

THE CALIFORNIA TECH



VOLUME CIX, NUMBER 3

PASADENA, CALIFORNIA

OCTOBER 15, 2007

Hot times from dead mollusks

Clumping of heavy oxygen in marine fossils yields global climate record, clear link between atmospheric carbon dioxide and high temperatures

BY MOLLY DAVIS

Although global warming sometimes seems less an area of scientific inquiry and more an emotionally-charged political statement, common sense and a wealth of scientific data tell us that more greenhouse gases mean hotter temperatures down here on Earth. Even though there has been data that denies such a correlation, a group of American and Canadian scientists has used a new method to look into the past – at a time when global CO₂ levels were at least ten times as great as today – and show that high temperatures and high concentrations of CO₂ in the atmosphere do go hand in hand.

But how do you record the temperature of ages long past? Much of the work done before the mid 20th century was based solely on qualitative reasoning; i.e., if glacier remnants were found, then geologists could say "It was cold then," and if they found fossils of palm trees, they could surmise that it was probably warm.

A quantitative way to determine past temperatures was invented in the mid 1930s, when scientists discovered that heavy oxygen (oxygen with two extra neutrons) was pulled out of seawater by the shells of marine animals, and was stored there when they became fossils. This heavy oxygen clumped together when temperatures were low, much like a squirt of perfume in a cold room tends to stay in one area.

The assumption that heavy oxygen concentration in seawater is constant through time is a fishy one, according to years of research on the polar ice. However, some models of changing concentrations predicted scalding temperatures that would have cooked most life forms millions of years ago, which put the search for an ancient temperature record back near square one.

A team of scientists headed by Dr. John Eiler – a professor of geochemistry at Caltech – went back to the drawing board. What if, they asked in the 13 Sept issue of *Nature*, instead of looking at the exchange of heavy oxygen

PLEASE SEE OXYGEN, PAGE 3

VP search almost done

Final top three recommendations already handed to President Chameau

BY CHRIS KENNELLEY

The Vice President for Student Affairs Search Committee is nearing completion as it works to finalize its recommendations to President Chameau. The committee of faculty, staff, and students convened during the summer and has been working to narrow the field of ten candidates to a list of three to be submitted as their recommendations.

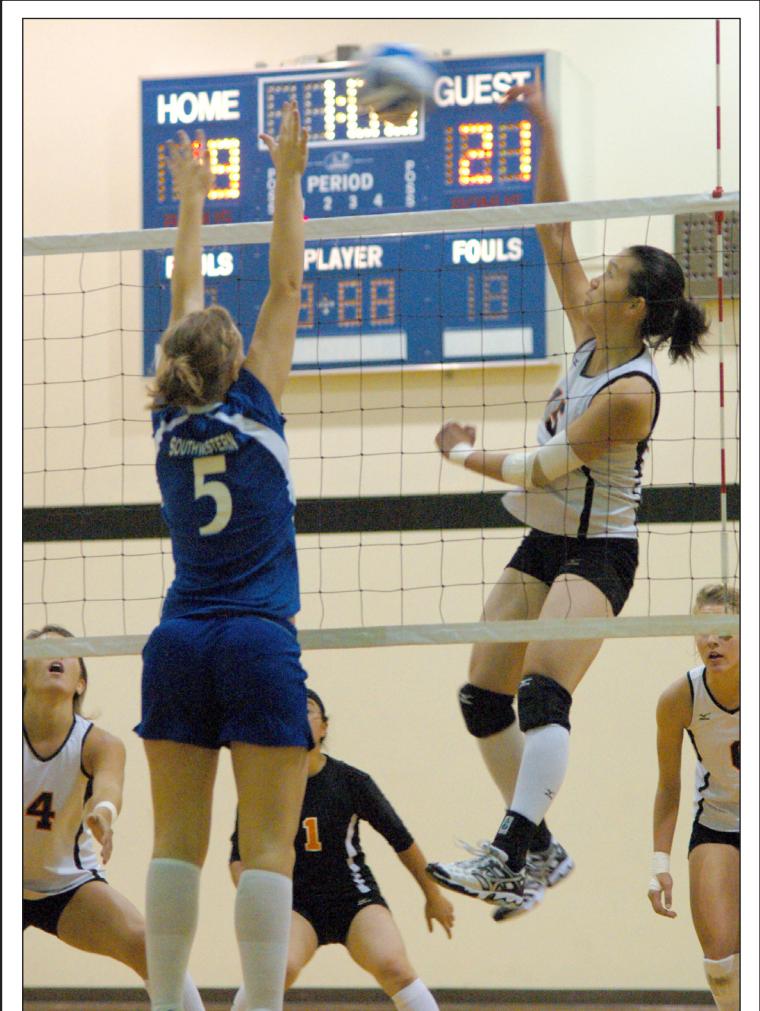
Andrea Dubin, a student representative on the committee, underscored the student goal of ensuring the officeholder would have the enthusiasm for and the understanding of the student body to advocate its interests.

The office of Vice President for Student Affairs is usually filled by a faculty member, who retains his or her duties as a member of Caltech's faculty while overseeing Student Affairs. The vice president would roughly split time between duties of a faculty member and as vice president of

student affairs.

During the new vice president's term, Student Affairs will likely undergo reorganization as it gains and sheds duties. Ashok Kumar, president of Dabney, noted the diverse set of offices that come under the umbrella of Student Affairs, ranging from the athletics program to JPL's daycare services and potential campus construction projects. He emphasized that strong oversight over the reshuffling of its diverse offices would be crucial during the vice president's tenure.

The current acting VP for Student Affairs is Dr. John Hall, professor of civil engineering in the E&AS department. Dr. Margo Marshak preceded him in the office, but announced her retirement in November 2006. The faculty have spent Dr. Hall's tenure as acting VP discussing the planned reorganizations of Student Affairs and corresponding changes in the duties of the vice president's office.



The women's volleyball team won two matches last week on Monday and Saturday, both 3 games to 1. See p. 9 for article.

How did Rotation actually turn out?



BY YANG YANG

After much contention leading up to the week of Rotation, the drastically revamped ranking system passed with surprisingly little controversy.

Following the IHC's overhauls – which included requiring the freshman to rank all eight houses – there was a level of uncertainty with the new Rotation system.

Some were strongly against the change – as evidenced by the faculty of the Student Housing Committee (SHC) voting to reinstate the old rotation rules. However, acting Vice President of Student Affairs John Hall later overturned the ruling to allow Rotation to proceed as planned.

Under the new Rotation rules, things progressed without any major complaint, according to IHC chairman Mike Woods.

"There are always little hiccups every year," he said. "[But] having been through last year's Rotation, this year was smooth sailing."

Last year, rumors about ranking strategies led to a dangerously low number of freshman ranking Ricketts house. No similar rumors were reported this year.

"There hasn't been a rumor of a rumor," Woods said.

Woods cited the abundance of new information about rotation as one of the many reasons for general satisfaction. The entire IHC held a one-hour session at frosh camp discussing rotation, passed out

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IN / RAINBOWS
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RADIOHEAD
RADIO HEAD

New Radiohead album colorful

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From the Editors

The Tech, it is a-changin'

Did you know that everything on this page can be found on our website before the papers even hit the newsstand?

Did you know that the Tech bought 28 newsstands so no one has to walk far to find an issue?

The Tech isn't like it used to be.

For one, we're taking a serious step toward making the Tech available all over the world. In just the first week of unveiling our new website, we had visitors from India, the UK, China, Canada, and Ireland. We still don't know what brought them to our site, but hopefully they found what they were looking for. Granted, all but the UK only had two or three hits, but it's still a lot better than printing a paper whose principal function is to kindle fires in house lounges. See page 12 for more ideas on what to do with the Tech when you're done reading it.

The most exciting thing we're doing about our website is updating it during the week—you can't find out about volleyball's first win in 3 years on paper, but you can find it on our website.

We're also trying to expand our coverage to graduate student and faculty issues. We have a new feature, Faces of Caltech, which is an informal Q&A between our staff and interesting people on campus. Undergraduates aren't the only fascinating creatures in Pasadena!

We have 28 new newsstands set up all over the campus that we're sharing with Caltech News and Engineering and Science. It should now be possible to find a stack of the newest edition of the Tech every Monday morning in most buildings on campus, plus house lounges, Broad, and Chandler (see p. 4 for the complete list). If you can't find one near you, drop a line to tech@caltech.edu. We're getting serious about our distribution this year—if someone doesn't see our paper, I want it to be because they stare at the ground when they're walking.

