

# THE CALIFORNIA TECH



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## Board of Trustees Interviews Students Undergrads Discuss Student Life at Caltech

BY: ANNA HISZPANSKI

Typically students only see the results of the Board of Trustees' decisions, but this weekend a select few undergraduates had the opportunity to see and meet the Trustees themselves. Six students, selected to represent the Caltech undergraduate population, spoke with Board members on Saturday, Oct 28th in a panel discussion on undergraduate life at Caltech during the Board's annual retreat.

According to Todd Gingrich, ASCIT President and one of the six students on the panel, the discussion with the Board of Trustees is not routine.

"This panel discussion is not typical, mainly because the annual Trustee board meeting traditionally takes place in Palm Springs, and students are not [usually] invited to join in the retreat," wrote Gingrich in an email response. "This year, the meeting was largely held on campus, allowing simpler incorporation of student discussions."

Students began by briefly introducing the Trustees to the pillars of undergraduate life — the core curriculum, the house system, the honor code, research, pranks, and Ditch Day — and then opened the floor to other topics. The discussion centered on four topics in particular: the quality of teaching at Caltech, faculty-student interaction, student morale, and Caltech's competitiveness against other undergraduate universities



Todd Gingrich, ASCIT President, and Craig Montuori, IHC Chairman, both sat on the undergraduate panel which discussed student life with the Board of Trustees on Saturday.

in attracting top students.

Some of the Trustees are Caltech alums and have experience related to the issues.

"I was an undergrad here in Page House... and I'm familiar with each of the issues raised by the panel," said Trustee Mrs. Clara S. Miller (Class of '84), who is a principal of Regulus International Capital Corporation.

The students on the panel were surprised by the enthusiasm and apparent sincerity of the Trustees

*"I was pleasantly surprised by the extent to which [the Trustees] seemed to care genuinely... about [student] problems and acting to fix them."*  
~ Ben Golub, student panelist

to understand and work on the issues of concern to the students.

"I was pleasantly surprised by the extent to which they seemed to care genuinely," wrote student panelist and senior Ben Golub in an email response. "Much of what we said was not unequivocally positive, and if these people didn't care about making our lives better, they would have probably found the chat to be a bit of a downer. The fact that even the griping was well received suggests that they really care about hearing about problems and acting to fix them."

Both sides, the students and the Trustees, appeared to feel the discussion was useful and seemed in favor of increasing communications between students, faculty, and administrators of Caltech.

"I'm always excited about speaking to students... It's a part of getting a realistic viewpoint of an institution," said Trustee

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## Venus Examined by Techer

BY: MARISSA CEVALLOS

When our planet was forming billions of years ago, it constantly braved collisions from space debris. In fact, it even took on an impact from a Mars-sized object, forming the moon we know today. But if Earth was well-situated to take on moon-forming collisions, how did Venus evade forming a moon?

According to research this summer conducted by Caltech sophomore Alex Alemi, Venus did have a moon. But in a second

massive collision, Venus reversed direction, and gravitational forces accreted the moon back into its mother planet to leave Venus mysteriously moon-less.

Not only does his research explain why Venus lacks a moon, but it predicts that Venus has very little angular momentum. In fact, Venus has the slowest spin of all of the planets, rotating about its axis once every 243 Earth days.

Alemi's "two giant impact hypothesis" predicts that Venus is hit twice. In the first collision, a moon is formed out of the debris, "just like the Earth-moon sys-

tem," said Alemi.

In the second collision, an object with the opposite angular momentum collides with Venus so it reverses direction.

"At this point," said Alemi, "we have a planet spinning in the opposite direction than the moon is traveling."

In the Earth-moon system, the moon's gravity slightly pulls on the Earth, causing it to bulge a little at the center; instead of a sphere, it is slightly oblong. Since the Earth rotates faster than the

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The volleyball photograph on the front page of the Oct 23rd issue of *The Tech* was by Karen Wang.



# The Outside World



BY: DANIEL ROWLANDS

## New Jersey Supreme Court Rules in Favor of Same-Sex Unions

The New Jersey Supreme Court ruled this week that the state constitution requires that same-sex couples be given the same legal benefits as married couples. The court ordered the state legislature to either legalize same-sex marriage or create a system of civil unions for same-sex couples giving them the legal rights of marriage.

Although a constitutional amendment reversing the ruling and a law legalizing same-sex marriages have been suggested by lawmakers, most expect the state to simply establish same-sex civil unions with the same rights.

## Study Shows Vaccines May Be Ineffective

A study in the British Medical Journal suggests that flu vaccines may actually have little medical value. The study showed that flu shots were no more effective than placebo when given to children under the age of two. The authors suggest that the original studies on flu vaccines' effectiveness were scientifically questionable and that the main

motivation for flu vaccination campaigns was the need for governments to be seen doing something about influenza.



Photo courtesy of AP/Chris Carlson

## Forest Fires Rage Across in Southern California

A massive wildfire that started in Riverside County, CA, near Palm Springs, Thursday morning has burned over 60 square miles and killed four firefighters. The fire is suspected to be a case of arson and is one of approximately 25 arson-initiated forest fires in the area over the last three

months. The fire has stayed in uninhabited areas so far - only ten structures have been destroyed -

## Muslim Cleric Criticized for Statements About Rape

Sheikh Taj El-Din Hamid Hilaly, the mufti of Australia's largest mosque, started a controversy that has led to calls for his resignation by commenting that women who do not wear headscarves "invite rape" and

comparing them to "uncovered meat".

The Australian Lebonese Muslim Association, which owns Hilaly's mosque, has banned him from preaching for three months and Australian Prime Minister John Howard has been joined by many Australian Muslim groups in calling for him to step down. Hilaly has said that he will not consider stepping down until the world is "cleaned of the White House".

## Daylight Savings Time Ends in October for the Last Time

At 2:00 AM Sunday morning, most Americans turned their clocks back to 1:00 AM as Daylight Savings Time (DST) came to an end. Next year, though, DST will run from the second Sunday in March until the first Sunday in November instead of from the first Sunday in April until the last Sunday in October.

The change was part of a massive energy appropriations bill passed by Congress last year. The main reason for the change was to decrease energy consumption for heating and artificial lighting, but studies by the Department of Energy suggest that the effects may be negligible. The change is also expected to lead children to Trick-or-Treat during day-

light and to cause difficulties with the scheduling of international flights.

## St. Louis Cardinals Win World Series in Five Games

On Friday night, the St. Lewis Cardinals beat the Detroit Tigers 4-2 in game five of baseball's World Series to win the series four games to one. The Cardinals won the series despite having less regular season wins this year than any previous World Series victors.

