cohesively. One challenging aspect about these contests is that each team only has access to one computer, so members need to organize how to share time on the computer.

Besides the prize of free travel and lodging to Shanghai for the top team in the region, the winning students also got MP3 players, backpacks and other gifts. Also, every attendee received a T-shirt, in a large variety of colors, although some of the designated colors—such as one shade that was a bright yellow—were not so desirable.

Contestants were allowed to use C, C++, or Java, although essentially all Caltech team members ended up using C++ for these contests. The practices were held from 10-12 PM on Tuesday nights, with an additional five-hour practice the Saturday before the regional contest. Although these practices could become exhausting, Ben Brantley helped

keep the competitors awake with the aid of free carbonated beverages. In addition, the food during the Saturday practice was beyond expectations, although the food during the regional contest itself was only so-so.

The problems emphasized problem-solving and algorithms. For example, there were problems on graph theory, such as finding the minimum spanning tree of a given set of nodes and edges connecting them. Also, there were many problems with the perennial favorite of programming contests, dynamic programming.

Unfortunately for our teams, the problems chosen for the regional contest tended to the less algorithmic side. In fact, one problem was not solved by any team because it required the teams to write an interpreter, a task that proved to be too time-consuming.

It was a fun and rewarding experience for all team members. "It was a fun contest," agreed Howard Liu. Finally, good luck to the A team members at the world finals.

## Trustees Vote to Add Mack to Their Roster

### Urban League President Honored

By D. WILLIAMS-HEDGES

PASADENA, Calif.—John W. Mack stands out as a dynamic force in shaping the social, economic, and political landscape of Los Angeles. His renowned career as president of the Los Angeles Urban League spans over thirty years, and has made a positive impact on Southern California. A highly respected advocate for equal opportunities in education and economics, Mack will now lend his expertise to the California Institute of Technology as a newly elected member of the Board of Trustees.

Mack's work in building productive partnerships has been pervasive throughout corporate America, small business, government, and communities, making him one of the most influential leaders in the country. Mack has been described as "a bridge

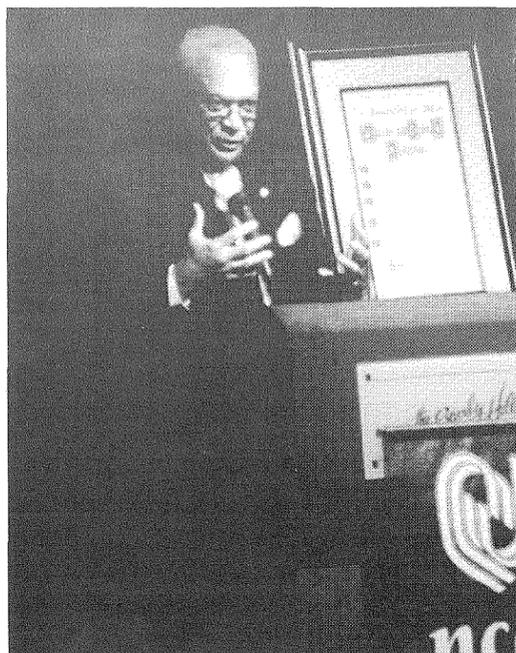
important role as a trustee to the board of the California Institute of Technology," Mack says. "As one of the preeminent research institutes in the world, Caltech is involved in some of the most vital scientific discoveries that will determine our future. Caltech understands the importance of an inclusive, diverse academic community for all. I eagerly look forward to this opportunity to contribute to the attainment of this crucial goal."

Under Mack's leadership, the Los Angeles Urban League has created innovative programs for business and career development, including programs for job training, job placement, education, academic tutoring, computer technology, and youth achievement. The Los Angeles Urban League serves more than 100,000 individuals each year.

Mack began his career with the Urban League in Flint, Michigan in 1964 and was appointed executive director in 1965. During this time he served on the Urban League's national staff for six months in Washington, D.C. Then in 1969 he was appointed president of the Los Angeles chapter.

Mack holds a Master's Degree from Clark Atlanta University. The recipient of numerous distinguished honors and awards, Mack serves on

various boards, including the United Way of Greater Los Angeles, Wells Fargo Bank, and Cedars-Sinai Medical Center.