*Marissa Cevallos
Editor-in-Chief*

President's Column

What's going on with the ASCIT DVD library? Chris Gonzales explains

ASCIT's entertainment services have been somewhat scattered since the South House renovations. With a loss of space, we had to temporarily discontinue several popular entertainment options, but thanks to the imminent reopening of the SAC and agreements with various

c a m p u s organizations, we should have all of the services back by the end of this term.

The ASCIT DVD Library used to be one of the most popular ASCIT services when it was housed in the Coffee House. Unfortunately, with the relocation of the Coffee House out of the SAC, it became hard to find a location to house the collection. Last spring, with the help of the Caltech Library System, the DVDs were moved to their new home in the Sherman

Fairchild Library. Although this is a little further from the student houses, the move allows the DVDs to be accessible 24 hours a day and allows use of the Library's state-of-the-art inventory management system to reduce the number of DVDs that disappear each year.

The second part of the ASCIT entertainment empire will hopefully come live soon after the SAC opens in November. The ASCIT Screening Room's old location is now

full of air handlers, but we've found a room that is even bigger and nicer. The newly-expanded screening room will be located next to the Fleming computer lab and will be available for online reservation any time of the day starting late-November.

Watching movies on DVD is nice, but when I hear about



college entertainment, I think of giant parties. As far as parties go, they don't get larger than Interhouse, which returns for its second year on November 17. After last year's great success, this year's party promises to be even bigger and better. We shook it up with new house pairings, pushed it earlier in the year, and told the houses to come up with even more elaborate ideas; the result should be on of the largest parties on campus in decades.

ASCIT is about communicating with administration and funding student activities, but the part of our job that I enjoy the most is providing for entertainment of the student body. We've got many more fun events planned for this coming year, but we always appreciate your input. If there is any event you would like to see, or any service you think ASCIT could provide, please feel free to email us or drop by one of the Olive Walk meetings at noon Wednesdays.

Can Caltech learn from its Ivy competitors?

BY CRAIG MONTUORI

In 1931 and again in 1967, Techers visited other schools and used what they saw to make big improvements at home. Craig explains why now is the time to do it again.

You may notice that I write about the 60s and 70s a lot, which I'm going to do again in this issue, and this is because of two main factors. First, the Caltech of that period was incredibly active both inside Tech, which it often is, and outside Tech, which is somewhat rarer. There were some amazing students during the period, many of which are active in the Alumni Association today.

Second, the Tech was amazing, at least in retrospect. Prior to the 60s, the Tech was similarly good, but the activities of the period are just too removed from the Caltech we know today. During the 60s and 70s, there are many good ideas that are documented in the Tech and are forgotten today. These ideas can still be applied to improve life here today.

I found about one interesting idea by reading the memoirs of a former MOSH, Professor Robert Huttenback. His memoirs were written as a 14 page serial in three parts published in the Engineering and Science magazine detailing his previous 10 years as MOSH.

The situation at this time was that many student leaders, specifically those in ASCIT and the Y, were moving to off-campus housing by choice their junior year and staying off their senior year. This was prior to when the Houses had carpets in the halls or murals on the walls, and Caltech was an all-male school. I point these differences out for a specific reason. In the last pages of Professor Huttenback's memoirs, he describes a trip he funded to

the East Coast for seven students, one from each of the Houses that existed at that time.

Additionally, at this time seniors were still given preference over freshmen for on-campus housing, meaning that around a significant portion freshmen were living off-campus during their frosh year. The food was provided by Saga, and there were many complaints, where 'high quality ingredients' were purchased and 'low quality food' was produced, according to one issue of the Tech. During the mid-60s, there were lots of problems with Housing.

How about the rest of campus?

The prime mover and shaker on campus was a fellow by the name of Joseph Rhodes Jr., class of 1969.

By the spring of 1967, he had gotten the ASCIT bylaws changed so that he could run for ASCIT president as a sophomore. I m m e d i a t e l y following his election, he had called a Corporation meeting in the newly built Beckman Auditorium, where Rhodes and his BoD passed several resolutions with

the support of the student body, asking for representation on the faculty committees that run the school.

While Rhodes was changing the face of the school, which I'll spend an entire week discussing his effects on the school in the future, Professor Huttenback was simply 'trying to keep up,' according to his memoirs. In addition to Rhodes' ASCIT, the Y was hosting several events in 1967 between inner city LA and Caltech students, as well as hosting the Rev. Martin Luther King Jr. for a speech on campus

several years prior.

To 'keep up,' Dr. Huttenback settled on funding and organizing a student trip to the East Coast, modeled off of the original 1931 student trip that resulted in the creation of the South Houses and our House system. Oddly enough, most of the students going on the trip were BoC reps, though the trip focused on recommending improvements to the Housing system. The only House president, as far as Ted Jou's research shows, was Richard Wright, President of Fleming.

The seven students visited eight schools: Harvard, Yale, Bowdoin,

Rice, Wesleyan, Swarthmore, Amherst, and Williams. They jointly produced a 115-page report, called "Reflections on Several Worlds," which is currently located in the Caltech Archives, where each student wrote a section detailing his travels and his recommendations to Caltech. Amusingly, the last page is a petition from "the

Undergraduate Women of MIT – McCormick Hall" asking that Caltech "go coed," which was signed by about 1/6 of the women at MIT at that time.

Professor Charles Newton, Special Assistant to the President, wrote in his 1980 memoirs that the report managed to provoke a pivotal change in the Student Houses. Carpets were installed to reduce noise propagation down hallways, murals were allowed on the walls, and starting in 1970, women were admitted to Caltech, which this report strongly recommended, though

many other forces were pushing for women to be admitted.

So where are we now? With the recent turnover in top administrators, which includes the President, Provost, Vice-Provost, Vice-President for Student Affairs, and Special Assistant to the President, I believe that now is the right time for recommendations from the student body to have the largest amount of influence over the school. Following my thoughts, last week, I asked the MHF for \$58,000 on behalf of ASCIT, the GSC, and the IHC to duplicate this trip over the next year, planning to visit about a dozen schools on the East Coast and Oxford and Cambridge in Britain.

What do I hope to accomplish? Clearly, the problems of today with Housing are no where near the order of magnitude in the mid-60s, so what's the point? I hope to see recommendations to build on what we've got today. I'm personally interested in seeing how Yale and Harvard use their Masters, somewhat a mix between a MOSH and a RA, to promote cultural events for their Houses and expand the horizons of their House's students. I'm also interested in seeing how other schools promote student-faculty interactions through their Housing system.

However, the report I submitted focused on the logistical difficulty of such a trip, for this reason: Why should I be the only one to determine what such a trip would focus on? So I'm throwing this out there to all of the faculty, alumni, parents, postdocs, and students that read this: How can we improve Caltech? How can we focus on being the 'best at what we choose to focus on,' living true to Millikan's dream, while answering the ever-present complaint to "improve Caltech's diversity" and "be more social"? Email me: montuori@caltech.edu if you have any thoughts.

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Rotation went smoothly, says IHC; last year's Ricketts problem solved

ROTATION, FROM P. 1

booklets about the houses, and conducted information sessions throughout rotation week as part of the concerted effort to ameliorate last year's problems.

"We gave a quick spiel about Rotation and hosted a round of Q & A," Ricketts house president Christopher Moody said. "That alleviated a lot of fears and got people talking openly and frankly about Rotation instead of churning out misinformation from the rumor mill."

Ricketts, which only received 16 freshmen last year due to rumors about ranking strategy, welcome 26 new skurves to the house this year.

"I think all the problem we had last year in Ricketts ... we've managed to overcome," Moody said. "And now we have an excellent new class of skurves in the house."

According to Woods, the new ranking system also helped to keep the spirit of rotation.

"[Rather than] forming very hasty opinions on the houses, [which] when I was a frosh I was

guilty of," Woods said. "Freshman gave a more serious consideration to all the houses than in previous years."

Although an email to the SHC by several upperclassmen warned that some freshman might be pressured to game the system under the new rotation rules, very few actually tried according to Woods.

"[Ultimately] gaming the system doesn't help anyone," he said. "If you try to... all in all you probably can't manage it very well. If you don't game it well, things will only turn out worse for you. Honesty is really the best policy."