This is the third year in a row that a team

## New Space Weather Monitoring Satellite Launched

On Wednesday NASA launched its Solar-Terrestrial Relations Observation (Stereo) mission to study space weather. The pair of satellites will allow for three-dimensional views of the sun and better studies of coronal mass ejections. The Stereo mission is expected to provide space weather alerts that will help power companies prevent space-weather induced blackouts and protect astronauts.

Compiled from the Boston Herald, CBS News, the Daily Mail (UK), the Guardian (UK), Reuters, and the New York Times.

# Trustees Examine Student Concerns

CONTINUED FROM PAGE 1

Dr. Shirley M. Malcom, who is the head of the Directorate for Education and Human Resources Programs for the American Association for the Advancement of Science. "As far as I'm concerned, the institution is here for the students, and until I have the opportunity to hear what they have to say, I don't know how we're doing."

The students seemed equally appreciative of the opportunity to speak to the Trustees.

"I have a great respect for the Trustees," said Blacker House President Joseph Koehler. "Many of the Trustees are graduates of Caltech that have gone on to be very successful. By meeting with them, I got the feeling as though they are a very down to earth folks, especially considering what they have done."

The Trustees were receptive to students' criticisms and complaints, as well.

"There are things that can be changed... We shouldn't have to have a presentation to the Board to have some of these issues addressed," said Ms. Miller.

The Honorable Shirley M. Hufstedler, a senior Trustee who served as judge of the U.S. Court of Appeals for the Ninth Circuit and Secretary of Education under President Carter, agreed that "Students are very upset about the prices rising, and I can well understand it. The other things that were mentioned are doable and should be done... The students tend to look at these things fairly sharply. I think some of the suggestions that were made are very useful."

Some suggestions the student panel made included: not cutting

costs from pre-frosh weekend (keeping it three days as opposed to two), more carefully considering how cost cuts may affect the quality of undergraduate life, facilitating more faculty-student interaction, and dedicating more resources towards publicizing Caltech to potential applicants.

The students also expressed concern that though each term student feedback is given for professors and courses, oftentimes few or no changes occur.

Sophomore John Liu, another student who sat on the panel, wrote that "From talking to Trustees..., I believe [they] were very thankful for a path of communication directly to the students themselves. I believe the student panel shed some new light on issues the Trustees were concerned about, so they were quite appreciative of getting our perspective. I even remember one Trustee approaching me and telling me to expect some changes in the future because of our talk."

Gingrich agreed that "The mere fact that we had a discussion won't solve the problems, but the Trustees appeared to be sympathetic, suggesting that we can look forward to a more organized method to combat some of these undergraduate issues."

Though plans for future student discussions with the Board of Trustees are not clear yet, the panel discussion seems to have been well-received on all sides.

"I'm very concerned about students," said the Honorable Hufstedler. "I listen to them all when I can get them to talk."

Proceeding the discussion with undergrads, the Board also met with a small group of graduate students for a similar panel.

# Grad Students Protest Proposed Insurance Policy Changes

CONTINUED FROM PAGE 1  
en, increased out-of-pocket costs could force students with physical or mental health issues into debt or even leaving the Institute due to the great financial burden, in the worst-case scenario.

The Graduate Student Council (GSC), while still planning a larger protest, made a preliminary statement by handing out T-Shirts at the Red Door Cafe that state "Health Care? We Care." to demonstrate support for health insurance coverage. GSC President Will Ford was not available for comment regarding a larger protest.

In a letter to the Graduate Student Council, Faculty Board Health Committee Chair, Professor Phil Hoffman reassured, "We are committed to offering comprehensive health insurance that provides the security and protection students have come to expect. We also understand the importance of balancing comprehensive insurance with affordable premiums and reasonable out-of-pocket costs, and we will continue to try to meet those goals. At the same time, however, we need also to remain mindful of how much the program costs Caltech, and how it compares with similar programs at other institutions of similar size."

When Dr. Miriam Feldblum and Dr. Kevin Austin from Student Affairs prepared a joint presentation for the Financial Aid and Scholarships committee earlier this fall, they listed important points for consideration while exploring possible changes to the health plan, saying any Caltech health plan must:

1) "Combine with the services provided by the Caltech Health

Center and Counseling Centers in a way that results in comprehensive medical and psychological care."

2) "Provide health care for the student while the student is physically present at Caltech, participating in Caltech off campus activities, at home, or while traveling."

3) "Is in force for the entire time the student is enrolled at Caltech."

4) "Provides benefit levels that do not subject the student to undue financial burdens that could result in the student failing to seek appropriate care."

5) "Is accessible to the student in a way that does not significantly interfere with their academics. This should be universally accessible to all students."

In order to gather student input regarding this matter, a Health Care Survey was made available to students to voice their extent of acceptance with respect to possibilities including, but not exclusive to deductibles, co-insurance, or co-payments, of which students pay relatively little under the current Chickering plan. According to GSC Quality of Life Committee Chair, Arthur Fitzmaurice,

"All [on the Health Committee] were receptive to the idea of having a survey to gather student feedback, so hopefully they will listen closely to the results of the survey, particularly to the personal responses to the open question at the end." The GSC has solicited personal letters from graduate students, and student representatives to the Health Committee are always available if one wants to contribute further input; several have held multiple meetings to gather student feedback.

The Health Committee is currently in the process of meeting to review the results of the health care survey to make recommendations to the Faculty Board Health Committee. These meetings have been attended by representatives from the undergraduate and graduate student bodies, as well as Human Resources, Student Affairs, and the Health and Counseling Centers. Fitzmaurice informed, "The survey results were presented to us as a committee last Wednesday. We intend to publish a summary of these results with details from our discussions in the coming weeks."

The Health Committee should make a decision regarding what they will propose to the faculty board within the week, so that a recommendation for a new course of action may be presented, in turn, to the administration and the Trustees for consideration.

Those interested can visit [www.healthcenter.caltech.edu/insur.htm](http://www.healthcenter.caltech.edu/insur.htm) for more information regarding the Health Insurance Review, in addition, one may contact the undergraduate representatives to the Health Committee: Csilla Felsen, Erin Flanagan, and Vickie Pon.

ASCIT BoD Meeting Agenda  
Wednesday 10/25/06

1. Funding Requests:
  - a. Long Boarding Club
  - b. Take a Prof to Lunch
  - c. D&D club
  - d. Other
2. Quick Trustee Meeting Update
3. Chris Watson's jobs: Movie Library, Staff Awards
4. Salaries
5. Little T
6. S. House Party
7. Other

# Scorsese's New Film a Departure from Past Failures

BY:HARRISON STEIN

In each of the last three decades of the 20th century, legendary filmmaker Martin Scorsese directed gritty, witty dramas that changed the way movies were made. *Taxi Driver*, *Raging Bull* and *Goodfellas* were revolutionary because they contained acting performances never before seen in Hollywood (Jodie Foster, Robert DeNiro, and Joe Pesci to name a few), and they changed the way the public viewed the Oscars.

