

<<<ColoradoKid>>>

Could a discussion be started on a comparison of the two as it regards to engineering? In general terms, I've heard that if you want to be a scientist, go to Caltech. If you want to be an engineer, it's MIT.

<<<h88>>>

The diversity of courses at MIT is incredible, in contrary to that of Caltech. Check out the following link:

<url><http://pr.caltech.edu/catalog/courses/listing/ee.html></url>

and compare it to

<url><http://student.mit.edu/@0135803.10854/catalog/m6a.html></url>

So yeah, MIT is a large school and offers a number of opportunities due to its size. Caltech is also a great school and with great research opportunities due to the closeness you can have with professors.

But when you consider Caltech, you must place emphasis not only on the *diverse* course offering, but on other aspects as well.

Research is a key factor. Why would I say that? The faculty members accessibility is something notable in Caltech. My point is, when your mentor is a faculty member, who's readily accessible, and thus help you through your research, your research would definitely yield better results.

Another point worth mentioning is the fact that Caltech's curriculum tends to follow a theoretical approach.

So you see, it all depends on your expectation and objectives (yes you have to know what you're targeting in the end).

My main focus was on the research opportunities. Thus, Caltech is the school that appealed to me.

Remember, this is just my opinion. I would love to see a debate of this topic, namely from Engineering students of both schools, who could give us firsthand experience of their majors.

<<<tech\_fan>>>

I'm a mathematician, not an engineer. But the stereotype is pretty much right.

For pure, hard sciences (physics, chemistry, biology, geology, astronomy, tack on math and theoretical microeconomics), Caltech's undergraduate education is far and away the best anywhere. It has the highest available level of rigor, thoroughness, and opportunities for work that most people don't do until a Ph.D. program. There is no comparably ranked school that respects or challenges its undergraduates more. Period. That's why, in these fields, the Caltech name means as much as it does.

In engineering, Caltech (as one would expect) has some of the top names in the world in particular areas. The consensus is that MIT has broader, more

industry-oriented courses. Caltech's EE is highly theoretical, like everything else. If I were an undergraduate EE major with a pretty practical bent, these would certainly be factors favoring MIT.

That said, Caltech certainly has a good number of things going for it. Undergraduates tend to get more (and more serious) research opportunities here (which also happen to be better paid), as h88 points out. Having JPL down the street doesn't hurt either, since undergraduates often participate in engineering projects that are implemented in actual space missions. So that's a plus if you're into that sort of thing. The founder of Intel went here, so it can't be too bad. And as far as jobs go, mean salary offers for EEs (with just a bachelor's degree) in 2002 were well over 60K, with half of graduates in EE offered more than 70K; even higher salaries for the top few kids are not unheard of. The figures are close to MIT's, and the averages in almost all engineering disciplines were slightly higher for Caltech. (See [http://www.career.caltech.edu/general/annual/2002/BS\\_annual\\_2002.htm](http://www.career.caltech.edu/general/annual/2002/BS_annual_2002.htm) and <http://web.mit.edu/career/www/salary/02bycourse.html> for the sources of these numbers.)

So that's the story -- most of it depends on your interests and what sort of environment you like.

<<<tech\_fan>>>

This is a separate post because it speaks to a broader topic than my previous one.

Between Caltech and MIT, it seems that there's some difference of spirit. I've had a lot of time to think and talk about this question since my girlfriend attends MIT, and we compare the academic and social environments here and there. To a first-order approximation, MIT is dominated by engineering students whose hero is (approximately) Bill Gates. That is, engineering and making money are the defining interests/aspirations of a large portion of the student body.

While most people would consider that as intellectual (nerdy, what have you) as it gets, there's actually a downside. In particular, the general MIT ethos seems less contemplative and less focused on deep theoretical questions. That's great if all you care about is engineering, but a lot of people I know agree that those who enjoy thinking about and discussing more abstract (less immediately applicable) questions can feel a little marginalized there. At least, that's what I hear.

Here, most people -- even if, like a large proportion, they want to do something "practical" with their lives -- view the first four years of higher education as a chance to explore, learn, and think. So weird discussions about abstract things are more common here, and the general spirit of the place is more open to that sort of thing. Lots of grass, good weather, big comfortable lounges are conducive to this. Maybe also the legacy of Feynman. I don't know.

The other bit of experience I have that allows me to compare across universities is that I took most of my courses at Princeton when I was a senior in high school. That school was sort of the opposite of my picture

of MIT, in that deep thought and a more holistic mental constitution were emphasized, but at the expense of rigor in some courses and analytic strength in the student body.

So my view of Caltech is that it's like a really smart version of a school like Princeton (minus a lot of nonsense). Deep thinking is emphasized, and most people aren't in a rush to learn to build things and stuff their wallets. On the other hand, this doesn't come at the cost of losing strength in math and science, or with the presence of a lot of art majors ;-).

So that's my take on all this. Feel free to kick me if you disagree.

<<<Samp0320>>>

Theoretical microeconomics? I didn't even know Caltech had a single undergraduate class offering in that field. I'll have to look it up, since that field is my general interest.

<<<h88>>>

<quote><i>While most people would consider that as intellectual (nerdy, what have you) as it gets, there's actually a downside. In particular, the general MIT ethos seems less contemplative and less focused on deep theoretical questions. That's great if all you care about is engineering, <b>but a lot of people I know agree that those who enjoy thinking about and discussing more abstract (less immediately applicable) questions can feel a little marginalized there. At least, that's what I hear.</b></i></quote>

There you go. :) From this perspective, I would say the scorer is Caltech. I would never want to limit myself to what's going on now, but work on these "less immediately applicable" proposals.

As such, although Engineering is very practical, you'd definitely feel outdated if you only apply what's applicable at the time you're studying (I would guess that was your point Ben?) after some time.

More power to theories! :P

<<<angrod>>>

I'm a freshman here at MIT, and I haven't taken any engineering classes yet, just core classes. Therefore, I'm probably not knowledgeable enough to really say that much about engineering at MIT vs. Caltech.

The one thing I wanted to address was the research opportunities. While Caltech might by default have more readily accessible professors due to its small size, I think MIT's professors are as readily accessible even though they are so busy. This week I am meeting with six professors, even as a freshman, to discuss research opportunities this coming spring. All I did was send them e-mails last week and they responded promptly to set up appointments with me. The Undergraduate Research Opportunities Program (UROP) here at MIT is top notch, and makes research opportunities available to all undergrads.

h88, I don't think that was quite Ben's point. (Correct me if I'm wrong Ben :)). Engineers always have to keep up with current trends, and MIT is always on the cutting edge of these trends. You'll never feel outdated. It might be true that MIT students aren't concerned about some of the deepest theoretical issues (but, cough cough, in the long run, if they aren't applicable, do they matter that much anyway? lol :))

Oh, little side point. Ben, you said that the pure sciences at Caltech were "far and away" the best anywhere. Well, I honestly can't say that I know that much about Caltech's program, and it might be better than MIT's. However, I find it hard to believe that it is that much better. Also, the rigour of the courses here is legendary (not just in engineering), and I would be surprised if Caltech was any harder. Just my two cents on all of this!

<<<tech\_fan>>>

>> MIT students aren't concerned about some of the deepest theoretical issues (but, cough cough, in the long run, if they aren't applicable, do they matter that much anyway?)

Well, I dunno anrod. You tell me. Does quantum mechanics matter that much? Does number theory, which, as you know, underlies essentially all modern cryptography? How about abstract algebra, which enables essentially all advanced physics nowadays?

It's hard to find more powerful and relevant fields, but those fields weren't discovered or developed by engineers, or even by practically minded physicists. They were discovered by those concerned with highly abstruse and philosophical questions. So the answer is, yes, those issues probably do matter; and no, engineering-minded folks typically won't find or resolve them (or, at least, certainly haven't in the past).

>> Also, the rigour of the courses here is legendary (not just in engineering), and I would be surprised if Caltech was any harder.

Well, then I guess you should color yourself surprised :-). In one sense, to be fair to MIT, it's somewhat moot to compare courses (since material can be moved among different courses but still taught at both places). But if you want to play that game, many of MIT and Caltech's undergraduate math classes use the same books, and it's virtually always the case (as a fellow math student at MIT agrees) that the Caltech classes cover more of the material more thoroughly. That's just the field I know. If you want another example, graduate students in physics who were undergrads at MIT often take the 106-125 sequence their first year. The rest of the students are typical Caltech junior physics majors (with a few sophomores).

But, as I said, maybe that's unfair to MIT because of the differences between the trimester and semester system. Comparing the curriculum as a whole doesn't help MIT much though because there's no question at all that Caltech's is harder. Every single frosh takes a rigorous proof-based analysis course out of Apostol, which is used in MIT's high-level theoretical math track only (but is totally standard here). That is, while

an MIT student can graduate without ever having proved a single theorem, every Caltech student's first experience here is a course that the vast majority of universities (all but the ten best or so) only give to senior math majors. You might say, "Who needs proofs," and I won't argue, but they're certainly \*harder and more rigorous\* than the standard two-course calculus sequence that comprises MIT's entire math requirement. [For the curious, the rest of the core math curriculum required of everyone includes linear algebra with proofs, multivariable calculus, diffeq, and probability with statistics: five trimesters all told. Only the calc and multivar are taken by everybody at MIT, and the "standard" levels of these courses there are uncontroversially easier and less theoretical.]

In physics (perhaps the most impressive field), everybody at Caltech takes a hard classical mechanics course, followed by special relativity, E&M, wave mechanics with optics, quantum mechanics, and thermodynamics. This is at least five trimesters of physics, but many students take six. There's no other school anywhere in the world where even the biologists and political scientists graduate knowing fairly sophisticated quantum mechanics. (MIT, by contrast, minimally requires a fairly light 8.01+8.02 sequence, whose exams are trivial to pass having taken a good AP Phys C course.)

In short, every Caltech student, by the end of sophomore year, could graduate with a math-physics double major from almost anywhere (some very good places included). The same is not true (or even approximately true) of MIT.

There is more to say, but this is enough to illustrate my point. I'm not necessarily arguing the wisdom of the core curriculum system, since that's a deep issue. But purely on the question of rigor of the curriculum both in individual fields and for the average student, it's pretty clear that there's no contest going on here.

Incidentally, I like and respect MIT, and some of my best friends go there. I have no bone to pick with the school or its choices. In many respects, I think its general tendency away from the Caltech model and toward the Harvard model is the right thing for MIT given what seem to be MIT's long-term goals. Rigor, difficulty, and depth are not the primary metrics of quality (although they come close to being my primary metrics and I'm guessing the same is true for many others reading this). But this discussion just hinges on a matter of fact about difficulty, which is not difficult to resolve.

<<<theleet>>>

wow, Ben just owned MIT. XD

<<<angrod>>>

Well, Ben, you just proved my lack of knowledge about MIT vs. Caltech. :) After reading your post I must agree with you that the Caltech science and math classes are much harder than anything required here. I spoke much too soon in my earlier post and apologize for my hastiness.

>>>>Well, I dunno angrod. You tell me. Does quantum mechanics matter that much? Does number theory, which, as you know, underlies essentially all modern cryptography? How about abstract algebra, which enables essentially all advanced physics nowadays?

It's hard to find more powerful and relevant fields, but those fields weren't discovered or developed by engineers, or even by practically minded physicists. They were discovered by those concerned with highly abstruse and philosophical questions. So the answer is, yes, those issues probably do matter; and no, engineering-minded folks typically won't find or resolve them (or, at least, certainly haven't in the past).

Sorry, I was way to vague. I recognize the great importance of everything you talked about above. I guess I was talking about more philosophical issues unrelated to science, which I guess wasn't what we were talking about originally. :) OK guys, sorry for making such a fool of myself. I'm going to bow out and close my trap now.

<<<tech\_fan>>>

Haha, angrod, why so apologetic. I agree with you that nobody cares about the philosophy of science except maybe me. And it won't build any bridges. So you win there :)

I was a bit unclear myself. What I meant was much of what precipitated quantum mechanics was not exactly what we now would call science. The meaning of uncertainty, measurement, etc. were purely philosophical issues at one point. So I guess the point is it's good to think about those things sometimes because you never know what useful stuff you might stumble upon.

<<<Samp0320>>>

My impression just from being an observer is that Ben is absolutely right. The only problem is, for me at least, I'm not so sure that it is a good thing.

<<<webhappy>>>

IMO, the rigor is a good thing if you're sure you want to attend grad school but it's a bad thing if you're sure that you want to work straight after graduation.

<<<sleepybunny>>>

what if you want to get a masters in engineering and then go straight to working?

<<<omgninja>>>

Then you should pick a good grad school.

<<<alleya>>>

For engineering, you really need a masters if you're planning to work in industry (according to my engineer parents who have seen many many resumes). So, sleepybunny, it still depends on where you want to work. If you want to work in industry, Caltech may not be the place for you.

Caltech is better suited for you if you want to work in more theoretical and experimental areas.

<<<angrod>>>

MIT has a 5 years masters program for many undergrad engineering degrees. I'll definitely be doing it for EE.

<<<rtkysg>>>

I would compare Caltech and MIT in some criteria:

1. Rigor: Caltech > MIT
2. Difficulty: Caltech > MIT
3. No of specialization: Caltech < MIT
4. Overall Faculty strength: Caltech = MIT
5. Best Professors in the field: Caltech < MIT
6. The strength of American student body: Caltech > MIT
7. The strength of International student body: Caltech < MIT

<<<tech\_fan>>>

I come close to agreeing with rtkysg's list except maybe 5, the "best professors in the field" category, where it depends greatly on field (i.e. in physics, pure chem, astronomy, and geology Caltech wins; in most engineering fields MIT wins, in math they're about tied, so it's hard to say).

I'll add some of my own (somewhat more frivolous) categories that haven't already been covered.

1. Weather: Caltech > MIT
2. Beauty of Campus: Caltech > MIT
3. Big-city, bustling, fast-walking feeling: Caltech < MIT
4. Number of clubs and activities: Caltech < MIT
5. Close-knit, homelike, fun feeling: Caltech > MIT
6. Respect of administration and professors for students / student freedom: Caltech > MIT
7. Engineering/business orientation of students: Caltech < MIT
8. Closeness to lots of big cultural attractions: Caltech < MIT
9. Ease of working closely with professors/general accessibility of faculty: Caltech > MIT
10. Food: Caltech = MIT

<<<webhappy>>>

"10. Food: Caltech = MIT"

Wrong! Unless you have a car, there are few accessible sources of good, cheap Chinese food (which is in contrast to what I hear Boston is like). OTOH, if I had a car, Monterey Park, Arcadia, etc. would be incredible! Dang, our upcoming parking structure is taking FOREVER!!!

<<<tech\_fan>>>

webhappy - i meant on campus. as far as i can tell, MIT is the same mix of several nice places (like Avery) and many mediocre places (like the N/S kitchens) just scaled up to the populatoin.

there is definitely good cheap thai place within wakling distance (prez2, they deliver too). and a great chinese delivery place in arcadia where people and i ordered from last weekend, except i forget the name.

<<<alleya>>>

The other thing about the food is that, in my opinion, it would be easier to find a ride to get food here than at MIT. Students are more likely to have cars here than in a big city and (from what I've seen) people are always really willing to give rides to those who don't. As for good, cheap Chinese that delivers, I like Grandview on California. It's definitely going to be easier to find good cheap Chinese here than in Boston. :)

<<<omgninja>>>

Din Tai Fung is an incredible chinese dumpling house in Arcadia (Life Plaza)... more expensive than others though

<<<tech\_fan>>>

Ah, Grandview palace, that's what it was :). Thanks alleya.