One concern for the IHC during rotation was the lack of freshman attendance at their afternoon rotation meetings held at 3 p.m. However, when many freshmen began showing up at 4 p.m., IHC members discovered that the time conflicted with physics recitation. For Woods, that was a minor concern.

"Any rotation where [information session attendance] was our major concern means things are going awesomely," he said.

Some believe that in addition to changes in the Rotation policy, the composition of the entering class also aided in the process.

"There was a wide variety of personalities in the freshman class this year," said former Page house president Sean Mattingly. "There were more people who fit the distinct personalities of certain houses."

Oxygen record confirms global temperature rises with CO₂

OXYGEN, FROM P. 1

between seawater and fossils, we looked at heavy oxygen and carbon clumping within the fossils themselves? Of course, the sheer rarity of these heavy atoms – 18O accounts for only 0.2% of all natural oxygen, for example – meant that finding them clumped together within fossils was a search for a needle in a haystack. "It's essentially a part in 100 in a part in 100 in a part in 1000. I have nothing. We decided to look for that nothing," says Dr. Eiler, "and we found it."

With his new method, Eiler showed that the Earth was about ten degrees hotter when it was blanketed with carbon dioxide. 400 million years ago, carbon

dioxide levels were more than ten times greater than they are today, and correspondingly higher temperatures were recorded, while 300 million years ago showed CO₂ levels similar to those found today, along with similar temperatures. Eiler says his findings are supported by common sense. "It's such a conventional result that it should be totally uncontroversial." The method already has backing: "This method of determining temperature is very new, but it has good theoretical foundation, and John Eiler's group has done quite a bit of work to demonstrate that it works," says Edwin Schauble, a geochemist at UCLA. He went on to say that, since the method is so new, future work might show that there are complications that haven't yet been considered. He suggested that such future work might include testing fossils from a greater variety of eras, and further improvement of the accuracy of the system by using it on appropriate present-day marine creatures.

"It's one thing to write a business plan, it's another to execute it."



ZACH MILLER, B.S. '00, MBA '01
Entrepreneur, business owner

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Faces of Caltech

Dr. Niles Pierce, math lecturer

Name: Niles Pierce

Position: Associate Professor of Applied & Computational Mathematics and Bioengineering

Goal: To improve human condition

NK: After having studied at Princeton and Oxford, how did you end up at Caltech?

NP: I had it at the back of my mind for a long time. I was one of those high school students that loved the Feynman stories. Caltech is very much what I pictured based on the culture and the lore that propagates out from here.

NK: What made you decide to pursue this field of science? Were you always interested in science or was there some defining event that encouraged you to do so?

NP: It's an interesting part of the education process that you have to give up things that you love so that you can focus on the one thing that you love the most. I changed fields more than once figuring out that I wanted to program the function of biomolecules. I do have regrets that I no longer feel connected to history, music and art the way that I used to.

NK: What are some of the things that you do in your spare time? Do you have hobbies that you still pursue?

NP: I have hobbies in principle. I still consider myself a serious soccer and trumpet player, I just haven't played much of either in about seven years. I'm testing a fitness regimen that I call "core fitness", which requires that you don't exercise. It fits well with my work schedule.



Photo by Jonathan Tsai

Niles Pierce says he'd be a commissioner of baseball if he didn't teach differential equations.

NK: What is the most exciting thing that ever happened to you, at Tech or outside?

NP: This will seem really boring to you, but it's a really easy one – my daughter, Clara, is the most exciting thing. She's about to turn three, and opening the door and bracing myself for when she leaps to jump into my arms and just about knocks me over is a highlight every day.

NK: Is there something that you've always wanted to do that you never had a chance to?

NP: I'd like to be commissioner of baseball someday, maybe as my last job. I'm being very disciplined in doing nothing to promote that possibility, but I really

like baseball.

Niles Pierce earned his undergraduate degree from Princeton, graduating with a BSE in Mechanical & Aerospace Engineering and a Certificate in Applied & Computational Math. He continued his education at Oxford on a Rhodes Scholarship, where he received a D.Phil. working in computational fluid dynamics. He came to Caltech in 1998 as a postdoc in computational molecular biology, joining the faculty as an assistant professor in 2000. A winner of the 2003 Feynman Prize for teaching, Pierce currently teaches ACM 95 and conducts research on biomolecular design.

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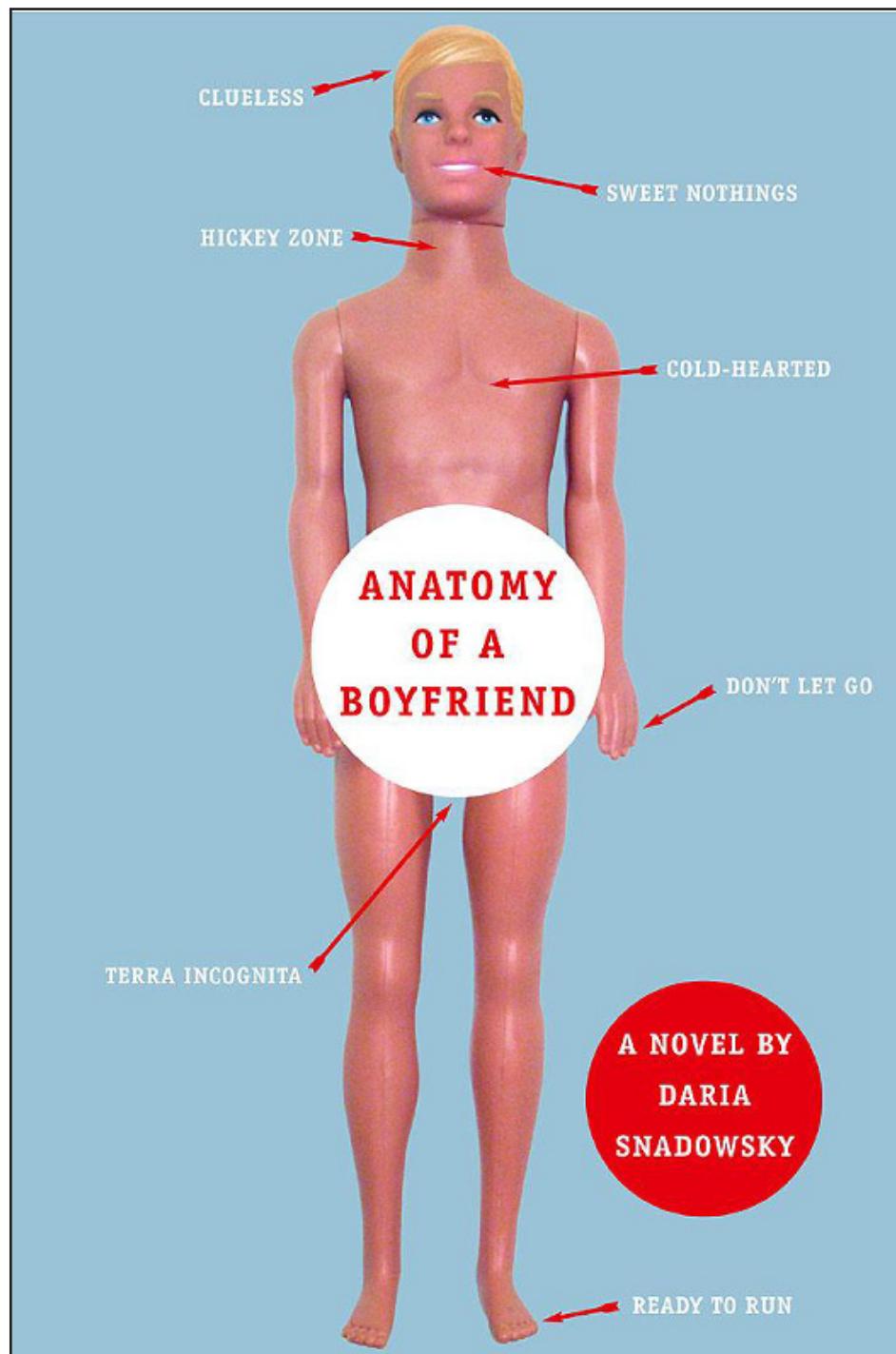


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'Anatomy' cute but misses audience



Dannah Almasco reviews
"Anatomy of a Boyfriend"

Dom is a high school senior planning for med school, and she has no experience with boys at all. In the midst of perfecting her college "crapplications" she falls for a track star named Wes. Their relationship is tested by many obstacles, including attending different colleges.