Despite being three of the most lauded films in history, none of the films won any Best Picture or Best Director awards permanently staining the credibility of film's greatest award. Scorsese took those defeats especially personally and ever since the groundbreaking *Goodfellas*, he has made a batch of films with the sole purpose of adding Oscar-winner to his illustrious resume. The results have been far from flattering, as the Scorsese we grew to love seemingly sold his soul for a last gasp at film immortality.

Luckily, Scorsese has shed his recent shell just in time for this midyear tour-de-force, *The Departed*, based on the popular Chinese film *Infernal Affairs*. The Departed contains a who's who of Hollywood mega-stars as Jack Nicholson, Matt Damon, Leonardo DiCaprio, Mark Wahlberg, Martin Sheen and Alec Baldwin all have juicy roles that leave enduring impressions.

Nicholson plays the prototypical "Jack" character, a psychotic mob boss named Frank with a vicious streak tempered by a dash of humor. Damon and DiCaprio play opposing rats, with Damon starring

as Colin Sullivan, a mobster who infiltrates the police and DiCaprio as Bill Costigan, an undercover officer masquerading as a mob enforcer. Sheen, Wahlberg and Baldwin have secondary, but intriguing roles in the police force.

The film begins with an expert portrayal of Bill and Colin's parallel paths towards the police force. Once they graduate, both are callously interrogated, and it's at this point that the characters' courses permanently diverge, only to be intricately linked by a chain of tragedy and bloodshed.

Sullivan passes the test with flying colors, demonstrating the sleekness and cunning needed to ultimately turn on the outfit he promised to protect. In the meantime, Costigan grows hostile and defensive showing that, while ill-equipped to handle the rigors of detective work, he is perfectly suited to permeate the inner-workings of Frank's mob front.

Sullivan begins dating a beautiful doctor (Vera Farmiga) who just so happens to be Costigan's court-appointed shrink. Expected fireworks arise in the complicated love triangle and while the psychiatrist character is largely extraneous, she does add a nice little niche to the plot that is neatly tied-up at the end.

As Costigan and Sullivan burrow deeper and deeper into their respective organizations, they both find it necessary, yet impossible to extricate themselves from their inauspicious situations. What follows is a grim cat-and-mouse game with a few twists and a lot of outcomes that feel predestined.

Scorsese proves he is finally back in form, as *The Departed* is his most impressive film in over fifteen years. Back in



Matt Damon and Leonardo DiCaprio star in *The Departed*.

the day, Scorsese formed an enduring rapport with Robert DeNiro as the two were at their pinnacle when working together.

DeNiro has long since retired from fine cinema with recent stinkbombs like *Godsend* and *Hide and Seek*, but Scorsese has found his new leading man in Leo DiCaprio. Of the main stars, DiCaprio is most comfortable because of his newfound synergy with the director.

His character is clearly the most complex as he plays everything very close to the vest, never letting the emotions get the best of him until an explosion of passion near the end. Damon, a supreme disappointment since his star turn in *Good Will Hunting*, is considerably less impressive, but at the same time, his straight-laced, cold-hearted character is one-dimensional, leaving little room for Damon to showcase his range. More often than not, Damon hits the right notes and by the end, the audience truly despises his louse of a character.

Jack Nicholson is predictably fantastic, as the creepy but articulate mob boss is the perfect role to bring Jack out of his late-life crisis.

Nicholson delivers scathing monologues, including the defining speech of the movie

where he proclaims that cops and villains are no different when faced with the barrel of a gun. While we learn to loathe the slimy, manipulative Sullivan, Nicholson's Frank remains a sympathetic character. When he's not showing his homicidal tendencies, Frank is the type of guy we would invite over for football on Sundays.

Despite being the only name on the ledger without instant name recognition, screenwriter William Monahan manages to stand out for the right reasons, as the script is an absolute revelation. Despite being a depressing and gritty crime drama, *The Departed* is full of fresh one-liners and plenty of hearty dialogue.

The conversations between Nicholson and DiCaprio have the perfect tone and the Baldwin and Wahlberg's characters are infinitely enlightened by the presence of witty, caustic dialogue. Not since *Pulp Fiction* has a crime drama been blessed with such a coherent script.

Unfortunately, there are a number of factors that keep *The Departed* from joining the exalted class of classic action dramas. For one, the story is all over the place and the ending is a bit too much.

A lot of the subplots are pretty extraneous and a num-

ber of Sullivan and Costigan's actions are not particularly realistic or convincing. While the pacing of the film is nearly perfect once the first hour has passed, there are moments early on where the film noticeably drags. There were even a few moments where I felt the despicable urge to rest my eyes in the theater.

Nonetheless, the yays far outweigh the nays in this excellent picture. The film is beautifully shot on-location in Boston and Scorsese demonstrates his unparalleled creativity with a number of excellent scenes.

Most notable is a shot of Jack Nicholson gleefully enjoying his opera while slightly intoxicated. Scorsese uses a full red backdrop to elucidate the evil in Frank's character. It remains to be seen whether Martin's effort is rewarded with a gold statuette (or two), but it's clear that no matter what happens in March Scorsese, Monahan, Nicholson, Damon and DiCaprio have made a film worth remembering, even after the audience has departed the theater.

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## Learn to Fly!

### Caltech/JPL Aero Club

For more information go to: <http://aacit.caltech.edu>  
or email club VP and instructor Joe Areeda  
(joe@areeda.com)



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# Study Abroad Provides Unique Opportunities

This week, *The Tech* presents the first of a four-part series that highlights the opportunities of the study abroad program. Students may contact Lauren Stolper, the director of Caltech's study abroad program, for more details.

BY: LAUREN STOLPER

Study abroad started in the winter of 1999 when four intrepid seniors made their way to cold and wet Cambridge, England to spend a term at Cambridge University. Their response to study abroad was so enthusiastic that over the

last five years the Cambridge program has more than doubled in size and we have added three new programs involving four universities: Copenhagen University (KU), the Technical University of Denmark (DTU), University College London (UCL), and the most recent program in its second year, Edinburgh University.

The Copenhagen Scholars Program is a study abroad program in which Caltech students study in Copenhagen, Denmark at Copenhagen University (KU or Københavns Universitet) in economics, biology, computer

science, mathematics, the biological sciences or the physical sciences, or study at the Danish Technical University (DTU) for engineering and the applied sciences. Students attend during the junior or senior year for the fall semester. Two to five spaces are available each fall.