<<<h88>>>

Great Read -

<a rel="nofollow"

href="/?page=url\_http%3A%2F%2Ftalk.collegeconfidential.com%2Fshowthread.php\_t\_13470\_page\_1\_pp\_40\_highlight\_Caltech%5Dlink%5B%2Furl">url=http://talk.collegeconfidential.com/showthread.php?t=13470&page=1&pp=40&highlight=Caltech]link[/url</a>

<<<angrod>>>

While its true that more people have cars at Caltech, the thing is we don't need them at MIT because we can walk to about any restaurant we want, and if not then definitely take public transportation. That is one of the nice things about living in a big city. The downside is our campus is pretty rough looking being so urban, but actually, compared to some other universities in Boston, we actually have a pretty nice looking campus!

<<<tech\_fan>>>

I think angrod is right. My girlfriend tends to complain about the urban, cold-looking campus and the fact that there are few restaurants or other establishments that cater directly to MIT students. One has to take a somewhat nontrivial walk across the bridge to Boston or take the bus/T to Harvard Square. This might not seem like a big deal but apparently it's enough to make the activation energy pretty high when one wants to plan a night out without making it a big deal. But maybe this varies by person.

I'd say that Caltech has more restaurants within comfortable walking distance (15 minutes or less) than MIT does, but MIT has a big city within slightly less comfortable walking distance.

As long as we're talking about distances and campuses, it should be pointed out that the longest walk between home and class for most students here is four minutes or less. At MIT it can be 15. For me this didn't matter (one can get a bike) but maybe for some people it does.



<<<alleya>>>

Well, there is one apartment complex that's a bit farther. I have a 8 minute walk to the building with all of my CS classes, and my roommate has about a 12 minute walk to her physics classes (which are on the opposite side of campus). Either way, we're in the farthest housing (a block and a half) from campus, so those numbers are upper limits.

<<<tech\_fan>>>

Yeah, my estimate was for the houses/Marks/Avery. I have a friend who lives in the same apartment complex and she just bikes to class, takes her about three minutes.

<<<2bad4u>>>

Rigor: Caltech > MIT

11. Difficulty: Caltech > MIT aren't rigor and difficluty the same?

12. No of specialization: Caltech &lt; MIT

13. Overall Faculty strength: Caltech = MIT

14. Best Professors in the field: Caltech =MIT

15. The strength of American student body: Caltech > MIT

16. The strength of International student body: Caltech &lt; MIT

Weather: Caltech > MIT

Beauty of Campus: Caltech &lt; MIT

Big-city, bustling, fast-walking feeling: Caltech &lt; MIT

Number of clubs and activities: Caltech &lt; MIT

Close-knit, homelike, fun feeling: Caltech =MIT

Respect of administration and professors for students / student freedom:  
Caltech = MIT

Engineering/business orientation of students: Caltech &lt; MIT

Closeness to lots of big cultural attractions: Caltech &lt; MIT

Ease of working closely with professors/general accessibility of faculty:  
Caltech > MIT

Food: Caltech &lt;MIT

In terms of rigor they could be equal depending on the classes you pick. Food is better ,. Boston is a college town ,you can easily get delivery or food 24 hrs a day. You dont really need a car in Boston unless you plan on moving sofas / fridges from one side to another on a daily basis. And if close tight knit feeling is what your looking for east campus dorms/ or fraternaties can give you that. beauty of campus i personally like mit mix in architecture it combines classical structures like the great dome with modern structures like the stata but beauty is in the eye of the beholder just my opinion

<<<alleya>>>

"Beauty of Campus: Caltech &lt; MIT"

Ummm... I completely disagree. Caltech is gorgeous -- roses year round, flowers everywhere, sidewalks lined with orange trees or olive trees or trees that rain purple or orange flowers during different parts of the year, the mountains in the background (only about 2 miles away)... I could go on and on.

"Close-knit, homelike, fun feeling: Caltech =MIT"

I disagree with this one too. I defy any university as large as MIT to be as close-knit as we are. That's just one of the pros of a smaller university. Not only is it a small university, but our housing system makes it even smaller, placing you in a dorm with around 80 people of the same personality. This is the around the same size as a fraternity (I think) and is more inclusive (it's not nearly as much of a popularity contest to get in).

"Respect of administration and professors for students / student freedom: Caltech = MIT"

I disagree with this one as well, though I don't have any first hand information for MIT, so someone can feel free to give examples proving me wrong. I've always been amazed at the respect we get as students. My freshman year, Caltech decided to put up a sculpture. They'd contacted the guy and he'd done preliminary plans, but when the students saw them, we hated them so much that the administration ended up dropping the project. As for professors trusting us, in three years I haven't taken a single test in a classroom. Almost all of our tests are take-home. The prof tells us how much time we can use and what materials we get, and then trusts us to follow the honor code. So, I'd bet Caltech students get more respect from the faculty and administration than students at MIT.

<<<h88>>>

An old article - most of the folks here should've read it - listing the important aspects about Caltech as a whole:

<url><http://hewitt.astro.cornell.edu/~favata/usnewsarticle.html></url>

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An old campus saw describes Caltech life as follows: "Grades, social life, sleep: Pick two."

<<<None>>>

Ahhh Feynman. In my mind, he is the most interesting physicist of all time. If any of you have not heard much about him, read "Surely your Joking Mr. Feynman." It is one of my favorite books.

<<<tech\_fan>>>

Yeah, I'll agree with alleya about all three of her points.

Beauty: I wrote a long answer to this but just deleted it. Come and spend a few days here :-). That will gently conclude all debate. But I will say that, for most tastes, green is a more pleasing predominant color for a campus than grey.

Close-knitness: So, it's certainly true that MIT can be a very close-knit, happy place, in some places especially. BUT it's much easier to get left out in the cold there. A few of my close friends have relayed firsthand how the more dormlike places to live can leave people very socially isolated. YES, it's possible to be socially isolated anywhere, but at

Caltech you have to try much much much harder. At MIT it's possible to be lost in the crowd by accident. Not just possible -- it happens regularly.

As for the respect of the administration and faculty, I do agree that among large universities MIT stands out, but Caltech is #1 in this category anywhere. How many other schools, including MIT, give students a key that opens most buildings on campus (and let you in to the others)? How many of them have virtually no in-class tests? How many tacitly encourage students to explore tunnels and roofs as long as they're not stupid about it? (MIT recently instituted a fine for being found on a roof.) How many have students treated as equals on pretty much every policy-setting committee (including undergraduate admissions)? The list could go on, but honestly, I think one can't find a university that treats undergraduates as equals to the extent that Caltech does.

<<<CC Admin>>>

"But I will say that, for most tastes, green is a more pleasing predominant color for a campus than grey."

When I visited Caltech, it was REALLY nice.. I think I was sitting outside one of the cafes (umm... red door or something like that? I can't quite remember) in the shade, and the campus atmosphere just seemed very welcoming and supportive.

"How many other schools, including MIT, give students a key that opens most buildings on campus (and let you in to the others)?"

Hm, the only one I can think of is Harvey Mudd. But then again, they probably have more restrictions than Caltech about WHICH doors to give you the keys to.

"How many tacitly encourage students to explore tunnels and roofs as long as they're not stupid about it? (MIT recently instituted a fine for being found on a roof.)"

Hahaha that's hilarious... a fine for being found on the roof. But that sounds pretty exciting, exploring tunnels and roofs. :D

<<<rtkysg>>>

2bad4u,

No, difficulty and rigor are not exactly the same. Rigor refers to the atmosphere, workload and the environment, e.g. since many Caltech undergrad take about 6 classes (for Physics, EE and ECE) the atmosphere become rigorous. On the other hand, for a similar subject, I would claim that Caltech teach slightly more deeply than MIT, i.e. the homeworks are harder :).

<<<tetrahedr0n>>>

I thought rigor meant how proof-based classes are. In calculus, when we say a rigorous class, we mean that proofs and formal definitions are provided for every theorem and concept. Could some one clear up what the ops meant by "rigorous"?

<<<rtkysg>>>

Well depending on your own definition on 'rigor' you can formulate the comparison yourself. However, since it is my comparison here in this issue, it's reasonable enough to take my definition to clarify my comparison :)

<<<2bad4u>>>

rigor still is in what and how many classes you decide to take ,for example Caltech has Physics 1A which covers what 8.01 covers but if you wanted rigor you could take 8.012 which covers the same material with more rigor and insight than caltech does it uses Kleppner/Kolenkow book which is much more rigorous than Serway or Feynman

<url><http://www.cco.caltech.edu/~tmu/ph1a/geninfo.htm></url> (i own all 3 volumes of Feynman and have used Serway's book) although Caltech used k/K in the past that was in the past. Same goes for e/m. Rigor depends a lot on you and your choices.

regarding close knitness its a matter of choice, each hall on EC is a very close knit group and has its own personality , deciding on where you fit in best and the fact that the school has an nearly even male to female ratio means you wont have too spend 4 years in a borderline all boys school. Central Square is right next door and has a whole lot of restaurants that cater to mit students.Delivery food is common.

as native californian i could tell you that although roses and flowers are nice, having more than one season is also a thing of beauty. The beauty argument is more of an individual matter

as a side note i have never heard of anybody being fined for being on the roof . The fine is just to appease the city of cambridge. Hacking and Pranks are still common and if prefrosh want to be a part they should go on some of the tours that take place in CPW. There are also bigger buildings and miles of underground tunnels and hallways to explore.

<<<rtkysg>>>

2bad4u,

You seem to enforce your definition on rigor, which undeniably confirms your own justification. Your intertwine \*my\* definition on rigor and depth of the class. Notice also that textbook by itself doesn't justify how hard the class would be. Am I right to say that you consider K/K as more rigorous as it requires more mathematical fluency? When Feynman himself taught the physics class at Caltech, whatever its name then, the class was notoriously perhaps the hardest physics class you may find in the States. And yet, his questions are based on his lectures, compiled in the form of the 3 books (you might also notice that the 3rd vol is much harder than the 1st or 2nd vols). Hence your perception on the rigor fails here as it doesn't necessarily materialize as the rigor of the class itself.

However, based on \*my\* definition, I consider rigor as typically how many classes an average student tend to take every term/semester. While you can of course take as many courses as you are capable to, there's indeed some invisible pressure from the environment and atmosphere of the school to dictate it. In this regard, the more nerdy environment of Caltech impose

its society taking heavier workloads (than MIT) and hence spirally elevates the rigor of the atmosphere.

<<<alleya>>>

As far as rigor goes, there's more expected and required of students at Caltech than at MIT. The fact of the matter is that the easiest core courses at Caltech are harder than the easiest at MIT.

As for the close-knit community, the house system at Caltech is something you're a member of for as long as you want. It's not based on where you live and it doesn't fall apart at the end of every year. Most people are a member of their houses for 4 years and are active even while living off campus, in apartments. If your close-knit community is based on the hall you live in, it can't have many relationships more than one year old, so the relationships won't be as strong. Also, if you'd rather live in an apartment (as I would), you miss out on this experience. The virtue of Caltech's system is it's permanence in your life for all 4 years while you're here, regardless of where you live.

You can have your seasons if you want. I had so much fun this last week watching the NorthEast completely blanketed with snow while we were having gorgeous 70+ degree weather. If I ever feel the need for snow, I can just head up to the mountains for the weekend.

<<<2bad4u>>>

"As for the close-knit community, the house system at Caltech is something you're a member of for as long as you want. It's not based on where you live and it doesn't fall apart at the end of every year. Most people are a member of their houses for 4 years and are active even while living off campus, in apartments. If your close-knit community is based on the hall you live in, it can't have many relationships more than one year old, so the relationships won't be as strong"

I don't quite get the reason that the close-knit community is supposed to fall apart at the end of every year. There is no moving away from your hall if you don't want to, no year end housing lottery. If you know any people from EC they form groups as tight knit as I could imagine, a lot of them even chose to live in the same spot as a GRT while doing grad work. Options, you could live here there or anywhere, same goes for food.

"As far as rigor goes, there's more expected and required of students at Caltech than at MIT. The fact of the matter is that the easiest core courses at Caltech are harder than the easiest at MIT."

Easiest core courses, I'll give you the benefit of the doubt that the easiest core courses are harder but there also the only core courses in most cases. Most core courses have more than one version 8.01T/8.012/8.01x, 18.01/18.014/18.013, you have to admit there are more options.

<<<rtkysg>>>

Only they who have already attended both schools can really understand the comparison. 2bad4u, there're a bunch of ex-Caltech students at MIT, why don't you find one of them and ask them directly?

<<<hello>>>

We all know MIT and Caltech are awesome schools, so STOP COMPARING.

Both schools have thier +'s and -'s and probably no one can attend both as an <b>undergrad</b> hence it would be impossible to ever find out which school is better.

hmmm.... unless ..... somebody ..

transfers :D

<<<rtkysg>>>

hello,

We're not comparing as to say which one is better, this is a neutral comparison.

I refer to grad students. I've never seen an MIT undergrad student transfer to CIT or vice versa.

<<<alleya>>>

hello, I usually agree with you that comparisons are annoying, but I think we're all trying to be impartial while discussing differences in specific areas. I think that type of discussion is very relevant to students choosing between the two schools. If you don't like the discussion, feel free not to read it.

2bad4u, I didn't know there was no housing lottery at the end of every year. I stand corrected. However, my point stands that there's no way to be a part of that environment while living off-campus. Also, yes there are more options for core classes. In fact, there are probably more options for classes in most areas -- that's an advantage of a large school.

<<<sakky>>>

I agree that Caltech is more rigorous than MIT in the sense that there is a wider variety of easier classes and easier majors at MIT and so in that sense, there are more places to 'hide'. MIT is therefore more accomodating to students who find that they can't or don't want to work hard and/or don't want to study technical subjects than is Caltech. In that sense, Caltech is more rigorous.

However, whether that rigor is really a good or a bad thing is, I suppose, in the eye of the beholder. The fact is, a significantly larger percentage of students at Caltech than at MIT will not graduate. Put another way, a given incoming student is more likely to eventually get a degree from MIT than he will from Caltech. Maybe that degree will not be in a subject that he really wants to study (i.e. maybe that student wanted to study EE but he either can't or doesn't want to study as hard as needed to get that EE degree, so he instead gets a degree in a less demanding subject), and maybe that student gets low grades, but at least he manages to graduate.

Hence, whether rigor is a good or a bad thing depends on whether a particular student can take the rigor. For those students who can take the Caltech rigor, then it's probably a good thing. But there are some

students at Caltech who can't or don't want to take the rigor. For them, the rigor is obviously a very bad thing.

Which leads me to the possibly controversial conclusion that Caltech may need to look at its admissions policies and raise its standards and not admit borderline students, because these students are the ones who are most likely to encounter academic difficulty at Caltech. You aren't doing anybody any favors by admitting somebody only to watch him flunk out or drop out from frustration.

Some of you might respond by saying that some borderline cases turn out to become stellar Caltech students. True, but on the other hand, many other borderline students end up flunking out. And flunking out is a serious black mark on your academic record. Few other top-ranked schools will seriously consider transfer students who flunked out of their previous school. And those bad grades are a major setback if and when that student later wants to apply graduate school. Bottom line - it is clearly better to graduate from HYPISM than to flunk out of Caltech. If you can survive the rigor of Caltech, more power to you, but that's a fairly significant 'if'.

<<<rtkysg>>>

LOL ! Sakky, that's very true, however, perhaps the borderline Caltech admits typically have GPA above 3.8 and SAT above 1510 on top of their EC listing. How would the adcom know that he/she would become a borderline case later on?

Also if Caltech increases its selectivity, it would lose out most of its potential admit to MIT. This is not good in the eye of Caltech adcom economically :P

<<<alleya>>>

sakky,

Actually, very few students flunk out -- most leave before that happens. It's been argued on the board before that this is the same thing because the student was "essentially forced out" (I don't agree with this -- in my opinion, the school goes above and beyond to allow a student to stay if he/she wants to), but this is a moot point as far as the record is concerned. For most students, their records will just indicate that they transferred schools.