"Anatomy of a Boyfriend" by Daria Snadowsky is a new teen novel about the sexual and emotional growing pains of a romantic relationship.

This classic story of first love captures the awkwardness and bittersweetness of relationships. It depicts a real teen romance,

which is anything but perfect.

The book has an endearing and charming way of approaching naïve Dominique's first-person play by play as she rounds the bases with Wes. "Anatomy" is blunt with human anatomy and the mechanisms of sex, sans the cliché steamy soap opera scenes.

A book for teens, it dabbles briefly into taboo situations that are rarely spoken of without an uncomfortable aura, which allows the novel to be light and interesting to read. This book gives a raw representation of awkward first sexual encounters, leaving very few blanks for the reader to fill in.

The subconscious thoughts of Dom that narrate the book encourage the reader to sustain a page-turning curiosity pace from the beginning to end.

Smart, frank and original, "Anatomy" is educational for those who have yet to get out of the dugout and relatable to those who have. I would recommend this book for a younger crowd, though; 14-17 year old girls would benefit from the authentic voice of Dom revealing her opinions and thoughts during the ups and downs of her relationship.

A definite guilty pleasure chick flick book, you'll shake your head in agreement and cheer for the rookie as her world is turned upside down by her first true relationship.

If you are interested in working for *The Tech*, feel free to attend our weekly meetings on Mondays and Fridays from noon to 1 PM at the Broad Cafe.

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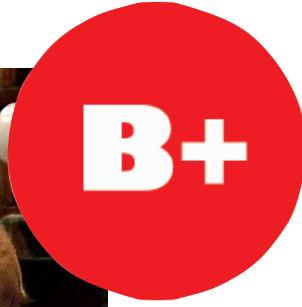
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METROPOLITAN CAFE



ACROSS from Target and Office Max on Colorado Blvd., the Metropolitan Café offers an alternative to popular coffee chains situated around Caltech.

By Danna Almasco and Andrew Freddo

Goal: To check out the Metropolitan Café, which is a relatively new and unexplored establishment, and to taste their coffee, tea, and dessert offerings with our discerning taste buds.

Stockroom Options: There are a lot of options here, especially in coffee and tea. Choices range from the standard cup of joe to a mint mocha, and, surprisingly, ten different types of tea. As for food, there is cereal available for breakfast, sandwiches for lunch, and good pastries for an afternoon snack.

Materials and Cost: We had a Snickers Mocha (\$4) and a Peppermint Tea (\$2), paired with a Chocolate Truffle Cheesecake (\$3.25) and a Chocolate Chunk Cookie (\$1.75).

This is definitely a place to work on a set or tap on a laptop: the wireless internet is free.

dense. It was so thick that we had to work at pulling it off the fork! Overall, the desserts were very satisfying, but don't plan on ordering two desserts for two people unless it's lunch!

Atmosphere: Although Metropolitan Café appears unassuming on the exterior, there is a lot of space to work and sit inside. The

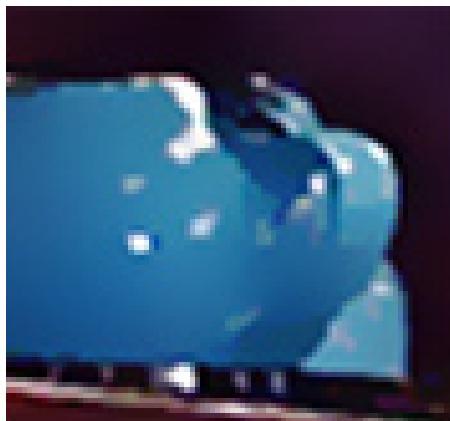
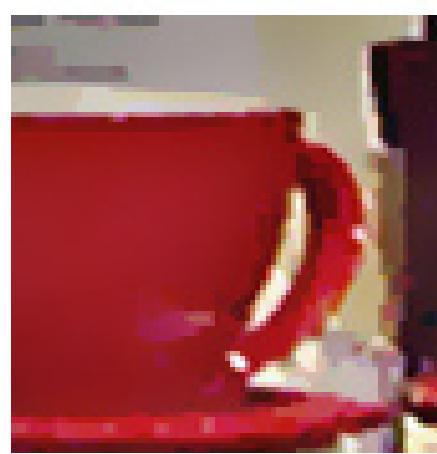
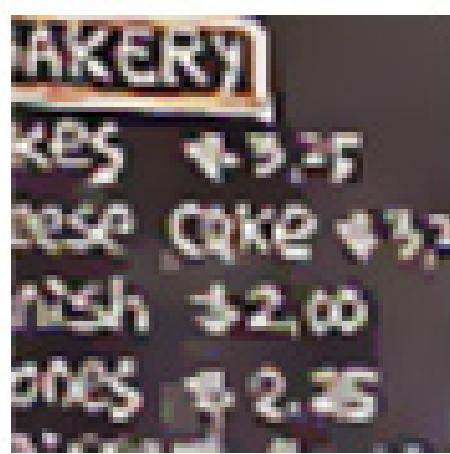
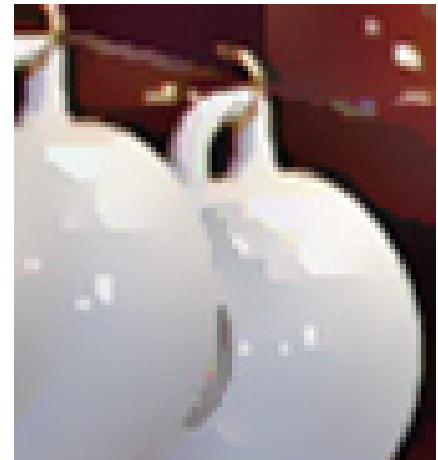
overall feel is homely, but more chic than a country kitchen. This is definitely a place to work on a set or tap on a laptop: the wireless internet is free, and there are numerous outlets for power cords. However, it is definitely not a place to bring your date, because the atmosphere is almost hushed and very intimidating (almost makes you want to

do work to fit in). Still, it's a great place to unwind and have some quiet time alone.

Conclusion: Though the Metropolitan Café is not your standard coffee shop, it's still a great place to work while sipping a good cup of coffee (or tea). It's not hip or loud, but a worthwhile place to check out, especially on a Friday

afternoon after a long week of stressful work. If you're interested in the pastries, make sure you have the appetite to finish them!

The café is open 6:30 AM – 10:00 PM from Monday to Saturday, and hopefully Sunday, too, in the near future. Switch it up a bit and grab your next caffeine boost from Metropolitan Café!



Observations:

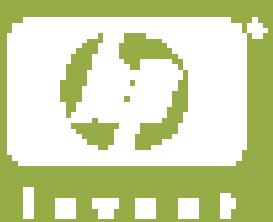
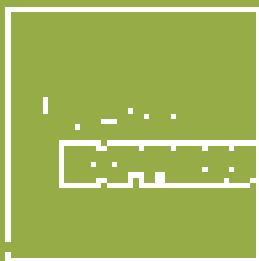
The snickers mocha had a distinct coffee flavor (not too sweet like Starbucks). Although it tasted noticeably of caramel, there was no hint of Snickers bars at all, which was a bit disappointing.

As for the peppermint tea, it arrived piping hot. While cooling, the scent permeated the area, which was very pleasant and fresh.

Surprisingly, though, the peppermint wasn't overpowering (a good thing). As with most teas, it was very soothing to drink.

No trip to a café can be complete without some great pastries! The chocolate chunk cookie was warm, which made it nice and chewy. However, the texture was not as soft as expected, but more crumbly. Each bite was full of nuts and chocolate chips!