The University of Copenhagen (KU) is located in the heart of the city of Copenhagen while the Danish Technical University (DTU) is located about 10 miles north of Copenhagen in the town of Lyngby. KU is the oldest university in Denmark and was founded in 1479. DTU has

is comparatively younger and was founded in 1829. KU has 34,000 students and 65 departments in six faculties: Health Sciences, Humanities, Law, Science, Social Sciences and Theology. The Faculties are located across Copenhagen in three campus areas. DTU has 15 academic departments in the applied and physical sciences and 6000 students. In the 1960's DTU moved to its new Lyngby campus. All upper level courses are or can be taught in English at both KU and DTU.

Caltech students enjoy liv-

ing in this hip city which is located on several islands interconnected by bridges-in fact much of the country of Denmark is on a series of large islands. The city has an ultra-modern driverless metro system. It is a city for cyclists and pedestrians and in fact started the now common practice of pedestrianizing the city center so that no traffic flows through certain parts of the city center. There are ample opportunities for nightlife, cultural activities, sailing and the hiking or walking. The Danes are friendly and almost everyone speaks English fluently.

## Techers Share Experiences

**STEVE PAIK '03  
PHYSICS KU**

Copenhagen is a dense, sprawling metropolis that never fails to offer something in the way of excitement. There are countless, museums, restaurants, shops, cafes, bars and other attractions jam-packed into a quaint, little city designed around pretty canals and harbors.

With a bus pass or a bike you can easily get almost anywhere in the city, and day trips by train to most of Denmark and Sweden can be done without advance notice. I find the opportunities to travel and to study the vestiges of a country whose absolute monarchy once controlled all of Scandinavia to be most exciting.

I believe it is that combination of rich history and modern lifestyle that makes Denmark a great change of pace from humdrum Pasadena.

The academics here, especially in the physical sciences, are very good. The level of enthusiasm I see from my classmates is surprising and it just adds to the enjoyment of going to lectures and doing homework.

It was quite easy to develop a nice rapport with my professors. Since the atmosphere between students and teachers is so informal here,

I always call them by their first name, and I am usually welcome to drop by their offices any day of the week. The workload can be as

intense as Caltech if you choose to make it so.

That is, the usual style here is to assign optional problems that you can present the solutions to on the blackboard in front of the class one day a week. The norm is also to have oral final exams, which means you have to give a mini-lecture on a topic from the syllabus from memory.

Consequently, I think I've done more reading for courses here than I normally did back home. There are lots of foreign students (especially from European countries) in my classes and it's great to have such diversity. The Danish science students I know are extremely courteous. In general, most Danes I live near or see on a daily basis are some of the nicest people I've ever met.

The views from the eastern coastline are very picturesque in early autumn, and the weather during August and September were just fantastic in Copenhagen.

But around this time of year it tends to get dark and rainy most days. I don't recommend Denmark if you can't live without the sun for extended periods, or if you really dislike riding buses or subway trains.

Even though the weather can prevent a lot of outdoor activity there are still many things to do indoors, like going to the cinema, or to a pub. Just ask a friend if you come here.



This photo of Denmark shows the busy streets and the urban landscape.

One of the biggest differences between university life here and back at Tech is that KU is integrated into the city. Therefore, there is no central campus and going to another faculty might require a short commute.

For example, the humanities department is here on Amager (where I live) and the physical

science buildings are about a half hour north by bus. Sometimes it is an interesting experience trekking to school and passing by so many businesses, parks, homes, etc. I don't always get the impression that it's school, but more like work.

Life here is different in many ways. The food is one example.

The city-wide campus is another. The most prominent of course are the people. As a result of talking to many Danish friends I can now say that I understand how people in Europe perceive America, and I've learned to look at things differently. It is always good to get another perspective.

CONTINUED ON PAGE 5

## Finance Experiment Continues

The table to the right summarizes funds' performance in the second round of the financial-markets experiment. This round took place on Tuesday, October 24. There were 66 investors and 32 managers who participated, all of them Caltech students. The fund managers are identified by names of minerals. The DowTech is a fixed portfolio of assets and cash, and provides the measure of return if managers started with that portfolio and held on to it. There were two funds that were not actively trading in this round, Allanite, which is marked with a (P) and is expected to trade in the next round, and Biotite, which is marked with (PP) and is not expected to trade in the next round. Students interested in more details or who want to participate in the experiment as an investor may see the CLEF webpage at <http://clef.caltech.edu/exp/dp/index.html>

Fund	Re - turns*	V o l - ume**	R e s i d u a l (\$)***	Risky*#
DowTech	<b>0.830</b>	NA	NA	<b>84.75%</b>
Albite	<b>3.966</b>	<b>0.34%</b>	<b>27.75</b>	<b>242.13%</b>
Alexan - drite	<b>1.131</b>	<b>11.61%</b>	<b>398.53</b>	<b>100.00%</b>
Allanite(P)	<b>0.493</b>	<b>1.96%</b>	<b>42.66</b>	<b>74.32%</b>
Alunite	<b>1.510</b>	<b>2.27%</b>	<b>92.75</b>	<b>100.00%</b>
Amazonite	<b>0.906</b>	<b>6.68%</b>	<b>197.72</b>	<b>96.11%</b>
Amblygo - nite	<b>1.286</b>	<b>4.38%</b>	<b>178.01</b>	<b>99.99%</b>
Amosite	<b>1.900</b>	<b>0.98%</b>	<b>45.57</b>	<b>112.09%</b>
Andalusite	<b>0.786</b>	<b>0.84%</b>	<b>23.16</b>	<b>120.55%</b>
Anthophyl - lite	<b>0.796</b>	<b>1.70%</b>	<b>44.82</b>	<b>99.97%</b>
Atacamite	<b>0.997</b>	<b>4.39%</b>	<b>142.55</b>	<b>106.65%</b>
Barite	<b>0.421</b>	<b>2.19%</b>	<b>45.34</b>	<b>62.05%</b>
Bassanite	<b>1.031</b>	<b>3.18%</b>	<b>100.13</b>	<b>99.84%</b>
Beidellite	<b>1.253</b>	<b>1.83%</b>	<b>65.45</b>	<b>111.98%</b>
Bementite	<b>2.570</b>	<b>0.64%</b>	<b>36.56</b>	<b>106.61%</b>
Bentonite	<b>1.603</b>	<b>0.69%</b>	<b>27.67</b>	<b>98.58%</b>
Bertrandite	<b>-0.048</b>	<b>10.57%</b>	<b>109.82</b>	<b>69.59%</b>
Biotite(PP)	<b>0.993</b>	<b>1.09%</b>	<b>33.03</b>	<b>75.01%</b>
Birnessite	<b>-0.088</b>	<b>7.71%</b>	<b>73.34</b>	<b>11.60%</b>