As for not admitting as many borderline cases, I don't agree with that. I don't think the borderline cases are the ones who are necessarily leaving. In my opinion, there's a certain academic threshold a person needs to pass in order to make it at Caltech. After that, it's dependent on drive, desire, and an ability to deal with high stress situations. Some people get here and realize that what they're getting here isn't worth what they're giving up. They didn't know this beforehand, so it probably wasn't readily obvious in their application. I think that the factors (above the academic threshold) which contribute to a student sinking or swimming can be very hard to see in an application. Unfortunately, to settle the debate we really need statistics of borderline cases, which is the type of thing that admissions won't (and shouldn't) release.

<<<sakky>>>

To rytskg, actually I would have to disagree that those borderline students would have the statistics that you suggested. The 25th SAT percentile for Caltech was 1460, hence a full quarter of the entering class had an SAT of 1460 or less. That's a fquite sizable chunk of the entering class, you must agree. Furthermore, 94% of the entering freshmen were in the top 10% of their high school class, which obviously means that 6% were not. I would say that this is also a fairly large chunk.

Now, don't get me wrong, it is obviously true that the SAT doesn't measure everything and high school class rank also doesn't measure everything. No metric is perfect. I am not here to debate the merits of the SAT or class rank. What I am saying is that Caltech could easily go back through its historical data and examine all the students who came in but, for whatever reason, didn't make it, and then perform a statistical analysis on these students to determine if they tend to hold a specific incoming trait above a certain confidence interval. For example, Caltech might find out that of all the students they admit but don't graduate, 95% of them had an SAT score of less than 1400. Or had relatively low (that is, low for Caltech) math test scores and/or grades. Or whatever it might be. Then Caltech should then just admit less of these students.

Some of you might object that you never really know which students aren't going to make it. But that's beside the point. You obviously can never know with a 100% guarantee who is going to make it and who isn't. But statistics can tell you what is probably going to happen. It is similar to auto insurance companies deciding whether they should insure a particular driver - the worse that driver's record is, the less likely that that company will decide to insure him, until a point is reached where the insurance company will absolutely not offer insurance. A guy who has a history of DUI's and who has been in numerous accidents is probably not a good insurance risk. Hence, Caltech can set up a table of confidence intervals and determine, based on historical data, who is highly unlikely to graduate.

Also, I dispute the notion that if Caltech increased its selectivity, it would lose out most of its potential admits to MIT. That might be true if Caltech were currently admitting lots of students who aren't good enough to get into MIT, which I do not see. However, the data does not seem to indicate that Caltech is admitting a significant number of students who aren't good enough to get into MIT. On a head-to-head basis, in terms of admittees, Caltech and MIT are basically even. The other way it might be true is that people who are admitted to Caltech and MIT will tend to prefer (perhaps slightly) MIT over Caltech. If that is true (and I'm not saying that it is), I would argue that might in fact be explained by Caltech's higher rigor, which may serve to turn some people off. Simply put, some people might want the greater guarantee of getting the degree that they will get from MIT rather than put up with the greater risk from Caltech of ending up with nothing. Hence, I would argue that this is really a reversal of cause and effect.

Finally, I don't know whether Caltech's economics has anything to do with anything. Honestly, how much money are we talking about here? Considering



Caltech's highly generous financial aid, I think a case could be made that Caltech is actually LOSING money from its undergraduate program. But in any case, if Caltech is in fact making a profit from its undergrad program, it's going to amount to at best a rounding error relative to the rest of the budget. The vast vast majority of Caltech's budget comes from research dollars, from alumni donations, and from interest on its accumulated endowment.

Let me put it to you this way. Caltech's endowment is something on the order of \$1.2 billion. If Caltech were to invest this endowment in US Federal bonds, which are generally considered to be the safest financial vehicle in the world, Caltech would earn about \$50 million a year just on endowment interest alone. Caltech enrolls about 900 undergrads, of which about 100 will eventually fail to graduate. So if Caltech were to simply not have admitted these 100 students in the first place, then that is basically a loss of about \$2.5 million of tuition a year, and that presumes that each and every one of those 100 students received zero financial aid from Caltech, which is obviously ridiculous. And I haven't even begun talking about all the research money that Caltech garners or the additions to the endowment from alumni donations. Or, to quote from Caltech's published 2003 budget, "...As has been the case historically, sponsored research and gift revenues (including payout from the endowment) in fiscal year 2003 provided 85 percent of the support for campus activities."

<url><http://www.caltech.edu/at-a-glance/2002-2003CaltechFinancials.pdf></url>

The point is that whatever money that Caltech might be losing from admitting fewer students is, at worst, a drop in the bucket, and payback would be in the form of improved morale within the Caltech community. I can tell you firsthand that is extraordinarily gutwrenching to watch people who you know and who you've befriended end up struggling academically and finally end up giving up and dropping out or flunking out. It's like working at a company and watching your friends getting laid off or fired. That's not fun for anybody.

Now to alleya, I would have to say that I agree with those people who say that flunking out and being forced out are basically the same thing, because at the end of the day, a student, for whatever reason, is unable to continue.

Furthermore, you have to seriously look at what is meant by the notion of 'transferring schools'. We have to be careful about our definitions here. There are obviously some students who come to Caltech and who do just fine and could graduate, but decide that they want to transfer out anyway. They are not forced out in any way, they just decide that they would rather be somewhere else, maybe someplace with a major that is more to their liking, or they just don't like Pasadena, or whatever. Every school has these students. I am not talking about these students.

What I am talking about are those students who come to Caltech and then start doing very poorly academically, either because they aren't smart

enough, or they aren't motivated enough, or they aren't mature enough, or some combination of the 3. Those are the students that I am talking about. You say that they will simply transfer out somewhere, and my response is "Transfer out to where?". If you're good enough to get into Caltech, then you're almost certainly good enough to get into some other top 15-20 school, and you're probably good enough to have gotten into at least 1 of HYPISM. However, if you come to Caltech and then start getting a bunch of mediocre or less-than-mediocre grades, what do you think your chances are of successfully transferring into HYPISM, or even into some other top 20 school? Low indeed, you must agree. Rightly or wrongly, if you are doing badly at Caltech, then few top schools will want to admit you as a transfer. You shot the moon and you lost big. If you do end up successfully transferring out, it will probably only be to some fairly low-ranked school. In that case, that person would probably have been better off not getting admitted into Caltech in the first place. Case in point - I know one guy who was admitted to Caltech, and also to Stanford and a bunch of the lower Ivies. He chose Caltech, and barely scraped by in his first year, and wanted to transfer out. Stanford didn't want him anymore. The lower Ivies didn't want him. He ended up at UCSB. He tells me now, over and over again, that going to Caltech was probably the worst decision he made in his life, and that he should have taken Stanford when he had the chance.

Now obviously, that story was anecdotal. But it does serve to illustrate a larger point. Caltech is, in some ways, an example of 'shooting the moon'. If you go to Caltech and you do well, then the world is your oyster. But what if you don't do well? In that case, you run the significant risk of greatly hurting yourself, at least, compared to going to some other school where things are safer and you're more likely to graduate.

And finally, as to your last paragraph, we have to be careful about what we mean by 'borderline' cases. I am precisely defining 'borderline' cases as those people who are likely to leave because of poor academic performance. I am surmising that these people are probably those who have borderline academic records, but I agree that it is not necessarily so. But that's not the point. The point is that Caltech should figure out who these people are, whoever they are, and then seriously consider not admitting as many of them. I also don't believe that it really is all that difficult to determine who these people are, at least to some confidence interval. For example, Caltech might run multiple rounds of interviews for the applicants to assess who really is fired up and motivated and who isn't. Caltech might want to call up guidance counselors and teachers (basically, whoever wrote the rec's) to really determine who really has the heart to succeed, and who doesn't.

The point is, I don't think it's that hard for Caltech to find out. Caltech clearly has the budget to do it. If Caltech wants to do it, Caltech could do it. The question is, does Caltech really want to do it? I get the feeling that Caltech feels that not only is this not a real problem, I strongly suspect that Caltech actually seems to like it the way it is - that a lower graduation rate relative to HYPISM proves that Caltech is tougher and more strenuous than those other schools.

<<<webhappy>>>

"I also don't believe that it really is all that difficult to determine who these people are, at least to some confidence interval. For example, Caltech might run multiple rounds of interviews for the applicants to assess who really is fired up and motivated and who isn't. Caltech might want to call up guidance counselors and teachers (basically, whoever wrote the rec's) to really determine who really has the heart to succeed, and who doesn't.  
"

Uh... that would give skew the student body towards outgoing people. I don't really think there's an easy way to determine the people truly willing to work hard.

<<<rtkysg>>>  
Sakky,

I don't think your claim in the last paragraph was accurate, although I can't be so sure myself. But Caltech, in some of its reports, actually expresses its concern about the rigor of its curricula, which in fact has some effects on its yield rate. Unfortunately, it doesn't seem to care much about such matter. Regarding the selectivity issue, I think most people agree that technically Caltech and MIT are perhaps of the hardest schools to get in, and most students take both of them as super reach schools. Now if Caltech is to increase its selectivity, my guess is many students will not even bother to apply to Caltech. I have actually encountered some people who didn't apply to Caltech because they thought paying \$50 for application fee was too expensive for such a high rejection risk.

<<<tech\_fan>>>  
Interesting points, sakky. Here are a few of my thoughts on them.

I read applications. I vote on who gets in. The first question I ask is "Can this kid make it here?" If there is even a plausible possibility that the answer is no -- no matter how much we otherwise want the student -- we tend not to take him or her. Frequently, in discussing particularly difficult cases, admissions officers will note that taking a certain student (and exposing him to the consequences of coming here unprepared) would be much worse than not taking him and exposing him to the relatively less severe disappointment of not getting in. We are keenly aware, in short, of the issues you raise.

How loud a "yes" do we require to the question of whether they can make it? To give you an idea, we sometimes get nervous a teacher fails to rate a student's academic ability at the level of "one of the top few in my career." (Of course, there are many exceptions to the rule, but I'm just trying to give you an idea of how high the standards are.) The sort of kid that teachers rate as the smartest in 20 years is close to average here.

As Galen discussed on another thread, a single sub-A grade in calculus or physics without an adequate explanation is often a pretty serious issue. In particular, we know that whatever calculus or physics class you took in high school was a whole lot easier than the core classes you'll take here.

If you couldn't be at the top there, there'll be some doubt about whether you can pass here. And failure isn't something we'd wish on our students.

In short, what at schools like Princeton and Harvard is considered pretty impressive math/science achievement is often considered borderline here. I can't imagine a much more rigorous screening procedure that would still be practical.

So while your concerns about protecting students from not making it are well-intentioned, I don't think we could do much more than we're doing. Plus, given the extent to which SAT scores are bunched up at the top, I doubt that statistically significant trends could be extracted from them. Here, teacher recs are much more telling. And trust me, we pay a great deal of attention to that and to the rest of the application (even though good scores are obviously important, too).

<<<tech\_fan>>>

Now, on the broader question: It's true that Caltech graduates a smaller percentage of its entering students than do its peer schools. My personal view is that this isn't a bad thing. My view is that it doesn't mean much to graduate from a place if failure to do so is essentially not an option (this is the case at HYPs, at least, maybe M too).

What distinguishes Caltech from its peers is that after admitting only the cream of the crop, it doesn't let them coast to a relatively certain diploma. You have to rise to a whole new level here to survive. Being the smartest kid back home is an assumption, and then Caltech forces you to get a few times smarter to graduate. It's like the Olympic team or the NBA. Everyone who is allowed to train at that level is extraordinary, but only a fraction of those survive to make it to the highest grade.

Is that for everyone? Surely not. Some people don't want the intellectual equivalent of Kenyan running camp. For the select group who do, Caltech is one of the very few places left in the country that won't let you coast, won't coddle you for being impressive enough to get in, and won't dispense obligatory self-esteem boosters.

One reward (among many) is one of the few remaining truly meaningful diplomas in American undergraduate education.

For some, all of that is frightening and off-putting. For others, it's an inspiring challenge. I'd like to keep it that way.

<<<itsallgood>>>

Ben, one of the reasons HYPs graduates such a high percentage is that there are a host of other majors they can switch to if they get blown out of engineering or the sciences. I think you will admit, CalTech offers few other avenues other than engineering and science.

<<<ColoradoKid>>>

I'm not being antagonistic but if Caltech is so highly regarded as an engineering school, why are they not ranked any better by USNWR in undergraduate engineering specialty areas? I believe they only make a showing in aeronautical engineering and even in that they are 5th.

<<<itsallgood>>>

following up on my last post:

If CalTech blows out 10 to 15% of each class, why take the chance at all? Forget this argument over who might be better at what. The differences are not significant. They're all GREAT schools. Go to MIT, Stanford or Princeton and you're golden for grad school and the job market if you succeed, and you can switch into a different major if you don't. At CalTech, you have fewer attractive options (hence the high drop-out rate). Why put yourself through the hell of transferring if you don't have to?

<<<tech\_fan>>>

itsallgood -- because for some people, the superiority in the rigor of science education here, the research opportunities, the 3:1 student:faculty ratio, the weather, the campus, etc. (I could go on) are enough to outweigh the risk of failing out. Plus, they know they are too smart to fail out.

<<<rtkysg>>>

ColoradoKid,

If you take the National Research Council (NRC) ranking, I believe Caltech ranks 3rd in the engineering as a whole. The problem with USNWR specialty is that they only take peer assessment ranking score which translates to 'how many professors you know are at those schools'. Well since the faculty of Caltech is so small, it doesn't do well in the ranking. However, if you look at USNWR overall engineering ranking, without trash measurement like the 'number of PhD granted', then you can see that Caltech would be the 1st or 2nd in the list.

<<<itsallgood>>>

Ben, first of all, I want you to know I've been on the CalTech campus. It's big, beautiful and is in a really great neighborhood in the Pasadena area. No argument that CalTech is pretty much unbeatable in those criteria, especially if you prefer warmth and sun over cold, dreary winter. I can't quote numbers, but CalTech is probably also #1 for pure and deep research in sciences.

But, when it comes to Engineering, any amount of "Rigor" above and beyond that found at MIT and Stanford (which most genius kids find rigorous enough) is just useless, masochistic abuse...especially since MIT and Stanford (and Berkeley) are recognized pretty much universally as the gold standard in all the subsets of Engineering.

Here's my point.....Just looking at it from a cold, analytical viewpoint, there is an added risk attached to CalTech (greater drop out rate) with no comensurate increase in reward for students who want to be Engineers.

If you want Pure Science and Research, by all means choose CalTech.

<<<itsallgood>>>

One more thing, again this is specific to Engineering graduates going out and looking for Engineering jobs: If an employer has candidates from

Berkeley, Stanford and MIT standing there with 3.0 GPAs and a kid from CalTech with a 2.85 or 2.75 GPA (because of the extra "Rigor"), I suspect the employer is going to choose the higher GPA over the (perhaps mythical) higher rigor.

Any thoughts?

<<<rtkysg>>>  
itsallgood,

LOL! you've been to Caltech campus but my guess you haven't socialized yet with most of Caltech students. They're just 'weird' :) Can you believe that many Caltech students actually take more than they should (some of them take 7-8 classes per quarter) and they think Stanford students are losers to have such easy workload with grade inflation.

Although it's an immature view on the prospect in engineering field, which by the way should be rather practical than theoretical perhaps, Caltech society has its own unique, lovable pride (well you may find it detestable :))

<<<rtkysg>>>  
"If an employer has candidates from Berkeley, Stanford and MIT standing there with 3.0 GPAs and a kid from CalTech with a 2.85 or 2.75 GPA (because of the extra "Rigor"), I suspect the employer is going to choose the higher GPA over the (perhaps mythical) higher rigor."

Only about 0.25 gap ? The answer is NO.

<<<sakky>>>  
To webhappy, perhaps it would skew the distribution towards outgoing people. But the first thing I would say to that is that such a skew such a bad thing? The fact is, people who are outgoing about a particular subject tend to be the ones with greater motivation and heart about that subject. Obviously it doesn't hold in every case, but a statistical correlation probably does exist - just like there is a correlation between smoking and cancer. Not everybody who smokes gets cancer, but those who smoke have a greater likelihood (not guaranteed, but greater likelihood) of getting cancer. And surely we all know people who are normally extremely quiet but if you get them talking about something they really care about, you can't get them to shut up. For example, if you get an initially-introverted Caltech applicant talking about physics, and then you find out that he just goes on and on and on and you can't get him to stop, I think that's a fairly decent indication that this applicant is passionate about physics.