The chocolate truffle cheesecake was ordered to round out the meal. This extremely rich dessert was served as an individual round cake. At first bite, it was obvious that the chocolate was incredibly



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Radiohead is in the Rainbow

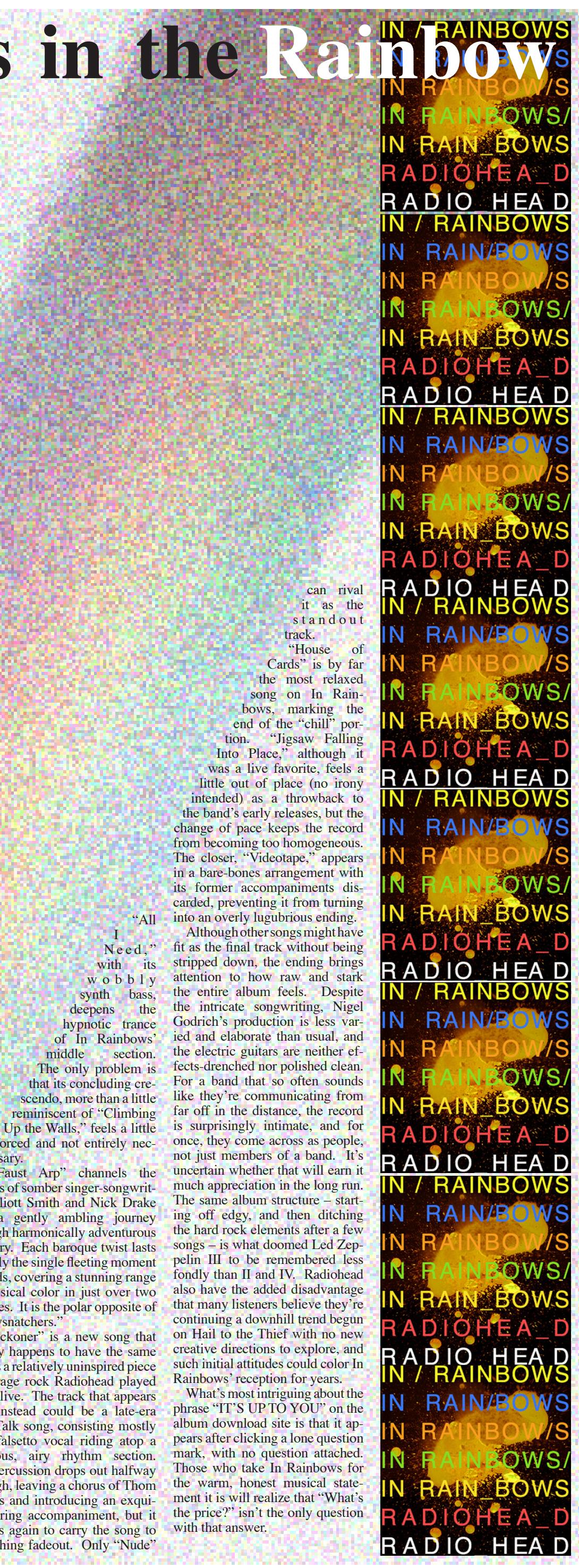
BY KYLE LITTLER

It's hard to imagine how Radiohead must have felt during the couple of years leading up to *In Rainbows*. When countless fans are following your every move, assembling bootlegs into potential tracklists, and trying to predict what the finished versions will sound like – and you know your creative decisions will defy many of their expectations – what the hell can you do? Radiohead did the only thing they really could do: give just ten days' notice before making the finished product accessible to everybody as a download for the price of, "IT'S UP TO YOU." This isn't a grab for attention. It's an anti-hype measure. It's effectively saying, "Hey folks, enough chatter and speculation. Just take it for what it is." Comparing individual songs to their earlier incarnations (going as far back as a decade) inevitably reveals their imperfections; but taking the album as a whole, it's probably the band's most consistently solid record aside from *Kid A*.

In Rainbows kicks off with "15 Step," whose initial scratchy 5/4 beats and strained vocals give a false impression of the album's character. It's not until Jonny Greenwood's guitar slickly glides in that the mood is established, and you realize this is going to be the chilliest Radiohead release you've ever heard. After the energized "Bodysnatchers" follows up the opener with a krautrock-style blast of sustained tension, the meat of the record shows up in the form of six of the most laid-back songs of their career, back to back. "Nude" is the most stunningly beautiful track, and for the first time ever, the band paints a pic-

ture of heavenly transcendence through multi-tracked vocals without a hint of gloom (except for the lyrics).

"Arpeggi" (co-titled "Weird Fishes") epitomizes the ways Radiohead have changed the songs since touring. Lately, Phil Selway's live drumming seemed too intrusive, cold, and alienating for the compositions, but in the studio he subtly shifted into a more hypnotic, pensive position within the sonic landscape. It may have been a matter of having better control in the studio rather than a creative decision, but whatever the reason, it makes the album immeasurably more cohesive. Instead of sounding as abrasive as it did during the 2006 tour, "Arpeggi" has regained much of the mesmerizing quality of its original orchestral debut, and with its new timbres, the quiet middle section vividly evokes the ocean abyss mentioned in the lyrics.



can rival it as the standout track.

"House of Cards" is by far the most relaxed song on *In Rainbows*, marking the end of the "chill" portion. "Jigsaw Falling Into Place," although it was a live favorite, feels a little out of place (no irony intended) as a throwback to the band's early releases, but the change of pace keeps the record from becoming too homogeneous. The closer, "Videotape," appears in a bare-bones arrangement with its former accompaniments discarded, preventing it from turning into an overly lugubrious ending.

"All I Need," with its wobbly synth bass, deepens the hypnotic trance of *In Rainbows'* middle section. The only problem is that its concluding crescendo, more than a little reminiscent of "Climbing Up the Walls," feels a little forced and not entirely necessary.

"Faust Arp" channels the ghosts of somber singer-songwriters Elliott Smith and Nick Drake into a gently ambling journey through harmonically adventurous territory. Each baroque twist lasts for only the single fleeting moment it needs, covering a stunning range of musical color in just over two minutes. It is the polar opposite of "Bodysnatchers."

"Reckoner" is a new song that merely happens to have the same title as a relatively uninspired piece of garage rock Radiohead played twice live. The track that appears here instead could be a late-era Talk Talk song, consisting mostly of a falsetto vocal riding atop a spacious, airy rhythm section. The percussion drops out halfway through, leaving a chorus of Thom Yorke and introducing an exquisite string accompaniment, but it returns again to carry the song to a soothing fadeout. Only "Nude"

Although other songs might have fit as the final track without being stripped down, the ending brings attention to how raw and stark the entire album feels. Despite the intricate songwriting, Nigel Godrich's production is less varied and elaborate than usual, and the electric guitars are neither effects-drenched nor polished clean. For a band that so often sounds like they're communicating from far off in the distance, the record is surprisingly intimate, and for once, they come across as people, not just members of a band. It's uncertain whether that will earn it much appreciation in the long run. The same album structure – starting off edgy, and then ditching the hard rock elements after a few songs – is what doomed Led Zeppelin III to be remembered less fondly than II and IV. Radiohead also have the added disadvantage that many listeners believe they're continuing a downhill trend begun on *Hail to the Thief* with no new creative directions to explore, and such initial attitudes could color *In Rainbows'* reception for years.

What's most intriguing about the phrase "IT'S UP TO YOU" on the album download site is that it appears after clicking a lone question mark, with no question attached. Those who take *In Rainbows* for the warm, honest musical statement it is will realize that "What's the price?" isn't the only question with that answer.

Volleyball wins second match

BY YANG YANG

Four days following its first win of the season, the Caltech women's volleyball team scored another 3-1 home victory against La Sierra Saturday night. The Beavers avenged a close 2-3 defeat to the Golden Eagles on Sept. 9.

Freshman Kathryn Peters led the team in kills with 20 while

sophomore Lisa Yee was a close second with 18. Team captain senior Sarah Stidham contributed 40 assists while freshman Ying-Ying Tran had a team-high 41 digs.

The team started off sluggishly, making several errors on route to a 30-26 loss in the first game.

"We were very close to beating this team at home," Peters said. "Everyone went in pretty pumped up, but in the first game we fell into our bad habits."

The second game turned into a rout for Caltech when La Sierra began to commit hordes of errors. Sophomore Carolyn Valdez served 22 straight points in the game as the Golden Eagles kept returning serves into the net.

The Beavers kept rolling in the third game, winning by a 12-point margin 30-18. The trend seemed to continue into the fourth as the team found itself with a ten point lead at 27-17.

However, La Sierra found its form and stormed back with nine straight points before losing a long rally. With Caltech up 28-26, Peters served a long ball which sailed past the far sideline, giving La Sierra a crucial point and the ball.

"Once we miss a few [points], we start to play tentatively," Stidham said. "The hitters start to swing easier, [causing] the ball to go out. And it just snowballs."