Fund	Re - turns*	V o l - ume**	R e s i d u a l (\$)***	Risky*#
Bloedite	<b>2.200</b>	<b>0.28%</b>	<b>15.66</b>	<b>88.08%</b>
Boracite	<b>1.342</b>	<b>1.44%</b>	<b>51.65</b>	<b>99.41%</b>
Calcite	<b>1.435</b>	<b>1.80%</b>	<b>67.26</b>	<b>61.12%</b>
Carnallite	<b>2.550</b>	<b>0.62%</b>	<b>38.52</b>	<b>122.34%</b>
Celestite	<b>0.385</b>	<b>1.82%</b>	<b>35.75</b>	<b>22.71%</b>
Chalcopy - rite	<b>1.231</b>	<b>1.58%</b>	<b>54.24</b>	<b>99.04%</b>
Chlorite	<b>1.007</b>	<b>2.21%</b>	<b>67.77</b>	<b>99.55%</b>
Colemanite	<b>1.941</b>	<b>0.97%</b>	<b>49.33</b>	<b>101.46%</b>
Cornadite	<b>1.979</b>	<b>3.62%</b>	<b>172.12</b>	<b>120.29%</b>
Cristo - balite	<b>1.248</b>	<b>1.87%</b>	<b>67.02</b>	<b>82.17%</b>
Cryolite	<b>0.512</b>	<b>6.15%</b>	<b>134.87</b>	<b>63.35%</b>
Dolomite	<b>0.024</b>	<b>12.36%</b>	<b>134.47</b>	<b>31.31%</b>
Dumortier - ite	<b>0.985</b>	<b>1.53%</b>	<b>46.54</b>	<b>96.19%</b>
Dunite	<b>0.708</b>	<b>0.70%</b>	<b>15.99</b>	<b>65.04%</b>

\* Returns = (final value portfolio - initial value portfolio)/initial value portfolio

\*\* Volume = initial value portfolio/(total value of all portfolios)\*100

\*\*\* Residual = final value portfolio - manager's fee

# Risky = (value of final holdings of risky assets)/(value of final portfolio)\*100, portfolio values at trading prices, not at return levels

Photo courtesy of Caltech Study Abroad

# Students Describe Experiences in Denmark

CONTINUED FROM PAGE 4

## WEI HUANG '07 MECH. ENGINEERING, DTU

To those who wants a great experience traveling abroad and getting to learn another language, then studying abroad in Copenhagen offers a great opportunity. This is because Denmark's first language is Danish and second language is English.

Therefore, all the signs on the streets and newspapers are in Danish. So you can definitely get an adventure out of wandering around the city with/without a map. On the other hand, if you are truly stuck and need help, then you can just ask any Danish people on the street; they are generally very friendly and can respond in perfect English. Sometimes, if you look stuck and lost,

they will voluntarily come and help you out.

Copenhagen itself is the biggest city in Denmark. And since the Danish people love design, you see great design everywhere, from fashion to architecture. The fashion here is slightly different than the States. People here generally dress pretty well. Danish people are generally very pretty and slim.

As for architecture, besides preserving the old buildings, modern buildings can also be seen by the waterbank. These modern buildings are not just new, but they are extremely pretty, for example, the Black Diamond, which is a building next to the waterbank with the building tilt 7 degrees toward the water.

It is made out of glass and black granite. The water will reflect the sunshine on the side of the building, causing it to shine. Although many buildings might look old on the outside, the interior design of these buildings is extremely modern.

Copenhagen is located just across the water from Sweden. One can often just take a day trip to Sweden, Norway or other Danish islands.

Travel by flight from Copenhagen to other European cities is very convenient. The airport is just located right outside of the city, and can be reached train.

EasyJet offers cheap fares to many European cities, one just need to book around a month earlier. Even if you don't, it would



Copenhagen's canal provides a convenient mode of transportation.



This woman represented Denmark at the 2005 Miss Universe contest.

still be pretty cheap. Also, one can often city hop by buying inter-rail train tickets. It is very convenient.

Also, studying abroad offers you a chance to meet other international students, and you can learn many cultural things directly from them. They are generally laid-back and fun to hang out with.

The groceries here are high quality; they are all organic foods.

Studying abroad offer you a chance to kind of get away from the high demands of Caltech's academic life and enjoy things like biking, running, reading and basically have your own free time to pursue your hobbies.

This is also a great chance to see the world before you get tied down with other things like career, grad school, etc.

Basic idea: you should study abroad if you can!

## Techer Valuable in Finance

The Career Center presents another profile of an alumnus from Caltech.

Alexei received a bachelor's degree in Physics from Novosibirsk State University in Russia in 1997. Following a brief exchange program at Ecole Polytechnique in Palaiseau, France, he came to Caltech in 1998 to pursue a PhD in experimental High Energy Physics. Alexei's work on the BABAR experiment at Stanford Linear Accelerator Center involved detector operations, event reconstruction algorithms, and data analysis. After graduating in 2006, he joined Susquehanna International Group, LLP (SIG) as a Quantitative Research Associate working on the Statistical Arbitrage desk.

**Major Responsibilities:** Alexei's responsibilities involve support, analysis, and development of automated trading strategies with a focus on high-frequency trading.

**The Career:** "I developed an interest in finance while at Caltech through interactions with alumni who started working in quantitative finance after graduation and after taking a basic course in options theory taught by Professor Peter Bossaerts. Later on I came to appreciate better the important role that technology and quantitative methods play in modern finance. SIG has a strong focus on technology, and its Quantitative Research department is among the best in the finance industry. The company is very successful and is growing rapidly: it has the size to be a major player in the markets,

but at the same time very nimble and entrepreneurial. I really like the culture which in some ways is similar to Caltech. SIG's prominence in the industry is far larger than its size might suggest."

**Preparation:** "Working in the field of High Energy Physics gave me an opportunity to develop skills in data analysis and software development that are directly applicable in modern quantitative finance. Carrying out research at the forefront of modern science requires a good deal of dedication, focus, and is often done collaboratively. All these skills will come to serve you well if you decide to work in the industry."

**Advice:** "Because of the competitive nature of modern markets financial companies have an ever increasing focus on technology and quantitative sophistication and many Techers have the skills that are much sought after by the industry. If you are thinking about a career in finance you should be excited about the opportunities that this industry can offer. Eventually, before you get a job in finance you will need to go through the interviews, so make sure you go to company presentations, career fairs and develop a basic familiarity with the workings of financial markets and the critical skills which employers seek. While Caltech's name alone will look impressive on your resume, you need to excel in your current research. It will be a very important factor in the recruiting decisions."