And my second response is that that's neither here nor there. I am not claiming to know exactly what are these attributes that will indicate whether a person has what it takes to succeed at Caltech. What I am claiming is that these attributes are out there and can be found out. Maybe the personal interview is a good way to do it. Maybe it isn't. Maybe interviews with teachers are a good way to do it. Maybe they aren't. I don't know. My point is not that I know what the right answer is, but rather that Caltech should take the time to find out what the answer is. I was just throwing out some possible examples out there.

Now to rtkysyg, I don't agree that higher Caltech selectivity would serve to deter applicants from applying. Harvard is unbelievably selective, yet Harvard doesn't seem to have any shortage of applicants. Far from it, in fact. Or think about the top medical schools like Johns Hopkins Medical, which are ridiculously selective, yet always seem to bag an ever-increasing number of applicants. The point is that just because you become selective doesn't automatically mean that you are going to deter applicants. In fact, I might argue that the exact opposite could happen - if Caltech becomes even more selective, then that might encourage certain applicants to apply just to 'see' whether they can get in, just like some superstars apply to Harvard even if they don't really want to go, but just to see whether they can get in (or perhaps because their parents push them to see whether they can get in).

And furthermore, if the \$50 app fee is really the issue, then reduce it, or eliminate it entirely. Seriously, how much money does Caltech really make from this \$50 fee? Something on the order of 2000 or so applicants (of which ~20% are admitted, and of those admitted, about half will actually matriculate) apply to Caltech undergrad each year. So we're talking about only about \$100,000. With Caltech's budget, who really cares about 100k?

Now to Bengolub, I never said that Caltech doesn't screen its applicants at all. Indeed, I am well aware that it does. But at the end of the day, one fact remains indisputable - a greater proportion of Caltech students do not make it relative to peer schools like HYPSM. Caltech can talk about how it rigorously screens its students and all that good stuff, but at the end of the day, the fact remains.

Furthermore, I don't think it's even really a matter of screening at all. Rather it's a matter of 'tolerance values' and of where do you place the benefit of the doubt. Right now, with the screening process, I'm sure that Caltech admits some applicants who the adcom officers have some doubts as to whether they succeed - and these applicants disproportionately tend to flunk out. In the future, perhaps Caltech should simply admit less of these students. Now obviously nobody can ever know with a 100% guarantee who will succeed or who will not, which is why the notion of 'playing it safe' and of 'tolerance values' comes into play. Caltech could simply make its 'safety window' smaller such that a safer group of applicants were brought in, which makes it more likely that a given admitted student will actually make it. It's one thing to say that maybe you can't get more data about your applicants, it's quite another to say that you can't do more with the data that you do have. Caltech could simply say something like "Instead of admitting the top 400 students who apply, we're only going to admit the top 300", or whatever the numbers turn out to be (I was just making up the numbers), and I think it is fairly clear that the top 300 will be a safer choice than the top 400.

Furthermore, Ben Golub, we have to distinguish between rigor and pure punitive behavior. This is where your analogy of the Olympics or the NBA not only stops short, but is a useful analogy for what I am trying to prove. Let's say you try out for the NBA, and you do poorly. Fine, so you can't get into the NBA. But the NBA then doesn't go and ruin your

professional record such that you find it difficult to play in the Continental Basketball Association or the Euro-leagues or some other pro-basketball league. Similarly, if you go to the Olympics and do really badly, that doesn't ruin your chances of going and doing something else in your life. For example, let's say that you do terrible and you come in dead-last in an Olympic event. No potential employer is going to say "Oh, you came in dead-last, so that means that you suck and so we're not going to hire you". No college is going to say "Well, we thought about admitting you, but since you really sucked in the Olympics, we're not going to admit you." But that's precisely what happens when somebody does badly and/or flunks out of Caltech. If you come to Caltech and do badly, not only do you ruin your chances of getting a degree from Caltech, but you also seriously injure your chances of getting a degree at any other peer school.

The point is, there's a big difference between maintaining high standards and going around unnecessarily punishing and hounding those students who don't meet those standards. It's one thing to say that Caltech should set a high bar and only those students who are strong and motivated will be rewarded with a Caltech degree. Fine. It's quite another thing to say that all those Caltech students who don't meet that high bar should have their academic records trashed such that they are hindered from doing other things in their life. If a guy can't make it through Caltech, then that's fine, don't award him the degree. But if he's not going to make it, then what purpose is served by tossing the guy's academic record into the gutter? That's just adding insult to injury.

Hence, maybe Caltech should run its first year or first-semester as pass/not-pass (similar to what MIT does), or have whatever letter grades are recorded in the first X semesters designated for internal use only, meaning that only Caltech faculty gets to see those letter grades, and outsiders only get to see grades of "pass" (and if the student doesn't pass a class, then no grade is recorded). Or Caltech can identify those difficult intro classes that are gateways to particular majors as ones that can be 'shielded'. For example, let's say that an incoming Caltech student thinks he wants to major in electrical engineering, but then does really badly in the intro EE classes, such that he no longer wants to major in EE anymore. Why then should that student's record have to be marred with bad EE grades? That student isn't going to be majoring in EE anyway. Caltech has already proved its point by setting a high EE standard, which that student could not reach. So what more is to be gained by sticking his record with a bunch of bad grades? If that student ends up majoring in say, economics, either at Caltech or some other school, what does it matter if he did badly in Caltech EE? That's like the Olympic analogy - if you're trying to get a job, what does it matter if you came in last in an Olympic event?

The point is, just because you have high standards doesn't mean that you have to go around gratuitously damaging the stock of the students who don't meet those standards. For those students who do well at Caltech, Caltech is obviously serving them well. But for those students who do poorly and want to transfer out, I believe Caltech should do whatever it can to help them transfer out to a good program, or at least not gratuitously hurt them from doing so. So if that means cloaking bad



grades from prospective transfer programs by instituting an external pass/not-pass policy, then maybe Caltech should do that. If that means simply not assigning any course credit to any grade less than a B (hence, if you get a grade worse than a B, then you can choose whether you want to take that grade or simply not take any credit for that course at all). Or some of the other options I mentioned.

<<<sakky>>>

And finally, to the last post of Ben Golub, I have always maintained that Caltech is indeed great for some people. But it is clearly not good for others. I have to agree with itsallgood that Caltech, the way it is now, is clearly a risk that some people would prefer not to take. After all - it's not like Caltech completely dominates all other schools when it comes to science/engineering. So for many people, it's a risk that isn't worth it. Again, don't get me wrong, for some people, it is worth it. But for others, it isn't.

I would also argue that if Caltech could institute a policy where high standards are maintained, but on the other hand, transferring to another school is easily facilitated should Caltech prove to be too difficult would be a great boon to the morale and to the overall desirability of the school. Lots of candidates who might now hesitate to go to Caltech because of its 'boiler-room' nature and instead end up at HYPsM might decide to go to Caltech if they know that they can get out if they have to.

<<<sakky>>>

Rtkysg, the problem with comparing GPA's the way you have been doing it is that often times, that guy with a 2.75 from Caltech won't even get considered. Right or wrong, many companies will simply set a GPA cutoff at 3.0. If you don't have that GPA, your resume gets tossed into the trash even before it gets read by a human being. Right or wrong, that's what they do. So the guy from Caltech with the 2.75 doesn't even get a chance to show what he can do.

This is particularly true of medical schools and law schools for which admissions are very much numbers- driven. If you don't have the numbers, then your application won't even be read. Caltech can therefore be said to be seriously hurting its students' chances of getting into law/medicine, something that I believe somebody (either kyshantry or galen, I can't remember) alluded to previously.

Like I said, there's a big difference between high standards and just going around hounding your students unnecessarily. If a guy does really poorly in a class, then instead of marring his record with a really bad grade, why not just let him strike it from his academic record completely? Things like that would go a long way towards removing the punitive nature of Caltech grading.

<<<itsallgood>>>

rtkysg: Thanks for the insight in the mind of the "Techer."

But explain to me why an employer would take a lower GPA from a lower ranked program, over a higher GPA from a higher ranked program? Something doesn't sound right there.

<<<alleya>>>

<quote>Hence, maybe Caltech should run its first year or first-semester as pass/not-pass (similar to what MIT does), or have whatever letter grades are recorded in the first X semesters designated for internal use only, meaning that only Caltech faculty gets to see those letter grades, and outsiders only get to see grades of "pass" (and if the student doesn't pass a class, then no grade is recorded).</quote>

Caltech does this. The first two terms are P/F (pass/fail), and the second of those they get letter grades which are for internal use only (called shadow grades). In addition, each Caltech student can choose to P/F up to 10 classes (this must be decided while the student is in the class). So, if a student tries out an intro EE course, realizes they're going to fail and wants to switch majors, they can P/F it. Students can't P/F classes in their own major for obvious reasons.

<quote>And finally, to the last post of Ben Golub, I have always maintained that Caltech is indeed great for some people. But it is clearly not good for others. I have to agree with itsallgood that Caltech, the way it is now, is clearly a risk that some people would prefer not to take.</quote>

The information about Caltech's freshman retention, and about how difficult Caltech is, is readily available to every student who applies. So every student who comes knows this and chooses to take the risk. If it's a risk someone would rather not take, then they shouldn't come here. That doesn't mean we should take the option away from them.

<<<itsallgood>>>

I would not want to be the CalTech grad interviewing in Silicon Valley and have to describe "rigor" to the Stanford and Berkeley grads who run most of the companies there. Their response will likely be "NEXT!"

And if I'm a CalTech grad interviewing on the East Coast, I think I better have a better story than "rigor" for the employer who graduated from MIT.

<<<tech\_fan>>>

sakky -- your posts are long on words and short on content. As alleya pointed out, you throw out accusations without realizing that (for instance) the first two thirds of the frosh year (two of three trimesters) are on pass fail. You also probably don't know that Drop Day, the last day for dropping a course so it doesn't appear on your record at all (any trimester) is a mere three weeks before finals -- with more than two thirds of the term behind you, including midterms. It's very hard to be doing badly and not to know it by that point.

As for Caltech gratuitously ruining lives or whatever, you may have some anecdotal evidence to that effect, but I have lots of anecdotal evidence to the contrary. I know a girl who failed spectacularly freshman year, got into Duke as a transfer, spent a year there, and came back because she liked it here better. Is Duke a third tier trashbag?

I also know someone who really didn't like it here, was getting very mediocre grades, and got into Stanford as a transfer student apparently without any trouble.

Finally, as Alleya said, students have extremely ready access to all the statistics about graduation rates. Those who take the risk have no excuse for not knowing what they're signing up for. (Caltech's viewbook doesn't gloss over the rigor, either... nor does the admissions website.)

<<<tech\_fan>>>

Itsallgood -- it's silly to act like the average Caltech grad comes to the job/grad school hunt badly beaten with a rock-bottom GPA. It's just not true. Very close to half of each class graduates cum laude. And you'd better believe that those guys -- especially the ones in the top fifth or so -- are snapped up VERY eagerly by investment banks, Google, Microsoft, graduate schools, what have you. I know because I see it every year.

In short, while we can quibble about a Stanford B versus a Caltech C, there's little doubt that an A in upper-level Caltech physics/math/engineering classes trumps almost any other card on the table. For the people who are capable of getting it, that's worth coming here for.

<<<tech\_fan>>>

Oh, and as for Silicon Valley companies, I know at least one whose upper management knows a little something about the rigor of Caltech. It's a little mom and pop shop called Intel, and its founder is a Caltech grad [edit] named Gordon Moore.

<<<itsallgood>>>

Ben, get your facts straight. Moore is a Berkeley product.

He got his Masters and PhD at CalTech but not in EE. It was Chem and Physics.

<<<tech\_fan>>>

Doesn't change the fact that he has an appropriate respect for the level of rigor here. In general, there's little disagreement among people who know their stuff in engineering and hard science that the Caltech name stands for the highest standard of difficulty. And as I said, the people who truly benefit from that are those that come out of here with flying colors. It's true that maybe the bottom of the curve might benefit from a less hardcore grading environment, but then that would take away from the cachet of the best grades. There should be at least one place that's not willing to make that compromise.

Plus, you haven't answered my major point in the post above the Moore one.

<<<itsallgood>>>

An "A" in upper level Physics/Math/Engineering courses from ANY of the schools--Stanford, MIT, Princeton, Berkeley-- is gold. Hate to burst your bubble, but there are other schools equal to or better than CalTech (at least as far as the rest of the world is concerned). You have to get out more.

But that's not even the point.

The point is that CalTech's program graduates a lower percentage of students than Stanford, MIT and Princeton. Great students, for whatever reason, bail out.

It's an extra risk. CalTech is alone in this among the top-rated schools. Given a choice, why take the risk?

<<<tech\_fan>>>

Eh, itsallgood, maybe YOU should get out more. I got grades of A and A+ in upper level Princeton math and physics courses and barely broke a sweat (as a high school senior, no less). Caltech has made me work. So I know the actual comparison.

As far as the outside world, recruiters here (Goldman Sachs, etc.) routinely say that the Caltech name conveys, on average, a higher level of expertise with hard math and science than diplomas from other top schools.

As far as your question "why take the risk" I've explained that many times. Because you learn more here. Because after Caltech almost everything else is easy. Because you know you are being judged on standards that aren't designed to make everyone feel good.

Heck, the president of Stanford explained this eloquently in his letter to US News ( <http://www.stanford.edu/dept/pres-provost/president/speeches/961206gcfallow.html> ). There, he points out what a nonsense criterion of quality graduation percentage is (which those foolish rankings devised in the first place).

<quote>The California Institute of Technology offers a rigorous and demanding curriculum that undeniably adds great value to its students. Yet, Caltech is crucified for having a "predicted" graduation rate of 99% and an actual graduation rate of 85%. Did it ever occur to the people who created this "measure" that many students do not graduate from Caltech precisely because they find Caltech too rigorous and demanding - that is, adding too much value - for them? Caltech could easily meet the "predicted" graduation rate of 99% by offering a cream-puff curriculum and automatic A's. Would that be adding value? How can the people who came up with this formula defend graduation rate as a measure of value added? And even if they could, precisely how do they manage to combine test scores and "education expenditures" - itself a suspect statistic - to predict a graduation rate?</quote>

Anyway, maybe you don't like the graduation rate. Too bad for you. I wouldn't be surprised if some people don't come here because of it. Too bad for them. Our goal isn't to maximize yield (otherwise we'd change our name to Harvard) and it isn't to accord with your tastes.

Maybe there's not a good answer to "why" for you, but there is for the people who come here, and that's good enough for me.

<<<itsallgood>>>

To Ben, sakky, alleya and others

Please understand, I believe CalTech is a great school, with great students and fantastic faculty. But PLEASE don't try to tell me that its program is any better than the ones at Berkeley, Stanford, MIT (all ranked higher) and, even, Princeton. That statement simply won't wash outside the walls of CalTech.

And stop ignoring the problem with retention and graduation rates. Something is wrong when you take super bright and highly motivated kids and can't hold or graduate them. There's a fault in the system that won't get fixed until you come out of denial.

<<<tech\_fan>>>

"But PLEASE don't try to tell me that its program is any better than the ones at Berkeley, Stanford, MIT (all ranked higher) and, even, Princeton."

errrm, time to wake up. For each school, there is certainly a field in which Caltech is ranked higher. In overall undergraduate USNews rankings, you well know that Caltech bounces around from beating those schools to being tied with them to trailing them by a negligible margin because those people need to sell magazines.

If you're just talking about engineering, you have to quarrel with me. I've always maintained that many engineers are probably better off at MIT. The one's who aren't probably like the 3:1 student:faculty ratio here.

Oh, and note also that for all the infinite wisdom of the USNews rankings Berkeley's undergrad program is ranked something like 20 spots lower than ours last I checked.