With the score tied at 29, the Beavers were able to obtain a crucial sideout. Freshman Deboki Chankravarti's final serve was returned into the net for the match-winning point.

"The team definitely made it an interesting ending," fan David Koenitzer said. "The last few points were really exciting."

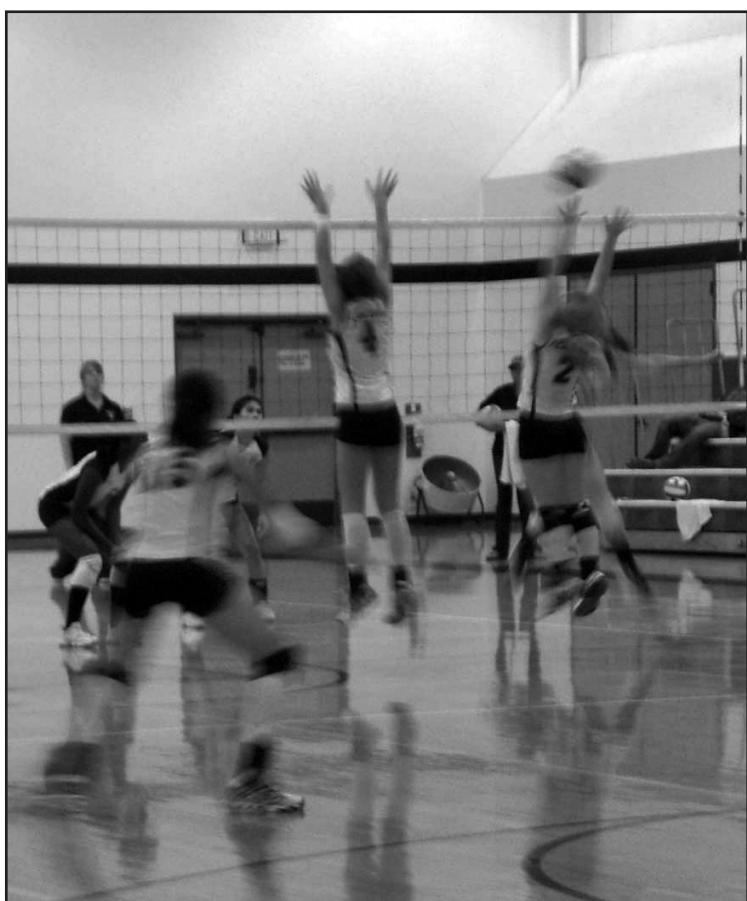
Several adjustments from the first match were key to Saturday's victory. Stidham took over all the setting responsibilities, freeing Yee to hit from the outside.

Prior to the win over La Sierra, the volleyball team lost a close match in four games to South-



Sophomore Lisa Yee goes up for the spike against La Sierra, she finished the game with 18 kills.

photo by Karen Wang



Senior Sarah Stidham and freshman Sarah Griffis goes up for the block.

western College (AZ). The Beavers lost the closely contested first game 30-26 and won the third before Southwestern closed the door in the fourth.

The team returns to SCIAC play this week looking for its first

conference win with a home game against Cal Lutheran on Tuesday

"It was definitely nice to win again," Stidham said. "But I'm still waiting for the conference win."

Sports and Scores

Men's Waterpolo

10/10 vs. Chapman University

10/13 vs. Occidental College

L 20-9

L 21-2

Women's Volleyball

10/8 vs. West Coast Baptist

W 3-1

10/11 vs. Southwestern College (AZ)

L 3-1

10/13 vs. La Sierra University

W 3-1

Men's Soccer

10/10 vs. Occidental College

L 7-0

10/13 vs. Cal Lutheran University

L 6-0

Upcoming Games

Tuesday, 10/16

7:30PM - Women's Volleyball vs. Cal Lutheran University

Wednesday, 10/17

4:00PM - Men's Water Polo @ Claremont-Mudd-Scripps

4:00PM - Men's Soccer @ University of La Verne

Friday, 10/19

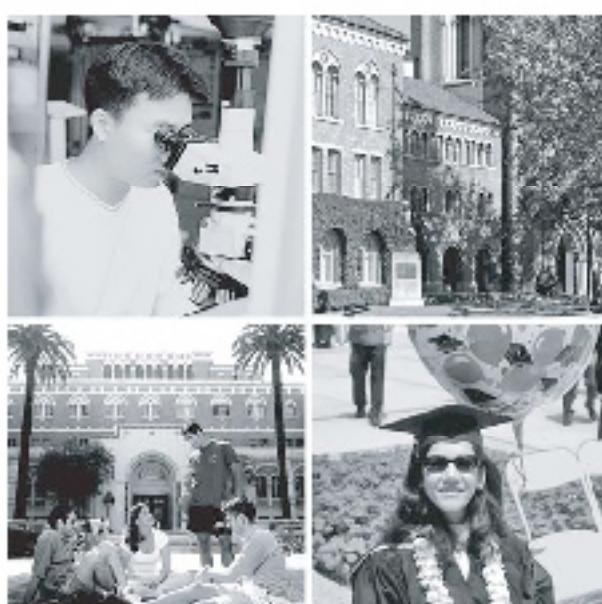
7:30PM - Women's Volleyball vs. University of Redlands

Saturday, 10/20

11:00AM - Men's Soccer vs. University of Redlands

11:00AM - Men's Water Polo vs. Cal Lutheran University

6:00PM - Women's Volleyball @ Occidental College



Jane Austen on a comfortable budget

Student takes a hike to England

BY CSILLA FELSEN

When I was eleven, my mother popped *Pride and Prejudice* into the VCR and suggested my sisters and I watch it. Seeing the period costumes, I knew it was not a movie we would have ever chosen on our own. We liked silly, modern chick flicks and this movie seemed too elegant for our taste. However, within a couple of minutes of watching, our attention was captivated, and now, all my sisters and I insist on watching the movie every winter break. However, this year, I saw the movie in summer too...in England.

"A large income is the best recipe for happiness I ever heard of," one of Jane Austen's characters asserts in *Mansfield Park*. At Caltech, one such recipe is the Don Shepard Award, which can grant up to \$1000 for students to have fun. With this award and frequent flyer miles, I was able to pursue my childhood dream of exploring where Jane Austen lived and worked that inspired the settings she depicts in her lively novels.

Fresh out of Professor John Sutherland's Jane Austen course, I had Austen's six novels and *Discovering Jane Austen's World* to guide me when I walked off the plane and onto her land. First, I visited Brighton, where Austen often sent silly people in her novels seeking diversion, and then I wandered through Worthing, which she thought could be turned into a resort town like Brighton. Well, maybe if she had finished that book, it would have been true, but Worthing is very low-key compared to showy Brighton. I next saw Portsmouth, where Austen's naval family members were sometimes based. Only Old Portsmouth and the Historic Dockyard were as her family would have known them.

I most enjoyed going to where Jane Austen lived her daily life, journeying to villages in Hampshire. The house she was born at Steventon village no longer exists, but the church where her father was rector has a plaque commemorating her time there. The only museum-preserved location she lived in is the Chawton house, provided by Austen's brother for the Austen women after they were reduced to poverty in Bath with Mr. Austen's death. The house shows trinkets and artifacts which Austen and her family possessed to throngs of people who push through the corridors and spill into the small rooms. There was a recent newspaper article on one of the chairs on how the museum was expecting more tourists as a result of the *Becoming Jane* movie, but that movie was the only disappointment I encountered on my entire trip, as it reflected more the romances of Austen's heroines than her own life.

More amusing was the show the Jane Austen Center in Bath has made around Austen's writing, offering tourist treats like Tea with Mr. Darcy. Although their info session guide said Austen did well for herself when she made a grand total of \$100,000, adjusted in today's terms, for all of her novels combined, if she were to have earned royalties from all of the modern renderings of her nov-

els, she should at least be on par with JK Rowling. They did say though that if Austen knew what a spectacle some of us make of her works, she would be turning



in her grave in embarrassment. It had seemed a peaceful resting place when I had earlier visited Winchester, where Austen died at

41 of what historians think was Addison's disease.