## Write for The Tech

If you are interested in working for *The Tech*, feel free to attend

### Upcoming Events

Monday, Oct. 30, 2006	JP Morgan: Derivatives Research	Avery Library 4:00 p.m. - 6:00 p.m.
Tuesday, Oct. 31, 2006	L E K Consulting	Brennen Conference Room 3:30 p.m.- 5:00 p.m.
Wednesday, Nov. 1, 2006	Northrop Grumman: Space Technology	Brennen Conference Room 3:30 p.m.- 5:00 p.m.
Thursday, Nov. 2, 2006	Sandia National	Brennen Conference Room 3:30 p.m.- 5:00 p.m.
Thursday, Nov. 2, 2006	Google (ENGR)	Avery Library 4:00 p.m. - 6:00 p.m.



### teaching tip #9

Superheroes don't always wear capes.

Once you complete your bachelor's degree: Azusa Pacific University (APU) offers 26 opportunities at 7 convenient Southern California locations for you to become a teacher, counselor, coach, or administrator. And, because APU is one of only five NCATE accredited California private schools, you receive excellent preparation recognized by all 50 states and internationally. If you are not interested in pursuing a degree in education, APU also offers numerous other master's and doctoral programs to help you accomplish your academic and career aspirations.

To schedule a personal appointment or apply for an upcoming term:

call (800) TALK-APU or (626) 815-4570  
click [www.apu.edu/education/tips](http://www.apu.edu/education/tips)  
email [graduatecenter@apu.edu](mailto:graduatecenter@apu.edu)



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### Tutors Wanted

Home tutoring for all subjects K-12. Flexible hours. Car needed. Long-term positions. Caltech students get credentialed teacher rates: \$20.50-\$22.00/hour. To apply visit: [www.academicadvantage.com/jobs](http://www.academicadvantage.com/jobs)

Career Corner

# Getting Ready for Graduate School

Students interested in applying to graduate school can take a quick look at the Graduate School Checklist.

Students can attend the Career Center's Graduate School Workshop for information on the procedures and tips to present a strong application.

When: October 31, 2006 from Noon to 1:30pm.

Where: Winnett Lounge (Please note: due to limited space, students who wish to attend must RSVP to [career@caltech.edu](mailto:carrer@caltech.edu).)

At the workshop, the Career Center will have two professors and several grad students who will discuss the art of applying to grad school – what they look for in applicants, what strategies work and which ones don't.

Here are some things students should think about when it comes to graduate school..

- 1) Is graduate school for you? Should you apply now or later? (Avoiding the "real world" is probably not the best reason.)
- 2) How do you choose a graduate school? (Do rankings really matter?)
- 3) How can you finance your graduate education? (Application deadlines are here!)
- 4) What is required in the application? (Have you asked professors for letters of recommendation? Have you written your personal statement?)
- 5) When do you need to start applying? (Some schools begin in December, some in January and later, find out now!)
- 6) What do selection committees look for in grad school candidates?
- 7) What kinds of questions might you be asked in grad school interviews?

These are just a few questions to get students started. The Career Center provides resources at its webpage at <http://www.career.caltech.edu/resources/grad.shtml>.

This workshop gives fundamental information for anyone considering grad school. However, if the number one question in a student's mind is, "Should I apply or not?" then the student consider visiting the Career Development Center.

# Graduate School Checklist Are YOU Ready?

Check off the items that you have successfully completed as of today:

- Contemplated the decision to go to graduate school
- Made the decision to go to graduate school
- Evaluated your strengths and skills for graduate school
- Evaluated your career goals (post-grad school)
- Selected schools and programs in which to apply
- Reviewed graduate school applications and deadlines
- Investigated the GRE (dates, fees, location, etc.) – both the General and Subject (if applicable) tests
- Thought about letters of recommendation
- Asked professors to write letters of recommendation
- Developed a list of criteria to decide on which schools to attend
- Investigated financial aid (Fellowships, Assistantships, loans)
- Inquired with potential advisors at universities under consideration
- Wrote a rough draft of personal statement
- Had someone look over your personal statement
- Finalized your personal statement
- Ordered your transcript(s)
- Taken the GRE (General and Subject)
- Visited potential graduate schools

# Techer Explains Unique Behavior of Venus

BY: MARISSA CEVALLOS

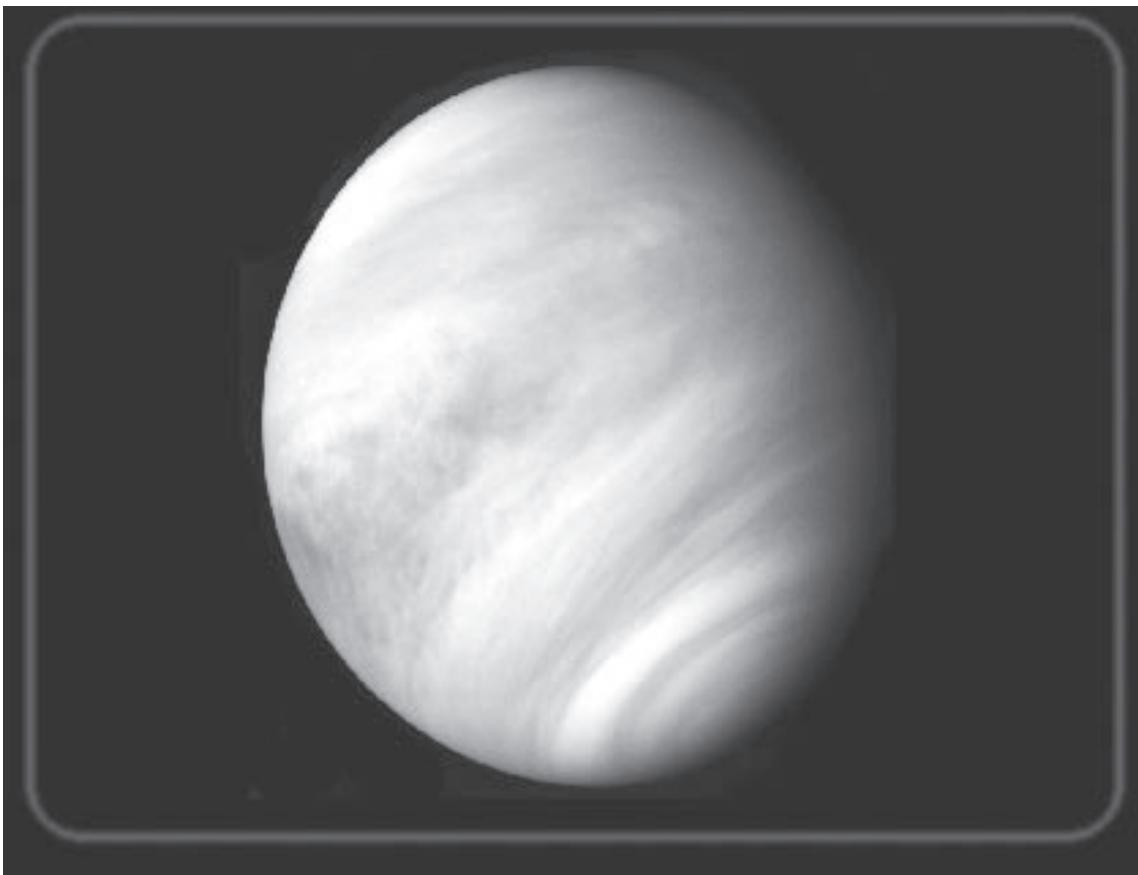
moon travels around it, the extra mass on the Earth's bulge applies a torque to the moon, "whipping" it farther in orbit. The Earth's own moon is outward evolving at about 1 centimeter per year.