And as for your persistent whining about graduation rates, I've answered your points and you don't have any substantive responses. You are now just down to repeating your undefended assertion that non-100% graduation rates mean there's something wrong. Why don't you respond to the points in the Stanford president's letter? Or is that too tough for you?

Anyway, until you come back with some answers containing substance, you've obviously lost this debate.

<<<itsallgood>>>

Ben, don't believe all the flattery of the recruiters. They probably say that at EVERY top school they go to. Right out of the play book.

It's good that Stanford came to CalTech rescue. It's a great and noble school looking out for the others.

<<<itsallgood>>>

Ben, ALL my posts have to do with Engineering. I said that at the start.

<<<tech\_fan>>>

Haha, nice try itsallgood, but do you have any response to the Stanford letter's demolition of your main point? Or is that it for you?

<<<sakky>>>

Ben Golub, and alleya, but the point is, why use shadow grades, or pass/fail for just the first couple of terms? Why not use them for ALL terms? What's so bad about that? If it's OK to do that for the first 2 terms, then why isn't it OK for all the terms?

But all the quibbling about procedure is neither here nor there. I think I have to agree with itsallgood and say that clearly there is an indisputable issue on the table which is that Caltech graduates a lower percentage of its students than its peer institutions do. We can argue about what exactly is the source of the issue or what is the best way to fix it is, but what is not in dispute is that the issue exists.

Furthermore, one of your latest posts I believe illustrates precisely what I see as the problem. You say that Caltech makes its graduation rates public, and to paraphrase and extend what you are saying, if somebody comes to Caltech and then flunks out, it's basically his own fault, for he should have known that it was rigorous. Come on, don't you think that's a bit cold - sort of like blaming the victim? It's like the Army telling all soldiers who die in battle that it's their own fault - they should have known that joining the Army was dangerous and if they didn't want to die, they shouldn't have joined. Not only that, but you can use that logic to say that the Army shouldn't bother trying to protect its troops in battle, because after all, the soldiers knew that they were getting into something dangerous, so if they die from lack of protection, that's their own fault for joining the Army. I think we both know that that would cause a political firestorm if the Army were to ever publicly say something like that.

Hence, I think the real source of the problem is that a lot of Caltech people think that chewing up and spitting out a bunch of students is inherent to what makes Caltech special, and if a bunch of people get hurt that way, that's too bad for them.

All of this might actually be defensible if Caltech really did provide a huge boost to its graduates relative to its peers. But does it? Do Caltech graduates really enjoy substantially greater access to graduate school and/or employers than do HYPsM graduates? Is the Caltech brand-name really substantially better than those of HYPsM? I think that's dubious at best. In terms of access to graduate-school and employers, I think we would all agree that it's hard to beat the 'Harvard' name, despite Harvard's coddling and grade inflation. And, again, it's not entirely clear that Caltech enjoys a substantial advantage over Stanford or MIT when it comes to engineering or science, or over Stanford, MIT, or Harvard when it comes to science.

Case in point. Look at the backgrounds of Caltech's own graduate students and notice how not all that many of them came from Caltech undergrad. This stands in marked contrast to what happens at the graduate schools at MIT, where the most highly represented undergraduate school is, unsurprisingly, MIT. You might reply that part of that has to do with the fact that certain Caltech departments don't like taking its own undergrads for graduate study, but that is only serves as another reason not to go to Caltech for undergrad, because it means that by doing so, you reduce your chances of going to Caltech for grad.

<<<tech\_fan>>>

itsallgood -- If all you mean is engineering, then you should make it precise when you say "higher ranked" that you mean engineering. Sometimes it seems like you're attacking the entire school, and most people won't read your very top post since this is such a long debate. It also undermines the credibility of your point.

The bottom line is that it would be easy to beat up any school by focusing on one area that is not a major focus and saying "look, here are three schools that are better." Most students coming to Caltech aren't even sure exactly what aspect of science/engineering they're most interested in, and for them the overall quality matters more. As far as overall undergraduate analytically-oriented education, I'd ask you to read the first half of this thread and respond (if you can) to my points proving why, for sheer "value added" the education here is the best anywhere.

<<<itsallgood>>>

"Oh, and note also that for all the infinite wisdom of the USNews rankings Berkeley's undergrad program is ranked something like 20 spots lower than ours last I checked."

Ben, here's the latest USnews rating of Engineering programs from their website. Where did you get your info that CalTech beat Berkeley?

Best Undergraduate Engineering Programs  
(At schools whose highest degree is a doctorate)

Rank/School Peer  
assessment

score

(5.0 = highest)

1. Massachusetts Inst. of Technology 4.9
2. Stanford University (CA) 4.8
3. University of California Berkeley \* 4.7

<<<sakky>>>

Now in itsallgood's defense, let me deal with the Stanford letter.

First of all, I find it ironic indeed that such a letter would come from Stanford, which we all know to be a school that is grade inflated. If the Stanford administration really believed what was in the letter, then why doesn't Stanford itself become more Cal-tech-ish in its grading?

Secondly, I have to say that graduation rate is in fact a valid metric to be used to assess whether a school is good or not. Let's face it. People don't just go to college just because it's fun to go to college. You go to college to get a degree. Those schools that don't facilitate its students being able to get a degree, whatever those reasons might be, deserve to get dinged for that.

And like I said, I respect the fact that Caltech wants to be rigorous. That's not the issue. Just because you're rigorous doesn't mean that you

necessarily have to have a low graduation rate, relative to your peer schools. You can simply admit fewer students - making sure that those you do admit truly can handle it. After all, I think we can all agree that Johns Hopkins Medical School is unbelievably rigorous, yet almost 100% of all students who matriculate there graduate with their MD. I would also point to the LFM program at MIT (basically the combined MS in engineering + MBA from the Sloan School), which is also indisputably rigorous (for you are getting 2 master's degrees in 2 years, which is the time you would normally need to get just 1 master's), yet every single MIT LFM student in the history of the program (which has been around since 1988) has managed to graduate. The point is, you can still have rigor and a high graduation rate at the same time.

<<<tech\_fan>>>

sakky -- note that your major metric of quality that might make up for the difficulty here is success with respect to graduate schools, etc. How shallow is that? Don't you realize that for many of us the learning and the intense environment are even more valuable and rewarding? It might not be right for everyone, but we're not recruiting everyone.

But if you want to talk about graduate schools, etc., just one particular example: last year two of the graduate students admitted to Princeton (uncontroversially a nearly unbeatable name in math) for math were from Caltech. No other major U.S. university (all of which are almost an order of magnitude larger than Caltech) had more than one. And this is not uncommon.

So when you remark on Caltech's career and graduate school success, you fail to keep in mind that we have 900 undergraduates here total. You're not likely to know someone who graduated. MIT churns out 1000 kids a YEAR. Harvard twice that. When you look at that and consider the Princeton example above, you begin to gain some understanding of just how disproportionate Caltech's influence is.

Anyway, I'd just like to point out that this debate, which you are losing, is pointless. Maybe it's not nice to do what we're doing. Who cares? We're going to keep doing it because the Institute as a whole values rigor in teaching and grading more than pleasing you and people like you. What is the point of your tirades?

<<<tech\_fan>>>

itsallgood -- note I said the UNDERGRAD program, overall. Go look at the granddaddy listing at  
<url>[http://www.usnews.com/usnews/edu/college/rankings/brief/natudoc/tier1/t1natudoc\\_brief.php](http://www.usnews.com/usnews/edu/college/rankings/brief/natudoc/tier1/t1natudoc_brief.php)</url>

<<<itsallgood>>>

Ben, your link has NOTHING to do with Engineering. That's the overall ranking.

Here's the Engineering link.



<url>[http://www.usnews.com/usnews/edu/college/rankings/brief/engineering/pd/topprogs\\_withphd\\_brief.php](http://www.usnews.com/usnews/edu/college/rankings/brief/engineering/pd/topprogs_withphd_brief.php)</url>

<<<tech\_fan>>>

Yes, itsallgood, I know that. My point is that most undergraduates thinking about Caltech want the best overall undergrad education around (usually with an analytical bent) not specifically the engineering program. The overall listing, though absurd, makes the most sense for them.

<<<sakky>>>

Look, Ben Golub, while I can't speak for itsallgood's motivations, I can speak for myself. I am not out to castigate Caltech. In fact, I respect Caltech as an undisputed member of the elite 6 - being HYPSMC.

But the point is, graduation rate is in fact a weakness of Caltech and it is something that Caltech should work on. If Caltech wants to get better as a school, then Caltech should address its weaknesses. Hence, I think it's entirely fair for Caltech to be called out for its relatively low graduation rate. If you want to get better, you have to work on your weaknesses. We all know that Caltech is a top-notch science and engineering school. But graduation rate is a problem. I don't think it does anybody any favors by pretending that it's not a problem. In the beginning of his NBA career, Michael Jordan was criticized, and rightfully so, for not being a good team player, and not being a good long-range shooter. He was a brilliant individual slasher, but not a good team player and not a good shooter. Only when he eliminated his weaknesses by learning how to integrate himself with the team and learning how to shoot from downtown did he finally become the greatest player in history. What would MJ have become if nobody ever pointed out his weaknesses, and so he simply remained the same player he was when he entered the league?

I believe that Caltech in fact loses a lot of very good talent who are scared off by the low graduation rate. I believe there are quite a few students who would have been able to succeed at Caltech, but, as itsallgood has pointed out, don't want to take the chance that they might flunk out, so they end up at HYPSM. I think it's a bit unfair to disparage all of these students by impugning them as unworthy or stupid. Not everybody likes to take chances with their future. After all, if HYPSM really are so unworthy, then why is it that Caltech's graduate programs have so many students who came from HYPSM?

<<<itsallgood>>>

Ben, you were wrong about Gordon Moore's background --what a gaffe that was--and now about the USNews rankings. Really sloppy work.

I find it hard to believe that you are either a Princeton grad or a current CalTech student or a application reader. In any case, if you aren't a total fraud, you certainly don't represent either institution with any distinction.

Honestly, I now suspect every statement you've made.

<<<tech\_fan>>>

sakky -- I've read your posts and understood your points. The administrators, faculty, and students who determine long-term Caltech policy are well aware of tradeoffs here.

We think it's important for there still to be a place where grades are fairly uninflated, where standards are unquestionably very high, that nobody makes fun of for being a creampuff school.

We know this is not the fad in American education today. Caltech has outlived a lot of fads and is still going strong. I'm fairly sure that when the public notices the slipping standards in the US and the rising ones in India and China, the push to shape up will be huge, and Caltech will be right there leading the way, as it has been in that respect for decades.

Top universities shouldn't all be the same and shouldn't all have the same priorities. Harvard has theirs, let us have ours.

<<<tech\_fan>>>

Umm, itsallgood, I never claimed that Caltech outranked Berkeley in engineering. I emphasized multiple times that I was talking about the overall undergraduate program. Why don't you get a quote -- even better, learn to read?

I also never claimed to be a Princeton graduate -- I took all of my math and physics there as a high school senior because I had run out of courses in high school. Read carefully.

Oh, and the ad hominem attacks certainly don't reflect well on your standing in this debate. You are becoming progressively less able to discuss its substance. Plus, if you don't believe me about something, why don't you look me up? My full name is right there, unlike yours.

That's all.

<<<tech\_fan>>>

Thank you for your sympathy, it's important to me. You show all the debating skill and honor that so well characterized the PrincetonReview boards in their heyday. Oh, and if you'd really like to see how foolish you are, refer to <url><http://www.its.caltech.edu/~beng/></url>

But I must thank you for leaving it so clear who won this debate. While I've never wavered from the main points, you have quickly slid down to nonsense and ad hominem attacks. How sad for you. But again, you have my gratitude.

<<<CWatson42>>>

As someone who was admitted EA and intends fully to attend Caltech next year, I'd like to put in my two cents. The fact that Caltech's graduation rate is not 99-100% is, in my opinion, a good thing. I want to be pushed as hard as is possible because I know that I will be getting a better education than I can anywhere else. Granted, I am more interested in math and physics than in engineering, but I am glad to see that I'm not going to get another piece of paper handed to me; you see, unlike most people,

the people going to Caltech are going to college to learn, not just for that piece of paper and a high figure salary.

<<<sakky>>>

Ben Golub, you really think I am losing this debate? So if you are winning, then who have you managed to convinced to be on your side? I believe I got itsallgood in my corner. So tell me again, who's losing?

Look, you have complained about ad-hominem attacks from itsallgood. I don't like adhominem attacks either. So I don't think it's proper for anybody to insinuate that somebody is losing.

You have also displayed a rather strong sense of, well, let me be frank - institutional arrogance (note, I am not saying that you are personally arrogant, but rather I am calling Caltech as possibly being arrogant). Basically, you're saying, this is the way we're going to do it, and if other people don't like it, too bad. Fine. Fair enough. But when strong students decide that they don't want to go to Caltech because of its purported 'rigor', then you have nobody to blame for that but yourself. It is precisely this resistance to change and 'not-invented-here' syndrome, and basically, a categorical refusal to learn from others that hinders certain organizations from getting better.

Besides, look at it this way. You talk about a story of Caltech math students getting into the Princeton graduate math program, and you compare that to the size of MIT and Harvard, as proof of the supposedly disproportionately large influence that Caltech has. Oh really? Does it really prove that? First of all, the vast majority of Harvard students study humanities or social sciences, so clearly they would have no interest in going to a math graduate program. The vast majority of MIT students study engineering, and engineering students generally are not interested in getting graduate math degrees. Hence, the fact that MIT and Harvard have larger total student bodies does not by itself show that Caltech has a disproportionate influence on anything. What you should have been talking about are the number of MIT math majors vs. the number of Harvard math majors vs. the number of Caltech math majors. What does it matter if Harvard graduates hundreds and hundreds of English and Psychology majors? What does that have to do with who has a more disproportionate influence on math?

Furthermore, do you really think that Caltech has such a disproportionate degree of influence on graduate-school admission? Then look at Caltech's own graduate departments (the ones that actually admit Caltech undergrads) and I think you would concede that there probably ought to be more former Caltech undergrads. After all, it would be 'homefield advantage' coupled with the fact that nobody really likes to move, and so Caltech undergrads would probably feel highly comfortable at Caltech graduate school. Yet Caltech graduate school seems to admit plenty of HYPISM students. I am not aware of any evidence that Caltech undergrads enjoy any serious leg up on HYPISM students when it comes to Caltech graduate admissions.

<<<CWatson42>>>

I'd also like to add that of all the people I have seen posting on these forums, Ben Golub is one of the most well-spoken, patient, and

respectable, so please don't sink to personal attacks--that's not what these forums are for.

<<<tech\_fan>>>

sakky -- I don't know your background, but there is a general ethos at most places that it's not great to stay where you went for undergrad. Contrary to your unfounded assertion that "nobody really likes to move" most people in their early 20s would love to see new places and meet new people. Have you been around college seniors recently?

Personally, I love Caltech, but four years here will be enough. Then it'll be time to go elsewhere and enjoy the fruits of the rigorous training.

Oh, by the way, MIT and Harvard and Princeton all have way more math majors per year than Caltech.

<<<tech\_fan>>>

CWatson -- good post (first one) and thanks a bunch (second one). See you next year :-)

<<<sakky>>>

Now, let me say the following. I'd like to think I'm a fair guy, so I would point out that Caltech's graduation rate today is far better than it was in the past. An 89% graduation rate in 6 years is actually really really good for Caltech, relative to what used to happen in the past.

But that just goes to illustrate one of the points I have been making. I think we can all agree that Caltech is still extremely rigorous today, despite the fact that far more Caltech undergrads actually manage to graduate today than, say, a generation ago. Hence, that serves to bolster what I've been saying - you can in fact boost your graduation rate while still maintaining rigor. They are not mutually exclusive.