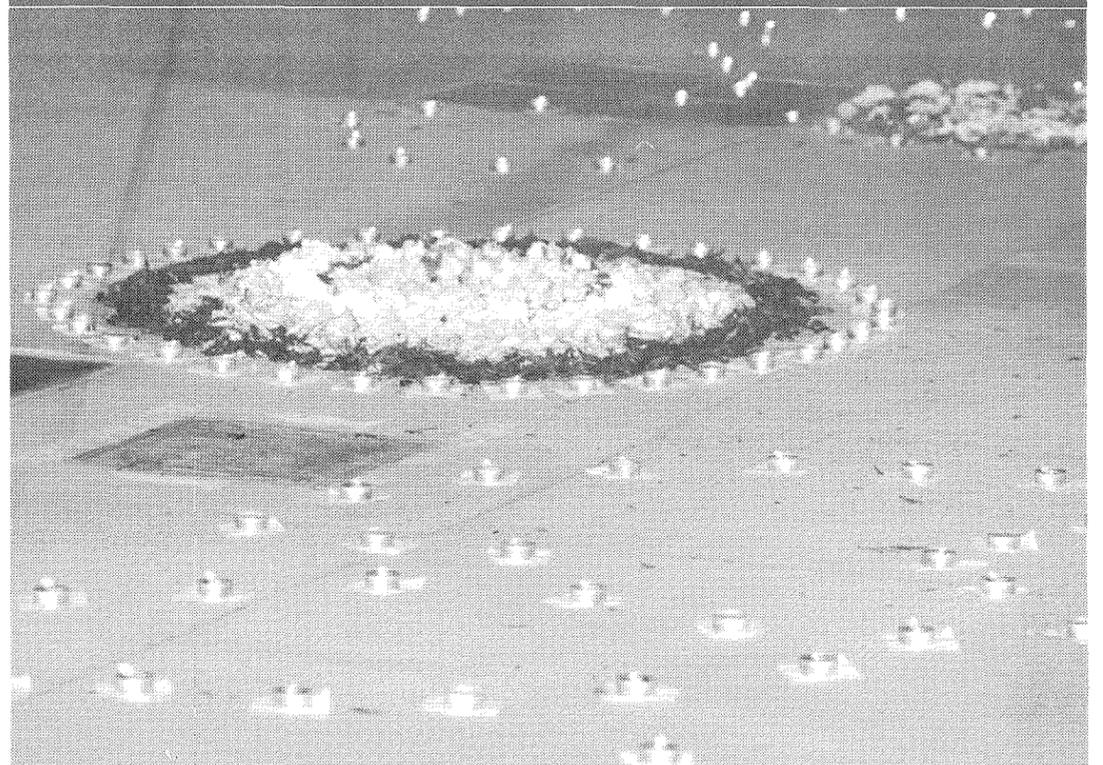
Courtesy of www.nccjla.org

John W. Mack has served as the Los Angeles Urban League President for over 35 years.

builder across all racial, cultural, economic, gender, and religious lines."

"It is an honor to accept this

## OASIS Celebrates Diwali



D. Korta/The California Tech

Diwali, or the festival of lights, celebrates the return of Prince Rama's to his kingdom, as chronicled in the Hindu epic Ramayana. Dancing and music at Avery marked OASIS's observance of the day.

# Pathing Algorithm, Sensors Rethought

*Continued from Page 1, Column 5*

wire fence. No winner was declared in the 2004 contest, since none of the participating vehicles managed to finish the race.

According to the current members of Team Caltech, "Bob's" rather unremarkable showing in March can be attributed to a lack of preparation time before the competition. Cable commented, "Last year, they didn't have enough time to finish. The navigation and control systems were incomplete and the sensors weren't really done."

This year, Team Caltech is incorporating a new plan, which will soon be put into action thanks to a brand new vehicle. The Ford refitting company Sportsmobile is donating a new van to Caltech, a remodeled Ford Econoline E-350 which has been adjusted with stronger capabilities and a new suspension system to handle rugged and otherwise precarious terrains and also to safely contain a slew of computers, sensors and navigation systems. The new model will arrive at Caltech in approximately three weeks.

Led under the supervision of Professor Richard Murray, students and other researching faculty and staff are currently in the works of integrating the new vehicle's systems and operational protocols. In essence, external sensors comprising of two sets of Stereopair cameras and a S.I.C.K. laser radar will work towards determining depth perception of the vehicle from various guiding objects along a travel course while a central color camera analyzes the terrain. Then the information from these sensory devices

is used to fill in a "map" of the course as the vehicle moves.