Once Venus reversed its spin, its moon reversed its outward-moving tendency and crashed back into Venus.

Alemi's hypothesis was not the first model to attempt to explain Venus's low spin. Suggestions that the Sun slowly soaked up Venus' angular momentum could not account for the possibility that Venus started with a high period.

"You'd need to start with a Venus with a more reasonable rate," said Alemi.

Alemi believes it is likely that Venus underwent a collision, since computer models predict that the planet would undergo more than one large "possibly moon-forming" collisions twenty-five percent of the time, and all of the terrestrial planets were predicted to



Caltech sophomore Alex Alemi researched why Venus lacks a moon.

undergo at least one large collision.

"But if Venus only underwent one collision, we'd expect that it could not have gotten rid of its spin," said Alemi. "So the two-impact hypothesis is cool because it explains why you don't have a moon, and it explains why Venus has a low spin."

Alemi presented his research two weeks ago at the Division of Planetary

Science's annual convention in Pasadena.

"[My advisor] Professor Stevenson said it was going to be in a small room, with maybe 10 scientists, but there were 300 scientists," said Alemi. "It was kinda scary."

Alemi began his research in the spring of his freshman year as part of Physics 11, which required two rounds of

problems as part of its class selection. In fact, Alemi pushed that his research should be more of a plug for the Phys 11 class than a trophy of personal achievement.

"Phys 11 rocks. It's what got me into this," said Alemi. "The first hurdle just got turned in, but if you turn in the second hurdle, you can still get in."

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# Caltech Government

BY: TED JOU

These excerpts from a SURF report entitled *A History of Undergraduate Self-Governance at Caltech* were originally published in *The Tech* during the fall of 2002.

## History of the Honor System

In the coming weeks, the Board of Control Representatives in each House will entertain their freshmen with BoC talks. Soon, the frosh will also take their first midterms, and in doing so will be fully entrusted with Caltech's Honor Code. For the frosh, and the upperclassmen as well, it might be useful to learn a little about where the Honor Code came from. Perhaps a little history will help us understand more about what the Honor Code means, which isn't as simple as it seems.

## About ASCIT Dues

Without really thinking about it, every undergraduate who is reading this article paid their ASCIT dues this term. If you dropped your ASCIT membership and are reading this, I'll have to ask you to stop reading now, because you don't have a subscription to this newspaper.

Besides a subscription to this illustrious publication, paying your ASCIT dues earns you a number of different privileges. With free donuts, access to DVD's, discounted tickets to ASCIT Formal, usage of the Screening Room, a little t, and a Totem, ASCIT dues are much like House Dues: they pay for services that you can take advantage of. I know what you're thinking – there's no way you get \$60 worth out of those things and unless you eat a whole lot of donuts,

We know the Honor Code today by the phrase, "No one shall take unfair advantage of a member of the Caltech community." It sounds like an adage passed down from the ivory towers of Caltech's past. However, that phrase did not enter the Caltech vernacular until 1980 (Note: I later found out this was not true. Although it entered the ASCIT Bylaws in 1980, the phrase existed in 1972 and various forms of "unfair advantage" concepts existed in the 60's).

Before that, Caltech simply had an honor system with no formal axiom. The 1970-'71 little t editors claimed, "Because one of the main benefits of the Honor System is a vast freedom from rules, attempts to state it explicitly are futile. Just respect the rights of others and expect them to respect yours."

So how long has Caltech had an honor system? According to early

you're probably right. But in my opinion, worrying about the value you get back is not the right way to think about ASCIT dues or House dues.

When you think of paying tuition, you should probably make the calculation of how much you're getting back. Can that dinner really cost \$11? Is a Caltech degree worth that much? Caltech is providing you a service and you're the customer; that's not the case with ASCIT. The Associated Students of Caltech, Inc. is a Corporation whose mission is to benefit the undergraduates of Caltech.

You are a shareholder in this Corporation, and have thus pledged \$60 a year toward that mission, which is not to help each member eke out a benefit, but is to serve the needs of a community of 950. Paying your ASCIT dues is a fundamentally selfless action, and it should not be done with the

records, the honor system was established at Throop Polytechnic Institute in 1910. In 1913, the school was renamed the Throop College of Technology, and the Associated Student Body created a committee called the Board of Control.

The Board of Control was given "Complete jurisdiction over the conduct of all students according to the rules." In 1913, there were exactly 5 rules, and they were listed in the Associated Student Body Minutes:

1. No unnecessary disturbances in the buildings during recitation hours.

2. Any damage to property shall be compensated for by offender.

3. There shall be no smoking about the buildings or quadrangle.

4. Conduct unbecoming a gentleman or an engineer.

5. Examinations: The honor system is in vogue, with all it implies. Violations shall be dealt

with accordingly by the Committee with the right of appeal for the offender to the student body.

It's interesting to note that maintaining the honor system is only one part of the duties entrusted to the Board of Control and that the honor system applied only to exams at that time. Over time, the Board of Control became synonymous with the honor system.

It was not the BoC taking on more responsibility, but the honor system slowly adopting everything that was under the BoC's control.

From 1913 to World War II, the honor system expanded to all academics, including problem sets, lab reports, and essays. After the war, with perhaps some influence from the military, the treatment of Institute property and the theft of personal belongings became an important part of honor at Caltech. After women arrived in 1970, many aspects of personal behavior and interper-

sonal relationships became part of the honor system. Courtesy towards other students, pranks, and initiations all became part of the honor system in the 70's, setting the stage for the catch-all phrase of "unfair advantage" to enter the ASCIT Bylaws in 1980.