The issue is not that Caltech hasn't made substantial progress on this front. It has indeed. But I believe there is still more that can be done. I believe the real problem is a cultural belief that rigor necessarily means a lower graduation rate, which I don't believe is the case. You can have both rigor and a high graduation rate. Is it easy to combine both? Of course not. But Caltech is an elite school, and elite schools are supposed to be able to do things that aren't easy.

<<<tech\_fan>>>

sakky -- you do seem to be a fair guy, and we agree more than we disagree. But I want to point out that going against the grain and not signing up for the popular fad of maximizing yields and graduation rates is not necessarily evidence of institutional arrogance.

Sometimes the popular thing to do is the right thing, and at other times the right thing to do is to go against the grain. I think this case falls into the latter category, but you are free to disagree.

<<<sakky>>>

Ben Golub, do you really think that people really like moving around, after they graduate from undergrad?

Then why is it that far and away the most popular grad-school destination for MIT undergrads is... MIT? And what's the 2nd most popular grad-school destination for MIT undergrads? Harvard. I guess these MIT people don't really want to move around.

<url><http://web.mit.edu/facts/graduation.shtml></url>

Furthermore, the largest chunk of Harvard Law Students came from ... Harvard College. The largest chunk of Harvard Medical Students came from ...Harvard College. Similarly, the largest chunk of Stanford graduate students did their undergrad at either Stanford or Berkeley (only 40 minutes away). Not a whole lot of moving around going on there.

<<<tech\_fan>>>

Keep in mind Stanford and Berkeley are cities compared to Caltech, size-wise. While a cozy place is great for undergrads, many of us would like another sort of environment for grad school. I don't think how many Caltech undergrads stay for grad school is a great metric. If you could get your hands on data saying how many of those who APPLIED got in, that would be a different and more interesting story.

<<<itsallgood>>>

Wow, that's an eye-opener. Illinois Urban beats CalTech too.

Hmmm.

Makes you wonder is CalTech is the elite school it makes out to be.

Maybe it's just a very small, good school, and that makes it seem elite.

<<<itsallgood>>>

Ben, have you been forthright with everyone about the smog in Pasadena area. Or would you even know? C'mon, are you really a CalTech student?

<<<tech\_fan>>>

... a \*\*\*\* (webhappy thus honored you in another thread)

For a while there you were occasionally saying some things at least worth refuting, but now you're just wasting my time. I wish you all the happiness in the world at Georgia Tech.

I am off to do my real analysis homework, which is harder here than at other places ;-)

<<<sakky>>>

The point was to simply say that a lot of people clearly don't like to move around too much, for whatever reason that might be.

The other point is that clearly HYPSM are highly respected programs, for if they were not, then the Caltech graduate programs would be stupid for admitting as many HYPSM graduates as they do. And I think we can all agree that the Caltech graduate programs are not stupid. Hence, people can laugh and poke fun at the high grade inflation at HYPS all they want, but at the

end of the day, a good number of HYPS students manage to get into Caltech graduate programs. So that grade inflation obviously didn't hurt them too badly.

However, what I am seeing is that Caltech seems to be playing a double game. On the one hand, Caltech decries the trend of higher yields and higher graduation rates, saying that it is a possible threat to rigor. On the other hand, Caltech has (quietly and not without resistance) in fact, boosted its graduation rate. I have noticed that the Caltech graduation rate is substantially higher than it was just a few years ago.

I still don't see why it is really so controversial for Caltech to boost its graduation rate with the simple step of admitting less students, and in particular, not admitting those borderline students. Why is that such a terrible thing? Caltech knows full well who these borderline students are, or could fairly easily find out. For example, Caltech could go back to its historical data of each admitted class, categorize and rank them in deciles, and then look at the graduation rate of each decile. Or some other more involved statistical analysis. From that, find out which attributes serve as 'warning flags', and simply admit less future candidates that have lots of these warning flags.

<<<tech\_fan>>>

sakky -- as I explained before: I do admissions, and we do all these things. It's just completely false to say that "Caltech knows full well who these borderline students are, or could fairly easily find out." You can't guarantee 99% graduation rates at Caltech except by seeing the future or changing the actual education. Plus, a lot of the kids who did great at great high schools end up not doing so well here (complacency or something). It's a complicated question. If you think you can do a better job than admissions does, come and do so.

<<<sakky>>>

I thought you were off to do your analysis homework.

It is obviously true that admissions is not an exact science and that you can never know with 100% certainty who is going to succeed and who isn't.

But just because it's not an exact science doesn't mean that you can't make good predictions. For example, you can take any entering class and figure out with fairly strong certitude who among that class will probably end up doing better than others. No guarantees, of course, but the likelihood is there. The guy with straight perfects on all standardized test scores, who is valedictorian with straight A's, and who won all kinds of math and science awards, and has mind-shattering rec's and essays will probably do better than the guy who got less than perfect test scores, who wasn't valedictorian, and who has less awards and whose recs/essays are not that good, even though both applicants got accepted.

On a larger scale, you simply take all the admittees from years past, put it into a computer running statistical software like JMP or Minitab (or heck, get some of the Caltech CS students to write a custom program), and basically run a large-scale regression using Design of Experiments techniques, to determine which attribute is statistically significant.

Then you do the same for several other classes of years past as a check and to make your data more significant. Eventually you will be able to flag certain attributes as truly significant. It really is no different from the data-mining techniques that all large companies use to ascertain which customers are likely to buy which products.

The point is, that every single admitted class has some students who just barely got in. If 400 spots were handed out, somebody came in as #400. Maybe you can't figure out exactly who is #400 (i.e. everybody between #351-400 looks basically the same), but you can divide out to some degree who is a very strong candidate in a given admitted class, and who is a less strong candidate in that same admitted class to at least some level of resolution. Then, Caltech can simply admit fewer students in that less-strong category. You can use the statistical results of the software to help you determine who is in that less-strong category.

You're not going to get all of the students who won't graduate, but you will get a good number of them. And, true, you will probably end up tossing out some students who could have graduated. But I wouldn't worry too much for them. Like I said, if you can get into Caltech, then you should be able to get into at least 1 of HYPISM.

<<<itsallgood>>>

If CalTech is tied with USC for Grad School Engineering, does that make USC an elite school.

Is Georgia Tech more elite.

Is Illinois Urbana elite.

Wow, what does that make MIT and Stanford.

<<<djcapelis>>>

I know that it may be generous to call me even borderline for Caltech, but I expect to thrive if I get in. It's very difficult to determine which people can survive there and which cannot from an application.

There's more to life than numbers. I don't envy admissions their jobs. I applied to Caltech for the same reasons that most people criticise it.

I do not want to float through college, I want intellectual stimulus and challenge. I do not want to graduate with a degree unless I deserve to do so. Caltech is one of the few schools that provides these opportunities and that's why I'm going. I could do fine without college at all so if I don't get a degree it's not going to really cause me much of a problem.

Of course, I already intend to start at least one company and have the framework set up completely for one (fiscal solvency isn't yet part of the company yet so I'm not calling it one until that stage comes into play)... so what employers are looking for concerns me less than it does most people.

But still, I doubt your points really concern the students Caltech is after.

<<<itsallgood>>>

dj, why go to CalTech when there are schools that are ranked and regarded as better?

And if you plan to run a company, you might consider UPenn Wharton or MIT on the East Coast or USC on the West. They have strong business schools too.

<<<itsallgood>>>

Stanford is probably the most famous for developing technology entrepreneurs. that might be the best bet for you if your company is based on high tech.

<<<tech\_fan>>>

itsallgood writes

<quote>why go to CalTech...?</quote>

And why \*\*\*\* on boards in a pathetic way?

Typically, only Harvard and Princeton attract "this school is overrated" \*\*\*\*. I guess we'll take itsallgood's presence as a sign of our immense prestige in the \*\*\*\* community ;-)

<<<h88>>>

I am applying to Caltech and I regard it as my first choice (oh and I want to major in EE). To make you feel better, I tried, as much as I can, to increase my odds of admissions and didn't apply for financial aid, and if you haven't yet figured from my posts, I am a junior and applying this year due to a certain circumstance. I could've applied to bunch of other schools (I'm only applying to Caltech and MIT) but I know I'm more keen into Caltech, and if I don't get in this year, I'll have another chance next year.

As for your point above, would you turn down a Princeton/Cornell/Harvard/Columbia acceptance for Purdue (USC, GA Tech, UIUC or whatever)? Purdue is ranked higher btw. I suspect you wouldn't, but your assertions are based on these rankings. The point is, don't take everything for granted, especially the usnwr ranking. They can be used as paths, but certainly not as the deciding factor.

And yes, I am aware of (and look forward to) what I'm going to encounter at Caltech (as djcapelis mentioned above).

[sarcasm]Chances are high, but are you related to NYCFan, btw?[sarcasm]

<<<itsallgood>>>

h88, if you're talking to me:

I would choose Stanford or MIT for Engineering.

I would choose Harvard or Stanford for most of the Hard Sciences

I would choose UPenn Wharton for Business

I would avoid the excellent publics such as Berkeley, Illinois, etc. Too big.



<<<h88>>>

itsallgood: ALL your posts were based on Engineering - yet you start speaking about Business and Sciences (where Caltech would most certainly win). [Refer to the undergrad/grad <b>Engineering</b> rankings to realize what I was trying to point out in my other post]

<quote><a rel="nofollow" href="/profile/itsallgood">itsallgood</a> wrote:</quote>

I guess that would most certainly sound resonable.

<<<rtkysg>>>

itsallgood,

Do you know what are you talking about, first of all Ben Golub IS a member of admission committee at Caltech. You can find his name in Caltech website. I would defend Caltech engineering (since I, and not Ben Golub, was in Caltech engineering) later on when I'm free. Wait for my return :)

Before that, THINK about HOW the undergraduate engineering ranking is made, is it really valid?

<<<Samp0320>>>

One statement in that flurry of posts caught my eye: that a degree from Caltech means something. That is such a true statement. In my opinion, by and of themselves, the only undergraduate degrees that mean something these days are from Caltech and MIT. The rest of the elite schools have no standard core and one is able to get a degree in gender studies or some similarly political and pathetic field without proving anything.

<<<alleya>>>

sakky, I want to respond to a few of your comments that I think got lost above:

<quote>why use shadow grades, or pass/fail for just the first couple of terms? Why not use them for ALL terms? What's so bad about that? If it's OK to do that for the first 2 terms, then why isn't it OK for all the terms?</quote>

You must be kidding. Do you really propose that we just give students P/F grades the entire time they're here?

<quote>You say that Caltech makes its graduation rates public, and to paraphrase and extend what you are saying, if somebody comes to Caltech and then flunks out, it's basically his own fault, for he should have known that it was rigorous. Come on, don't you think that's a bit cold - sort of like blaming the victim? It's like the Army telling all soldiers who die in battle that it's their own fault - they should have known that joining the Army was dangerous and if they didn't want to die, they shouldn't have joined.</quote>

I don't think this is a valid analogy. Maybe it's just because I come from a Southern family, but I've always seen serving in the army as a sacrifice people make, giving something for the country. As such, the country has an obligation to protect what they're giving as well as possible, in the hope that they don't have to make the ultimate sacrifice. As for college, Caltech doesn't need me. There are many more people out there that could probably do better here than I am, and give more back to the school than I

have. It is a privilege for me to be here, and I don't think Caltech has an obligation to shepherd me through and make sure I survive. Quite the contrary -- I like that I'm being challenged to my fullest. I like that it's not a given that I'll graduate with honors. I revel in the fact that Caltech has given me an environment where I can work hard to be mediocre. That's what I want, and I knew it coming in. Yes, I do think the students who leave made a bad choice. We all make bad choices every once in a while. It's nothing to be ashamed of or looked down on.

I also don't think leaving Caltech is the disaster you make it out to be. I also know the girl Ben mentioned who transferred to Duke, I knew a guy who transferred to Berkley, and I know another that I think is planning to transfer to Stanford. Many of these people did not have stellar GPA's. <quote>All of this might actually be defensible if Caltech really did provide a huge boost to its graduates relative to its peers. But does it? Do Caltech graduates really enjoy substantially greater access to graduate school and/or employers than do HYPISM graduates? Is the Caltech brand-name really substantially better than those of HYPISM?</quote> Maybe I'm alone in this, but I was very careful NOT to choose a school based on brand-name appeal. I wanted to make sure that I went to the school that would give me an education best suited to my needs. If you don't go to the school which is going to give you the best education, the brand-name is not much more than an empty label. It's hilarious to me how hung up everyone is on which school is "better". In my opinion, the school itself is not nearly as important as the interplay between the student and the school. The student needs to choose the school that's going to help him/her the most in achieving a good education. When did choosing a college start being about choosing a brand-name?

As for grad schools, it's incredibly unreliable. Some departments won't admit Caltech undergrads. In many, the grads take many of the same courses as an undergrad, so going elsewhere will give students a broader range of new courses to choose between. Those HYPISM students who come in and "do just fine" in the physics program, for example, often have to start with the same classes that Caltech undergrad JUNIORS take. All of my CS courses are half grad, half undergrad, and if I stayed here for grad school, I'd run out of courses to take. There are so many factors that go into a student deciding whether to stay or not that it's really not worth comparing. Also, where you want to go to grad school really should not factor into your search for an undergrad school. For instance, I considered not coming to Caltech as an undergrad so that I could do grad here. Now I know that Caltech doesn't have the branch of CS I'm interested in, so I wouldn't have wanted to come here for grad school anyways. If I'd declined Caltech so that I could come here for grad, I would have missed out.

<quote>You have also displayed a rather strong sense of, well, let me be frank - institutional arrogance (note, I am not saying that you are personally arrogant, but rather I am calling Caltech as possibly being arrogant). Basically, you're saying, this is the way we're going to do it, and if other people don't like it, too bad. Fine. Fair enough. But when strong students decide that they don't want to go to Caltech because of its purported 'rigor', then you have nobody to blame for that but yourself.</quote>

Maybe so, but there has been a demand for this kind of education for over a hundred years, and as long as there are still students who continue to flood us with applications, I don't see why it's so horrible to keep doing things the way we are. Wouldn't it be better to have many different types of college education out there, rather than half a dozen schools with no differences whatsoever? Who's to say HYPSM are doing it "better"? Why not just say they're doing it differently?

<<<djcapelis>>>

<quote>dj, why go to CalTech when there are schools that are ranked and regarded as better?</quote>

This thread has numerous reasons, posts 31, 34 and 8 and the article cited in post 32 all contain very good reasons why an education at Caltech is not only a worthwhile pursuit, but hopefully a lot of fun.

Ranking schools by numbers... almost as bad as looking at people by numbers, and just about as difficult. There's a lot more to a school than what is shown in those rankings.

As for picking schools based on their business program, that's not right for me. I intend to major in CS because that's what I enjoy doing. True, Caltech is probably not the best school for CS either, but I'm really looking for an environment that is creative. Caltech students create. Creativity allows creation of companies, research and products. The environment of Caltech is what I'm used to at my current school and is what I'm looking for.

Very few schools have this. MIT is the only one that comes to mind but I prefer small schools. (I'd be happy to go to MIT as well, but right now I'm hoping for Caltech.)

Does that explain things for you?

<<<rtykysg>>>

"If CalTech is tied with USC for Grad School Engineering, does that make USC an elite school.

Is Georgia Tech more elite.

Is Illinois Urbana elite.

Wow, what does that make MIT and Stanford."

itsallgood,

Tell me if you are intelligent enough to debate with me... now check the ranking of Caltech for peer assesment score, employer assessment score, GRE score, selectivity, and % of faculty in the National Academy of Engrg. TELL ME WHAT YOU SEE for USC, Gatech and Illinois !!!

Don't give me crap about your preference, Stanford Engineering has more % of Caltech engineering rejects than the other way around !!! What does it

imply? Tell me if you're kidding about your comments about Caltech engineering... don't you think your arguments are rather foolish?

Have you ever read the autobiography of Jack Welch, GE ex-CEO and Larry Ellison ? Which engineering grads first come into their mind when picking their employees? Caltech and MIT, you can buy the book and verify yourself!!!