Besides tracing Austen's steps, including seeing where she sometimes went dancing in Basingstoke, I also trekked to where moviemakers set their film adaptations. While not used directly in the films, Netley Abbey was part of the research agenda for *Northanger Abbey*, since visiting the abbey inspired Austen's writing of the novel. Mostly in ruins, where now the luxurious rooms are carpeted in grass, it still had enchanting architecture. The place I recognized best was the location in Wiltshire where *Pride and Prejudice*'s Meryton and Emma's Highbury were filmed. This time, where I would have expected the grass and gravel that I had seen in the movies, there was only pavement, and cars blocked the facades of nearly every building.

**JANE AUSTEN'S
HOUSE**

While it would be great to just take tea with Austen herself and gain the spirit of her novels from a conversation with her, just seeing the places instilled in me a greater awe of the person who wrote about them. For instance, in London, I saw the limited sphere she occupied compared to the vast expanse of the rest of London, making it even more extraordinary how timeless are her characters. Tracing her steps only emphasized how much she cared about the intricacies of the human condition.

Senior Csilla Felsen spent a summer exploring sites from Jane Austen novels on \$1000 and frequent flyer miles

**ST NICK
CHAW**

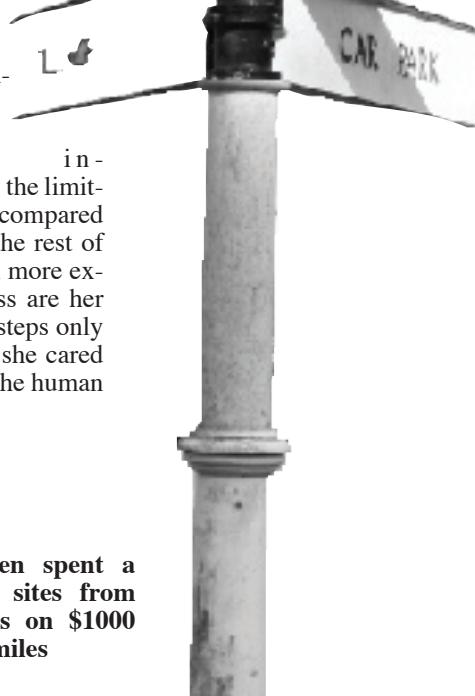
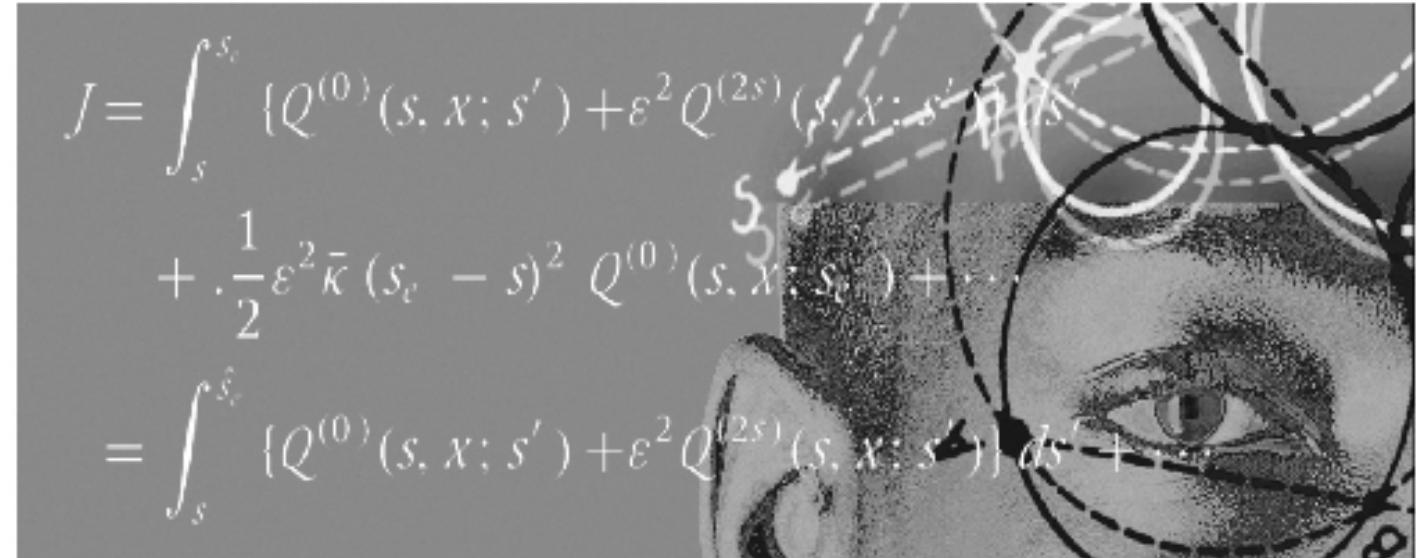


Photo by Csilla Felsen



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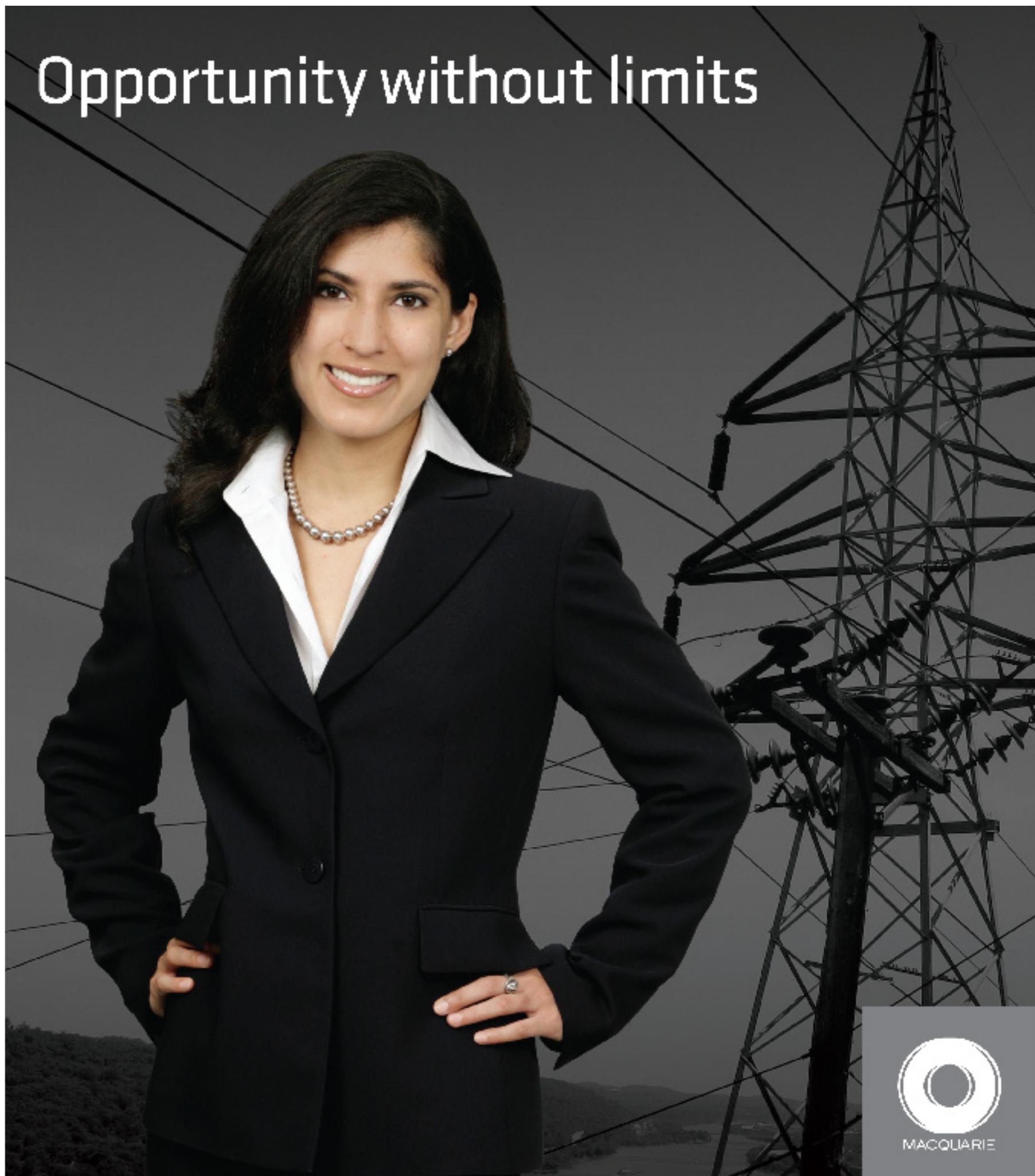
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Dr. Quark

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Dr. Quark,

Some jerk-off keeps leaving a newspaper at my doorstep. I love free news, but this is complete and absolute garbage (your column is the only thing I ever read). I have about 300 lbs of paper now, what should I do?