Today, the honor system applies to every aspect of behavior on the Caltech campus. Most simply, this means not cheating on exams and not stealing from others, but that is a far too narrow view. The honor system means we can pull pranks as long as we leave a note, we can have wild initiations as long as the participants feel comfortable, we can take food and drinks from the kitchen at our leisure as long as we don't bottle it and store it away, and we can trust our student leaders to work in the best interest of the student body, for it would be taking unfair advantage of my positions if I did not.

ficult to imagine what ASCIT would do with more money, but a brief tour through ASCIT history reveals some interesting things.

Many years ago, ASCIT supported a large fraction of the athletic program at Caltech. In 1949 this accounted for more than half of the ASCIT budget. Back then, the students had a lot of say in which varsity sports teams Caltech had and what sorts of sports facilities were maintained. Nowadays, this is completely controlled and paid for by the Institute, but as an artifact of the past, ASCIT still subsidizes athletic awards and letterman jackets.

**Continued next week**

## Letters to the Editor

I'd like to point out that nearly everything written on the front page of the October 16th Tech by Daniel Rowlands about the DVD library computer and software is wrong.

First, the computer system was developed by Jon Dama, Dylan Simon, and Rob Christie, all of class of 2003. Graham and Ryan Yoa-kum took care of the DVDs in more recent years, but did no development or setup work on the software, Donut, or the client computer.

I did not write the software for the DVD checkout client. That program, as part of the Donut DVD system, was written primarily by Dylan Simon. All I did was change some settings to accomodate a new network address for the client computer, a relatively trivial task.

Since the work necessary "to prepare the new check-out computer" took me only a few hours to do, it seems unlikely that it was the primary reason the DVD library was not opened all of last year. Perhaps Chris Watson didn't know to ask the people who wrote the software, or the people now in charge of taking care of it? I was only asked about it by IHC chair Craig Montouri at the beginning of the summer.

In any case, it's important that Jon, Dylan, and Rob's work be credited. Between them they designed and implemented Donut and the DVD system, a remarkable achievement.

-Evan Murphy

Our sport, waterpolo, has been described as "all-star wrestling and championship basketball... in eight feet of water." Mark Eichenlaub has referred to our team in a recent review of sports at Caltech as a "rare and elusive beast," before proceeding to speculate randomly about us and confuse our season last year with the one before it. The IHC ath man believes that our sport can never be an interhouse sport because she thinks people who have never played it before would drown during games. Yes, we are the men's water polo team, and it appears we are all but lost to obscurity and fear in the mind of the average Techer.

But this shouldn't be so. On several occasions we have been seen showing our support (among other things) to the entire gym at select women's volleyball games. Like many other sports at Caltech, we are victoriously challenged, and like other sports we play better when we have an audience of spectators at our games to make lots of noise and cheer us on. So come out this Saturday, November 4th, at 11:00AM to the pool to see the Battlin' Beavers water polo team take on the CMS Stags in our last home match of the season. Ladies, come for the CMS guys in speedos, and guys, come for the bloodshed. You can't lose. And hopefully, neither should we.

-Erin Flanagan



6	8	1		
1	3	4		
2		8		7
2				1
8		9		2
	7			4
1			6	7
			3	2
			4	9

Puzzle from [www.websudoku.com](http://www.websudoku.com)



## NEWTON'S THREE LAWS OF GRADUATION

Though famous for his seminal work in Mechanics, Isaac Newton's theories on the prediction of a doctoral graduation formulated while still a grad student at Cambridge remain his most important contribution to academia.

### FIRST LAW

"A grad student in procrastination tends to stay in procrastination unless an external force is applied to it"

This postulate is known as the "*Law of Inertia*" and was originally discovered experimentally by Galileo four years before Newton was born when he threatened to cut his grad student's funding. This resulted in a quickening of the student's research progress.

Galileo's observations were later perfected by Descartes through the application of "Weekly Meetings."

Before Galileo's time, it was wrongfully thought that grad students would rest only as long as no work was required of them and that in the absence of external forces, they would graduate by themselves.

(From Encyclopaedia Britannica)

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## NEWTON'S THREE LAWS OF GRADUATION

First published in 1679, Isaac Newton's "*Procrastinare Unnaturalis Principia Mathematica*" is often considered one of the most important single works in the history of science. Its Second Law is the most powerful of the three, allowing mathematical calculation of the duration of a doctoral degree.

### SECOND LAW

"The age,  $a$ , of a doctoral process is directly proportional to the flexibility,  $f$ , given by the advisor and inversely proportional to the student's motivation,  $m$ "

Mathematically, this postulate translates to:

$$\text{age}_{\text{PhD}} = \frac{\text{flexibility}}{\text{motivation}}$$

$$a = F / m$$

$$\therefore F = m a$$

This Law is a quantitative description of the effect of the forces experienced by a grad student. A highly motivated student may still remain in grad school given enough flexibility. As motivation goes to zero, the duration of the PhD goes to infinity.

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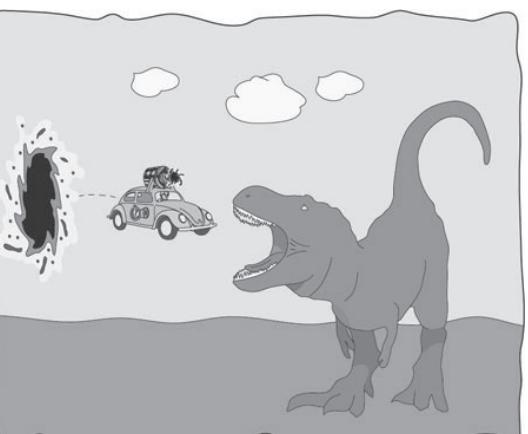
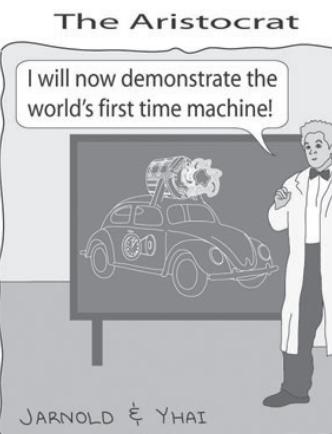


By Nathan Lau

### Morgan T. Rex, MD by Mark Eichenlaub and Tzong-Lian Tsay



WWW.PHDCOMICS.COM



### XKCD Comics by Randall Munroe



I WANTED TO GET LOST IN THE DARK, PARK MY CAR, LISTEN TO MUSIC, AND SIP FROM A WARM DRINK AS DAWN BROKE AROUND ME, GRADUALLY REVEALING A LANDSCAPE I'D NEVER BEFORE SEEN. A CHAIN OF UNIQUE BEGINNINGS FORCING WONDER INTO THE SEEDS OF EACH DAY.

BUT I GUESS I NEED MORE WILLPOWER, BECAUSE EACH SUNRISE JUST FOUND ME AT YOUR MOM'S APARTMENT AGAIN.



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