<<<Amused>>>

"One statement in that flurry of posts caught my eye: that a degree from Caltech means something. That is such a true statement. In my opinion, by and of themselves, the only undergraduate degrees that mean something these days are from Caltech and MIT. The rest of the elite schools have no standard core and one is able to get a degree in gender studies or some similarly political and pathetic field without proving anything."

So you're saying that only Engineering, math, and science are worthwhile degrees?

<<<joemama>>>

Well this is a very lively thread. A lot of good info from a lot of different people.

Please clarify what has been said or often implied here because it definitely bumps up against the conventional wisdom I've heard.

Are MIT's, Stanford's and Berkeley's engineering programs (all schools I've applied to) really easier and less demanding than CalTech's?

I've met so students at these schools and they thought they had it rough.

Also, do employers pay higher salaries to CalTech grads than those from the other schools I've mentioned because they are so much better.

Thanks in advance.

<<<rthysg>>>

joemama,

"Are MIT's, Stanford's and Berkeley's engineering programs (all schools I've applied to) really easier and less demanding than CalTech's? "

Yes, Caltech is much more demanding. I was in Caltech for undergrad, MIT for grad, and I've been to some Berkeley lectures when I was in California. I know about Stanford from many of my friends who are studying there.

"Also, do employers pay higher salaries to CalTech grads than those from the other schools I've mentioned because they are so much better."

On the average yes, employers look very highly on Caltech because it's purely meritocracy, i.e. if you brilliant you're in, if not then you're

out. There's no bargaining with non-academic EC like in Stanford for admission. The common exception for my claim is MIT.

<<<rtkysg>>>  
Sakky,

It may be easier to enter MIT grad schools from Caltech than from MIT undergrad school itself. Most of my Caltech friends \*who applied\* to MIT grad school are accepted. (Normally Caltech students would know whether he/she would be accepted or not prior to submitting his/her application). The number of Caltech grads who get into MIT grad schools (by percentage) are perhaps larger than MIT grads themselves and obviously larger than Stanford or Cornell or Princeton, etc.

<<<joemama>>>  
Thanks. Appreciate your help. I had an idea. I was talking to my Dad who knows some people in Human Resources for a few different semiconductor companies in Southern and Northern California. He going to pose the question to them. I hope to report back in a few days.

Again, Thanks.

<<<sleepybunny>>>  
Can you post the answer when you get them, joemama?

<<<joemama>>>  
will do. Stay tuned.

<<<Samp0320>>>  
Amused, in my opinion Math, Science, and Engineering degrees are the most worthwhile and relevant, yes. What I was saying, though, is that Gay and Lesbian studies or absolute crap like that cheapen the degrees in every department at a school which offers such a department. If a degree could mean coursework like that, then by and of itself the piece of paper that is the diploma means next to nothing.

<<<Samp0320>>>  
Think about it...if someone presents as a graduate of an ivy league school, their achievement cannot be evaluated without knowing what their major was.

<<<rtkysg>>>  
"Amused, in my opinion Math, Science, and Engineering degrees are the most worthwhile and relevant, yes"

LOL, this is the view of a typical Caltech student. Anyway, Samp, I don't really think math degree is commercially worthwhile and you forgot to mention Law, Medical, Economy and Business degree which are just as important.

<<<sleepybunny>>>  
if a student chose to apply transfer out of caltech and got accepted somewhere else, can she stay at caltech if she decided to change her mind and not accept the transfer offer?

<<<tech\_fan>>>

Yep! This happened just recently to a friend of mine. She got into Stanford but decided not to go. Moreover, even if you take a leave for a year to go try another school, you can usually come back if you decide you prefer Caltech (someone I know tried Duke, stayed for a while, and came back here).

<<<Samp0320>>>

I said that including Business, Medicine, Law ect. under the social science umbrella.

<<<sakky>>>

Now let me respond to some of the quotes given before:

<quote>You must be kidding. Do you really propose that we just give students P/F grades the entire time they're here?</quote>

No, I never said that. I said that I believe Caltech needs to look at all of the reasons as to why its graduation rate is lower than its peer schools (HYPSM).

<quote>I don't think this is a valid analogy. Maybe it's just because I come from a Southern family, but I've always seen serving in the army as a sacrifice people make, giving something for the country. As such, the country has an obligation to protect what they're giving as well as possible, in the hope that they don't have to make the ultimate sacrifice. As for college, Caltech doesn't need me. There are many more people out there that could probably do better here than I am, and give more back to the school than I have. It is a privilege for me to be here, and I don't think Caltech has an obligation to shepherd me through and make sure I survive. Quite the contrary -- I like that I'm being challenged to my fullest. I like that it's not a given that I'll graduate with honors. I revel in the fact that Caltech has given me an environment where I can work hard to be mediocre. That's what I want, and I knew it coming in. Yes, I do think the students who leave made a bad choice. We all make bad choices every once in a while. It's nothing to be ashamed of or looked down on.</quote>

First of all, I think it's an entirely fair analogy when placed in the context of what Ben Golub said. Basically, to paraphrase what Ben Golub said is that Caltech is rigorous and if people don't like it, then they shouldn't come to Caltech, and by I think by reasonable implication, I can surmise that if people come to Caltech and do badly, then according to Ben Golub, that's their own stupid fault for choosing Caltech, and they have nobody to blame for that but themselves. I am pointing out that that's a tremendously cold way to go about providing an education. We're not talking about a bunch of scrub underachievers here, we're talking about some of the best students in the world, and to say that Caltech holds no responsibility at all if they do badly is quite off-putting. If that's what you think Caltech should do, that's your opinion. It is, however, my opinion that every school has a responsibility to ensure that whoever comes to the school is provided with every opportunity to succeed, and if you don't want to provide such an opportunity to certain people, then fine, don't admit them in the first place. It's far better to not admit

certain students than to bring in some students only to watch them flail around and fail.

You also talk about making bad choices. and whether people should feel bad about them. The question is not whether people should personally feel bad about making certain choices, but about the stigma that society places. Let's face it. Right or wrong, society considers it to be shameful to be tagged as a 'college flunkie'. Right or wrong, society considers it to be highly desirable to have a college degree than not. You can look at how many jobs are out there that require a college degree, even if the job itself has nothing to do with anything that one would learn in college. Right or wrong, society makes a big distinction between somebody who has a college degree, and somebody who doesn't. Yes, we can talk about certain rare exceptions like Bill Gates, but by and large, unless you intend to start your own company, it is important to have a college degree, if for no other reason, than because it helps you to get a job. Hence, by and large, you are better off going to a no-name school and graduating, then going to a top-flight school, and flunking out. If you are good enough to get into Caltech, then you are clearly good enough to get into many other colleges. And the greater guarantee of a degree from somewhere else is something that people should consider carefully.

The flip side of that is that Caltech could better itself by offering a greater probability that those who come in will actually leave with a degree. This could be achieved by not bringing in borderline cases in the first place.

[I also don't think leaving Caltech is the disaster you make it out to be. I also know the girl Ben mentioned who transferred to Duke, I knew a guy who transferred to Berkley, and I know another that I think is planning to transfer to Stanford. Many of these people did not have stellar GPA's.]

I never said it was a disaster, and in fact, I give kudos to Caltech for being a lot better than most other schools.

But that's not the point. I'm sure you would agree that people who flunk out or get put on academic probation would have great difficulty in going to another top-flight school. And even that misses the greater point. Those people you cited who are trying to transfer to Berkeley or Stanford, you must agree, would have been better off if they had simply gone to Berkeley or Stanford as incoming freshman.

The point is that anytime any school (not just Caltech, but any school) brings in a student who, for whatever reason, doesn't graduate, that's a problem. It is of course true that no school will graduate 100% of its students. But that doesn't mean that you simply don't try. And in particular, Caltech graduates less of its students than its peer institutions (HYPSM). I believe Caltech should look at why that is the case and whether they can do something about it.

We're talking about flesh-and-blood human beings here who have feelings and have futures. If somebody comes to Caltech and for whatever reason decides it is not right for them, then that's a flesh-and-blood problem.

<quote>Maybe I'm alone in this, but I was very careful NOT to choose a school based on brand-name appeal. I wanted to make sure that I went to the school that would give me an education best suited to my needs.</quote>

And here, alleya, I think you have implicitly conceded the problem. You might not chosen a school based on whether that school would give you an education best suited to your needs. Fine. Fair enough. But clearly, judging from the Caltech graduation rate, quite a few people did not do that. Quite a few people came to Caltech even though it was not going to give them an education that was best suited for their needs (for if they did, then why wouldn't they be graduating?).

<quote>Maybe so, but there has been a demand for this kind of education for over a hundered years, and as long as there are still students who continue to flood us with applications, I don't see why it's so horrible to keep doing things the way we are. Wouldn't it be better to have many different types of college education out there, rather than half a dozen schools with no differences whatsoever? Who's to say HYPISM are doing it "better"? Why not just say they're doing it differently?</quote>

Well, to follow this logic, every highly-demanded school will never have to make anything better. For example, when I point out problems at Berkeley (which I often do), then Berkeley can argue "Well, lots and lots of people apply to Berkeley, so clearly there is a demand, so that means that we never have to fix any of our problems ever. Why should we care about making things better if there is demand for us?".

The issue is not whether Caltech is being horrible. It's about making Caltech better. I am not saying that HYPISM do everything better. However, what I would say is that I doubt that anybody at Caltech would point to its graduation rate vis-a-vis HYPISM and say that they are 'proud' of it. Nobody is 'proud' of having a lower graduation rate than its peers.

<<<sakky>>>  
<quote>Sakky,

It may be easier to enter MIT grad schools from Caltech than from MIT undergrad school itself. Most of my Caltech friends \*who applied\* to MIT grad school are accepted. (Normally Caltech students would know whether he/she would be accepted or not prior to submitting his/her application). The number of Caltech grads who get into MIT grad schools (by percentage) are perhaps larger than MIT grads themselves and obviously larger than Stanford or Cornell or Princeton, etc.</quote>

I believe this is an unsupported assertion, and in any case, I would like to see the numbers that support this assertion. I would argue that those Caltech students who apply to MIT graduate school are clearly a highly self-selective group and so it wouldn't surprise me if lots of students within that highly self-selective group got in. That doesn't tell me anything about people from Caltech who would have wanted to go to MIT for graduate school but don't apply because they suspect they can't get in (either because their grades aren't good enough, or whatever).



Furthermore, it especially doesn't tell me anything about those people who come to Caltech intending to go to MIT for graduate school, but then don't even manage to graduate from Caltech, either because they transfer elsewhere or because they simply flunk out completely. And that's the real crux of what I've been saying. I have always maintained that Caltech is really really good for those students who can handle it. But what about those who can't? Those students are people too, and it doesn't seem fair to simply ignore them out of hand.

[On the average yes, employers look very highly on Caltech because it's purely meritocracy, i.e. if you brilliant you're in, if not then you're out. There's no bargaining with non-academic EC like in Stanford for admission. The common exception for my claim is MIT]

I'm afraid that this is a bit of a non-sequitur. As horrible as it is to say, merit and employment are not as tightly coupled as many people think. Surely we've all heard the phrase "It's not what you know, it's who you know". Right or wrong, many jobs are given out for reasons that don't have a whole lot to do with merit. Things like contacts, networking, and brand-name come into play. Stanford people hire lots of other Stanford people because of the Stanford connection. Same thing with Harvard people. The other aspect of the 'game' is that employers might hire somebody from an extremely famous school (like Harvard or Stanford) even if they think that another candidate is probably better, simply because they know that the Harvard or Stanford brand-name is better for attracting clients. I-banks and consulting companies are notorious for doing that - they want to be able to show to customers that they have a Harvard or Stanford guy. Again, like it or not, Caltech doesn't have the brand-name appeal that Harvard or Stanford does. Even if it is in a bullshi\* major, the fact that it has a brand-name school behind it gives it customer desirability.

Look, I don't want this to turn into an emotional argument. Caltech is an elite school, I never said otherwise. What I am saying is that from a pure marketing standpoint, Caltech has a weakness when it comes to its graduation rate. Certain brilliant students who might otherwise have gone to Caltech might be off-put by its lower-than-its-peers graduation rate, and end up Harvard or Stanford (or even MIT) for its greater assurance of graduation. And I think it's a tremendously dangerous thing to simply back-handedly dismiss these students as 'not tough enough' or 'not worthy enough' to attend Caltech. Many of these students could have done just fine at Caltech, it's just that they prefer the greater assurance of graduation elsewhere. So the question is, does Caltech want to compete for these students or not? I believe that if Caltech really wants to be the best tech school in the land, it will have to compete for the best tech students, including those tech students who desire that high assurance of graduation. It is not an irrational or "wimpy" thing to want a high assurance of graduation.

<<<rtkysg>>>

LOL! Sakky, I think you've mis-interpreted some of my comments about employment. When I said recruiters looked very highly on Caltech students, it didn't necessarily translate to easy employment. In fact many not so technical companies are driven away from Caltech, nevertheless it still

commands highest respect (arguably slightly higher than Stanford) in terms of pure academic achievement.

<<<CotoDeCasa>>>

<url><http://www.pma.caltech.edu/GSR/facresearch.html></url>

The Physics Faculty and Their Research(caltech)

BARISH, Barry C.

Ph.D., Berkeley, 1962

Frank J. Roschek Professor of Physics

Ph.D., Berkeley, 1980

Ph.D., Chicago, 1982

FRAUTSCHI, Steven C.

Ph.D., Stanford, 1958

GOLDREICH, Peter M.

Ph.D., Cornell, 1960

GOODSTEIN, David L.

Ph.D., Washington, 1965

astro Assistant Professor of Physics,

Ph.D. Berkeley, 2000

Ph.D. Berkeley, 1993

HITLIN, David G.

Ph.D., Columbia, 1968

HUGHES, Emlyn W.

Ph.D., Columbia, 1987

KAMIONKOWSKI, Marc

Ph.D., Chicago, 1991

KAPUSTIN, Anton

Ph.D., Caltech, 1997

KIMBLE, H. Jeff

Ph.D., Rochester, 1978

KITAEV, Alexei

Theoretical physics, computer science  
KOONIN, Steven E.

[\[emailprotected\]](/cdn-cgi/l/email-protection) Professor of  
Physics, Ph.D., MIT, 1975  
Theoretical nuclear and many-body physics  
LANGE, Andrew E.

[\[emailprotected\]](/cdn-cgi/l/email-protection) Marvin L. Goldberger  
Professor of Physics  
Ph.D., Berkeley, 1987  
Experimental cosmology  
LIBBRECHT, Kenneth G.

Ph.D., Princeton, 1984  
Gravitational wave detection; crystal growth  
MABUCHI, Hideo  
Ph.D., Caltech, 1998

MARTIN, Christopher R.

[\[emailprotected\]](/cdn-cgi/l/email-protection) Professor of  
Physics, Ph.D., Berkeley, 1986  
Experimental UV, Optical and X-ray Astrophysics  
MCKEOWN, Robert D.

Ph.D., Princeton, 1979

NEWMAN, Harvey B.  
[\[emailprotected\]](/cdn-cgi/l/email-protection) Professor of  
Physics, Sc.D., MIT, 1973

OOGURI, Hiroshi  
Ph.D., Tokyo, 1989

PECK, Charles W.  
Physics, Ph.D., Caltech, 1964

PINE, Jerome  
Ph.D., Cornell, 1956

POLITZER, H. David  
Ph.D., Harvard, 1974

PORTER, Frank C.  
Ph.D., Berkeley, 1977

PRESKILL, John P.  
Ph.D., Harvard, 1980

PRINCE, Thomas A.  
, Ph.D., Chicago, 1978

KES, Michael L.  
Physics, Ph.D., Cornell, 1985

SCHERER, Axel  
Ph.D., New Mexico Institute, 1985

SCHWARZ, John H.  
Ph.D., Berkeley, 1966

Ph.D., Princeton, 1970

SOIFER, B. Thomas  
Ph.D., Cornell, 1972

Ph.D., Chicago, 1963  
Princeton, 1965

TOMBRELLO, Thomas A.