-Drowning in 'journalism'

My personal and scientific use of the newspaper is to use it as scrap paper when I am working out very complicated and scientific science problems. While it's fine to write in the margins, I recycle it by mashing it into a fine pulp and then pressing it between screens to make paper sheets, and then bleaching it to give it a cleaner look. You could also use the tech for toilet paper. When you're in the bathroom reading the news (supposing you know how to read you degenerate and miserable ball of depression) you can finish up with it when you finish up.

Burning the paper is also a very appealing alternative to the prior options, especially attrac-

tive when you consider what is written on it. You could help the newspaper has me chained up at the printers please help me this man is not a real doctor!!! also read portions out-loud to an audience of your enemies in an attempt to make them feeble and dumb.

If you are an aero major, then might I scientifically suggest that you model the behavior of a vehicle in wind currents by folding the pages of the piece of journalistic excellent into a more form that is amenable to airborne flight, a paper airplane. If you're bored you can throw them at professors or figures of authority, as a sign of your adolescence and rebellion. That will show the man!

You can also feed the newspaper to homeless people [Editor's note: That is absolutely terrible, do not do that]. If you wanted to be clever, you could calculate how many issues it would take to reach to the moon if stacked. The moon is 384403 km from earth, and each sheet is about 0.1 mm thick, so it will take approximately more papers than you have to get there. You should probably just give

the papers back to the trees. You don't know, but they're listening, and watching. And some day a root will come out of no where and trip you, you'll fall on your face and be mildly disfigured, and that really pretty girl you always liked will marry your best friend.

Dr. Quark,

I'm having a little trouble with my classes. I find it increasingly more difficult to concentrate as the day goes on, and this negatively impacts my performance on sets and quizzes. I am unable to focus in class, and I can't sleep at night. That all wouldn't be so bad, but in the past few days I've had the feeling I am being stalked by a talking Zebra named Pantomime. I get this feeling because the god damned zebra is always behind me in the pizza line at the dining hall, bumping into me and making me spill my soup. What should I do?

-Scared of Stripes

Frankly I'm not surprised that you're being stalked by a zebra. They're expert hunters, to be

fear and quietly revered. You'll never see a zebra coming, due to their sophisticated cloaking technology and quaint striped hide. They blend in perfectly in any environment (such as funerals, flocks of penguins and newsprint). There might even be a zebra hiding in this issue. OMG ITS A ZEBRA. that was a close call, you almost bit it all off right there, it's a good thing the zebra went for the guy behind you, and that it was really a clumsy panda, and not a zebra.

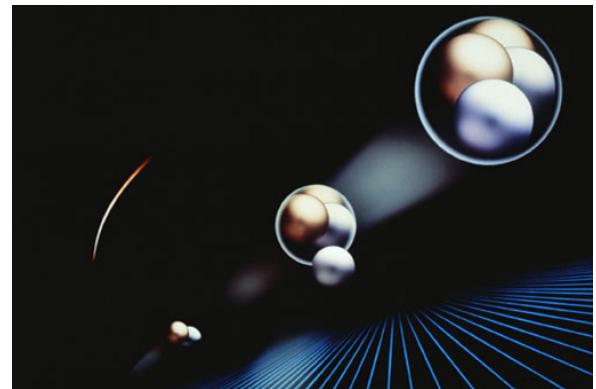
scientifically speaking, Zebras are just horses with an identity crisis. Do you even know who you are? Have you ever wondered if a zebra is black with white stripes or white with black stripes? Because if you have it could indicate a persecution complex or possibly acute hemophilia, so you might want to get that looked at.

If he keeps following you around spilling your soup, it could mean he is trying to get some secret information from you, such as if you cry when you spill your soup, or where your cocaine is hidden. I don't want to be racist, but everyone knows those hipped

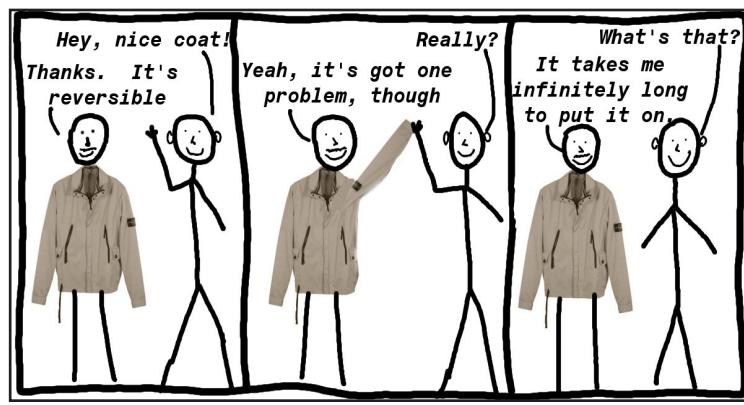
up zebras are always jonesing, so I would just give it to him. You know what's worse than having a hot soup stain on your crotch? Dying.

Dr. Quark is a world renown pioneer in applying the predictions of quantum chromodynamics to macroscopic personal dynamics by utilizing massively parallel computer clusters, so immensely powerful they can calculate a number before they're even turned on. He was also been voted one of the '50 best people to ever live' by Cool People Magazine, beaten out for 7th place by a tie between Huey Long and Spiderman.

Are you indecisive? Do you enjoy doing what other people tell you? When faced with a decision, is your preferred course of action to allow someone else to make it for you? Then join the writhing mass of zombie-men who write into this column on a regular basis! You can ask Dr. Quark your own real questions by emailing them to drquark@gmail.com, where Dr. Quark will dedicate precious time and cutting edge numerical computational methods to answer them.



Comics



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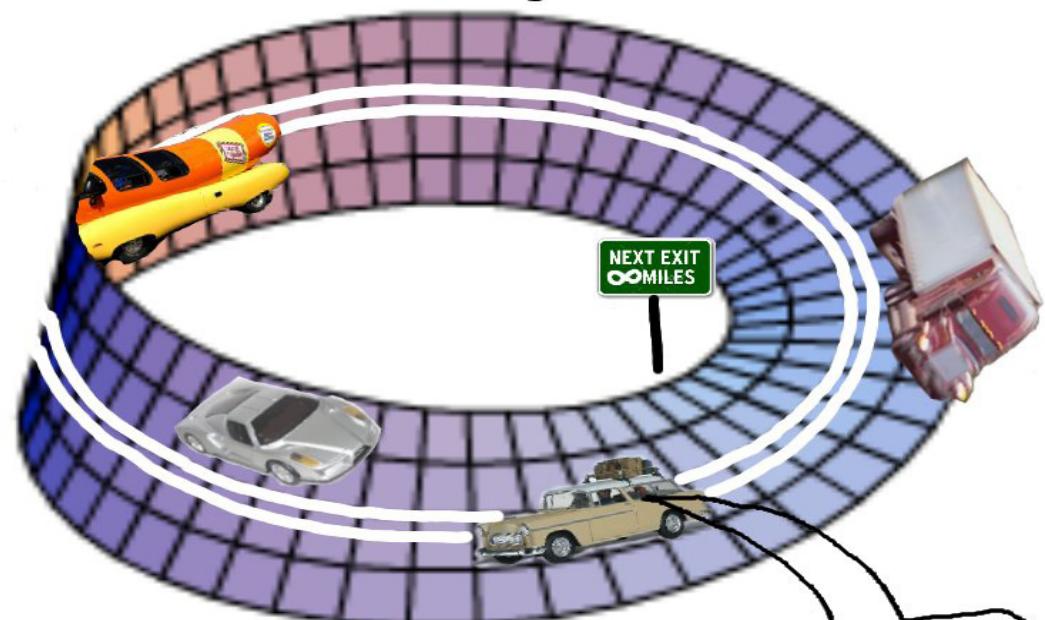
YOU KNOW, YOU MAKE
SOME REALLY GOOD POINTS.

I'M ... NOT EVEN SURE
WHO I AM ANYMORE.



XKCD by Randall Munroe

Mobius Family Vacations



Are we **there** yet?
Are we **there** yet?
Are we **there** yet?
Are we **there** yet?

WGP by Mark Eichenlaub

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