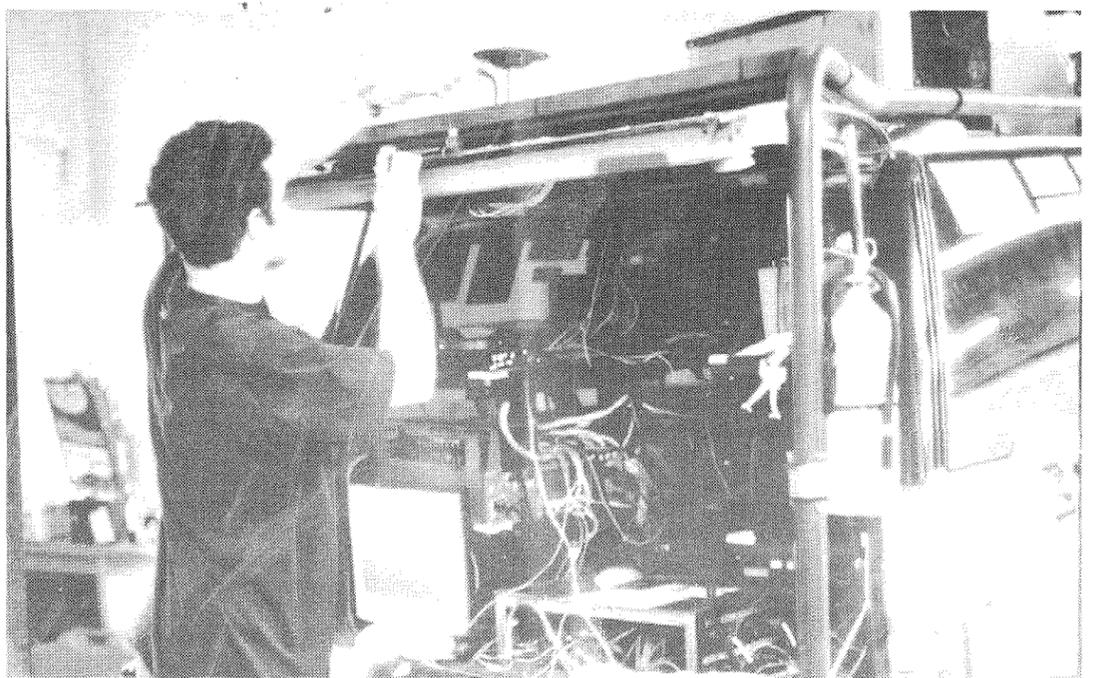
A planning module uses the map and creates a trajectory for the van using a path-generating algorithm and then finally a controller in the car's systems serves to regulate the car's movement.

Currently, in "Bob," this system greatly resembles a group of computers haphazardly stuffed into the back of a van, but this is expected to be greatly refined in the new vehicle. Groups of computers will be integrated together, physically adjacent by way of a rack mount, while electronically linked through a brand new, intelligent, SkyNet gigabit link Ethernet connection.

On Saturday, Team Caltech ran a field test of some new operations on the old vehicle "Bob," in order to check the status and tune the control systems that handle moving the vehicle along its trajectory. Also being scrutinized is the "Path Planner," the algorithmic system that generates the respective trajectories.

All in all, the dozens of members of Team Caltech and their equipment-donating sponsors are hoping that they will be able to put together an effective working machine and claim victory at the 2005 DARPA Grand Challenge and thus become a true part of the beginning of the design of completely autonomous driving and navigational systems for the motorized vehicles of the future.

For more information about Team Caltech, its operations, research opportunities and the DARPA Grand Challenge, visit <http://team.caltech.edu>.



*K. Peng/The California Tech*  
A member of Team Caltech adjusts some connections on Bob, the vehicle that brought fifth place in the last Grand Challenge. A new vehicle, dubbed Alice, is expected to arrive in early December.

## New Guinea Culture Changed By Recent Contact with Foreigners

*Continued from Page 1, Column 5*

old Tambaran, which was bombed during World War II, remain as a testament to the past.

People along the river revere the crocodile as the originator of earth and creator of humans. Some even undergo a ceremony called scarification, during which the man's body is scarred to resemble scales. Once he has undergone the ceremony, he is said to be reborn as a crocodile.

Much time is spent at the market, where goods are laid out on leaves for people to browse and buy. There, the inhabitants can buy sago, a tasteless pulp made from the pit of the sago palm tree. Sago can be made into pudding or gelatin. People along the Sepik also eat fish and grubs.

While in Papua New Guinea, May had the honor of watching multiple sing sings, which are celebrations held for some great event. One was held purely for tourists, during which people could pose for pictures with the big man, or chief of the village and buy the ceremonial clothes and drums used. However, she saw another which was held to celebrate a boy's initiation into manhood. The honored boy was dressed as a bird of paradise with shells which clanked as he danced. Faces were painted with colored mud and people moved to the beat of drums.

When May traveled to the highlands, she watched the Mount Hagen Cultural Show. Prior to Western contact, the tribes of the highlands had often been at war with each other. Once the white men observed this violence, they informed the tribes that a new method to resolve conflicts was needed. Thus, the tribes created the Culture Show, an annual competition between the tribes. Peo-

ple don headdresses of birds of paradise feathers and shells and the tribal groups gather in a field to being a chaotic day of dancing. The mud men, representing the most fierce warriors, wear elaborate masks.

Some parts of Papua New Guinea had not even been in contact with the outside world until the 1930s. However, there were already various changes on the island due to communication with the outside. One image of a little boy portrayed him wearing Budweiser pants. Western clothes are often viewed as a symbol of wealth.

During one sing sing, she ob-

served the big man standing near a young child dressed in overalls. "Even though only generations separated them in age, centuries separated them culturally," she said.

The arrival of tourists mark an exciting event for villages and people often gather to watch the tour group come to the village. Goods are now manufactured purely to sell to tourists which has helped the economy and brought in money.

With the arrival of Western culture in Papua New Guinea, it has become a land in limbo between the past and present.



*A. Green/The California Tech*  
Some pieces of New Guinea culture that May brought back are displayed before her slide show last Tuesday.



*K. Peng/The California Tech*

The sensor suite that maps the terrain is one of the components undergoing a revamping for the next DARPA race.

The California Tech

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