Ph.D., Rice, 1961

VOGT, Rochus E.

Ph.D., Chicago, 1961

WEINSTEIN, Alan J.  
Physics, Ph.D., Harvard, 1983

WISE, Mark. B.  
Ph.D., Stanford, 1980

YEH, Nai-Chang  
, Ph.D., MIT, 1988

ZEWAIL, Ahmed H.  
Ph.D., Pennsylvania, 1974

ZMUIDZINAS, Jonas  
Ph.D., Berkeley, 1987

<<<tech\_fan>>>

The point? This would be true at almost any university. How many Princeton mathematicians are Princeton-trained? (Not many.) Etc.

Indirectly, though, you've proved an important point. This list of faculty includes the most respected names in virtually every field of physics. The opportunity to work closely with such people is available at very few places.

<<<CWatson42>>>

Very few people end up teaching wherever they studied--a friend of mine whose dad has a Ph.D. in Civil Engineering said that his dad wouldn't have even been eligible for tenure if he stayed (don't remember which university though).

<<<CotoDeCasa>>>

>This list of faculty includes the most respected names in virtually every field of physics

8 from Berkeley 2 from Caltech

Caltech has 29 nobel prize winners. However only 6 are from Caltech UG.

<<<rtkysg>>>

30 Nobel prize winners. CotoDeCasa, dude, I wonder what you're trying to prove? I notice that you're like a buffoon blown by the wind giving irrelevant and rubbish comments.

<<<djcapelis>>>

I believe that we're also forgetting to remember just how few students Caltech even has. Somehow, even though Caltech is a spec of the college population there seems to be Caltech educated people everywhere along the cutting edge or highest realms of academia, none in great numbers, but a few everywhere that's important. Besides, do you really want all the Caltech people to just stay and teach at Caltech?

<<<CotoDeCasa>>>

Nice Try.

I think one person got twice. so 29 winners.

Quote.

Caltech was a pretty low quality place to go, it didn't really offer much in the way of a 'college experience'. The coursework was very rigorous, however, in many cases it seemed to emphasize covering more material instead of covering in great depth. I thought the core would give me a very solid foundation in math/physics but the classes seemed rushed and overall I think the coverage of the various fields was somewhat spotty.

<<<h88>>>

Eh? I don't get any of your comments! What are you trying to say, CotoDeCasa?

<<<CotoDeCasa>>>

Quote

Since graduating from Caltech, I have returned as a Microsoft recruiter, and for a couple of alumni functions. After my freshman year I seriously considered transferring elsewhere, but in the end I decided to stay. I have often thought about whether I made the right decision. Anyway, here's my thinking about this school. I'm writing this opinion as if to a high school student thinking of where to go to college.

Standards are really high at Caltech. About half of my class got the highest possible score on their SATs (1600 points). My total of math and verbal was 1579 which I still remember because this is the kind of place where such things are actually topics of discussion! I think almost every student got an 800 on the math part, it's only the verbal that was different. (This probably explains my lousy grammar.) It is really a pleasure to be with so many smart people who understand what you're talking about, who can follow a line of thought, and who have interesting things to say.

The teachers I had were outstanding. A number had either won a Nobel Prize or would later win one. I am tempted to drop names, but let's leave it at that. Sure the courses are challenging but if you are a good student, you love to study and learn new things, and so it's a pleasure, really. Students are treated well here. The administration is well organized. The student house system works well, especially for the many studious loners who would be isolated if housed in a regular dorm. The small student body and the small campus are nice and homey and you get a real feeling of belonging here. The narrow focus of the school is something to consider: if you want to be a scientist in one of the traditional hard sciences like physics, chemistry or biology, this is the place. For other things, like computer science or most engineering, it's only so-so. For other topics than science and engineering, the choice of courses is terribly narrow. I remember marveling over a UCLA catalog which offered a tremendous rainbow of things to study.

My feeling now, thirty years after graduation, is that college is a time of transition from being under your parent's roof to being a totally independent adult. The best thing a college can do is prepare you for success as an adult. And I'm not sure Caltech does the best job of that. First off, the social life is bad. Only about 30% of the students are women and that makes for a lot of lonely and sad guys. Secondly, it's such an ivory tower. The "Honor System" is an example of that. I think many students are attracted to the life of a scientist because it sounds like a noble calling - seeking truth and bettering humanity. The real world comes as a surprise. Grad students everywhere (not just Caltech) are treated like slave labor, helping their advisor to succeed and working for peanuts, with the time for their PhD dragged out for a shocking number of years. Then when they do get that PhD (the scientist's union card) they wind up in post-doc hell, trying to get on a tenure track or trying to get grants of their own, but mostly teaching for peanuts or doing the grunt work for someone else's research. Many finally give up and turn to other work, like computer programming. If I sound bitter, let me add that this is not my story. I was always interested in computers and went straight from Caltech into software development. But I have seen what happens to others.

I visited a number of times as a recruiter. A few students were fantastic - sharp and energetic, really kept me on my toes. But all too many were clueless dreamers. They were still learning computer languages like Pascal and Ada and LISP that time has passed by.

I think a better choice would be a larger and more diverse school with very high standards. For computer science, the best schools are Stanford,

MIT and (a sleeper) the University of Waterloo in Canada. Good luck with your choice.

<<<rtkysg>>>  
CotoDeCasa,

Don't give yourself a punch

<url><http://www.caltech.edu/at-a-glance/></url>

You seem to be one ignorant bufoon

<<<alleya>>>  
CotoDeCasa, as shown on the link rtkysg provided, he's right -- there were 30 profs who won 31 Nobel Prizes (Linus Pauling won twice -- peace and chemistry). The newest one of these prizes went to Prof. Politzer, who teaches one of the core physics classes.

<<<joemama>>>  
My dad did an informal research project. He talked with Human Resources people or Engineering Managers at 4 different companies, all in California, all very large and very successful, all famous for technology leadership. These companies currently run recruiting programs at CalTech, Stanford, MIT and Berkeley and compete to attract their graduates.

Disclaimer: It's a very small sample and there was no standardized question list so the results here at best can be described as anecdotal. The observations put forth here come from what my dad described as 5 to 10 minute informal phone conversations with people who were involved in interviewing and hiring engineers into their companies or departments. Two companies were very EE oriented, 2 were heavily EE and ME. No software companies. Nobody from IT departments. No chemical companies.

The opening question he asked was: "Looks like my son might be accepted at CalTech, Stanford, MIT and Berkeley for undergraduate Electrical Engineering. If he was your son, which would you prefer?"

First response from everyone, without exception, was "those are all great choices. All are great schools."

My Dad noted there was great hesitancy to choose between the schools because "you couldn't go wrong with any of them", the respondents also did not want to generalize, but when pressed to rank them, MIT and Stanford were the top choices and considered about equal, although my Dad said MIT was always mentioned first (a fine point, but maybe meaningful).

Now some comments which just came out during the conversations.

"The top kids from all the schools are unbelievably brilliant. Everybody wants them, there's not enough to go around, companies can't hire enough of them."

"Berkeley is a huge school, with a large Engineering program. The top kids are excellent and equal to the other schools, but there is less consistency in the total pool of graduates."

One of the companies said their CalTech hires were "absolute geniuses." Another company said they "don't see CalTech grads that often", and speculated it was because there are fewer CalTech graduates.

A couple of very common stereotypes were expressed (maybe they're true since these people should know):

Stanford engineering grads tend to be better rounded and more socially adept than those from the other schools.

Berkeley, even though it has a great UG program, is a better choice for grad school.

In the end, there doesn't appear to be anything new here. Certainly nothing that couldn't be found or deduced from reading US News.

I think the most meaningful statement is "you can't go wrong with any of them." So, if you're accepted at any one of the schools, REJOICE. You win.

If you're accepted at them all, you will have to make a hard choice among nothing but great options.

<<<sakky>>>

<quote>LOL! Sakky, I think you've mis-interpreted some of my comments about employment. When I said recruiters looked very highly on Caltech students, it didn't necessarily translate to easy employment. In fact many not so technical companies are driven away from Caltech, nevertheless it still commands highest respect (arguably slightly higher than Stanford) in terms of pure academic achievement.</quote>

Well, first of all, you are at least partially conceding something there. The fact is, a lot of people do indeed see the value of going to an elite college as getting easy (or at least easier) employment. And I think this is particularly true of many middle-class parents who get little financial aid, and who figure that if they have to fork over an arm and a leg for a private college, then they better be arming their progeny with the best chance of getting a job as easily as possible, otherwise might as well just send their kid to a public university. The point is, I don't think it's proper for us to dismiss any concerns of 'employability' as being somehow quaint or unworthy. A lot of people worry about how marketable their degree will be to all employers, not just highly technical employers, and rightfully so.

Now, again, to be fair, I am not saying that the Caltech degree is unmarketable. On the contrary - it is in fact one of the most marketable degrees on the face of the planet. What we are talking about is its marketability relative to its peer institutions. And in particular, we should be talking about marketability, keeping the major constant (hence, it's not fair to compare electrical engineers to English majors).



However, we still have at hand the true issue at hand. I have said it before and I will say it again - those students who are doing well at and who are enjoying Caltech are obviously benefitting from Caltech immensely. But I'm not talking about them. I'm talking about those Caltech students who don't do well at all. The fact is, there are a not-insignificant number of students at Caltech who are not doing well. And my central point is - what about them? At Harvard, or even at MIT, even those students who are not doing well are still more likely to graduate than those students at Caltech who are not doing well.

And the response and attitude that I have gotten is that "Well, if they're not doing well, that's too bad, they were stupid for choosing Caltech, and so they deserve what they get". I think that's a rather callous and cold attitude to have. I believe a school needs to look after ALL its students, not just those who are doing well. Caltech is indeed doing a pretty good job in this aspect (i.e. far better than Berkeley is, which hardly ), but still could stand for some improvement in this area.

And the other main point I've been making is that the relatively low graduation rate at Caltech (relative to HYPsM) does in fact scare some people off who otherwise would probably have done quite well at Caltech. Let's face it. Fear of not-graduating is a legitimate concern. Just because you're afraid of not graduating doesn't mean that you are an intellectual wuss or otherwise unworthy of Caltech. You don't just go to college because it's fun to go to college, you go there because you want to graduate, and so everybody should be concerned about whether they will graduate.

Nor is a low graduation rate necessary to prove that your school is 'rigorous'. You can have both rigor and high graduation rates. Elite medical schools like Johns Hopkins Medical are highly rigorous, yet they manage to graduate almost every student. Hence, that proves it is possible to have both. Is it difficult? Sure. But Caltech is an elite school, so Caltech should be able to do difficult things. After all, Caltech students are asked to complete extremely difficult assignments and exams all the time. So why can't the Caltech administration be asked to do something difficult?

<<<rtkysg>>>

Sakky,

Frankly speaking, beyond a certain threshold I believe it is really hard to measure the probability of an admit dropping out from Caltech. Again, the drop-out students' profiles may have large variance, although I and you will both never know the real statistics. Despite Ben's 'harsh' opinion, I would think that Caltech adcom has tried rigorously to select the qualified students. It does not make sense to admit students who have high probability to drop out. After all it doesn't bring good image to the university, and hence I would argue your claim that Caltech purposely makes such a scheme to prove its rigor. It's just a lame and childish perception don't you think? You keep pushing your view that the Caltech adcom should be able to better filter its students, but without statistical data, how would you argue that Caltech adcom has not reasonably done its homework before admitting a student?

Of course there is always another way to boost graduation rate, such as giving less workload and grade inflation as practiced in Stanford. However, it turns out to violate the school's core policy and hence not implementable in this case.

<<<rockyNol>>>

hey guys, i hear it is difficult to transfer to MIT. Is it as difficult or even more to transfer to Caltech?

<<<sakky>>>

Rtkysg, well I don't know, but it does seem to me that from what Ben Golub has been saying, that Caltech does in fact see its relatively high dropout rate as a symbol that it is a difficult school. The thinking seems to be "Well, we are an extremely difficult school and we'll prove it by causing a lot of our students to drop out." I believe the philosophy is that it provides a psychological and cultural boost to the Caltech alumni who obviously didn't drop out, because they can say that not only did they get into Caltech, they also managed to survive it, so that makes them even more special.

Furthermore, I would argue that it is in fact highly possible to fit your students better. This is precisely what medical school adcoms do. I think we would all agree that Johns Hopkins Medical School is ridiculously rigorous. Yet very very few students drop out. Yes, I know what you're going to say - we're not talking about med-school. But the point is that there is a model out there for how a school can be both highly rigorous and yet have very few students drop out. It is possible to do both. It will require dedication and hard work from the Caltech adcom staff. Yet I don't think that's too much to ask. After all, Caltech profs ask their students to do extremely difficult coursework every day. So why can't we ask the Caltech adcom staff to do something difficult?

<<<omgninja>>>

Sakky, I would like to point out that no matter what committees Ben is on, his opinions are still his own.

The homework here is doable, but it's still work. Completion of the homework requires the student's effort. Attendance at lecture, section, and office hours as well as giving homework a large chunk of one's free time may be necessary. Most people will need to really love what they're doing in order to succeed here.

From what I heard at an information meeting when I was looking at Caltech, it seems that the admissions committee selects students based on several criteria:

- 1) The student has talent.
- 2) The student has passion for math/science/whatever.

I would imagine that in as competitive an admissions atmosphere as the one present now there would be the occasional student who out of insecurity would overlay their passion for math/science/whatever. I seriously doubt

that anyone would purposely choose to admit someone with the intent of having them drop out. However, admissions committees know only what applicants and teachers tell them in the application\*, recommendations, and transcript, and in the event that someone misrepresents themselves on their application, I believe that it is entirely their fault if they do happen to drop out in this case.

Arguments calling for the admissions committee to better filter applicants would not benefit student life. Given that the number admitted is around 225 (wait-listed students were also admitted), I think that to cut down on the number of admitted students any more would simply limit this school. We would be given fewer options in terms of humanities and social sciences, which is not a good thing. Sports teams would be in a tough spot, as our teams are already tiny compared to other schools in our athletic conference. Although any housing shortages would be alleviated, and Caltech's small size is definitely an asset, I sincerely doubt that anything good can come from further decreasing the size of the freshman class.

In the event that there are fewer than 225 individuals capable of graduation in the freshman class, I believe that it is still in the student body's best interest to be given the 4-8%\*\* or so who drop out due to dissatisfaction with Caltech; these 9-18 students will without a doubt benefit and learn from their peers and classes while they are here, and no one is forcing these students to take the opportunity to study here. In fact, at prefrosh weekend orientation last spring, Dean Revel explicitly stated that the idea of prefrosh weekend was not to sell the school to a student but to determine whether or not Caltech is a good fit for the student, a theme apparent throughout the weekend. On top of this, since there were 240 prefrosh in attendance, he specifically asked that some of us not matriculate since our desired class size is less than the number of us that were in attendance. In addition to these statements, the overall tone of Caltech's admissions publications do not seem to be "pushing" the school on the prospective applicant as much as they are presenting it. <quote>First of all, I think it's an entirely fair analogy when placed in the context of what Ben Golub said. Basically, to paraphrase what Ben Golub said is that Caltech is rigorous and if people don't like it, then they shouldn't come to Caltech, and by I think by reasonable implication, I can surmise that if people come to Caltech and do badly, then according to Ben Golub, that's their own stupid fault for choosing Caltech, and they have nobody to blame for that but themselves. I am pointing out that that's a tremendously cold way to go about providing an education. We're not talking about a bunch of scrub underachievers here, we're talking about some of the best students in the world, and to say that Caltech holds no responsibility at all if they do badly is quite off-putting.</quote>

For those students who drop out of Caltech after matriculation due to grades, despite the fact that tutoring is available through the Dean's Office (free for classes in the core curriculum), I think it's unfair to say that they were not warned. The informed applicant has no excuse not to know that Caltech has "one of the most demanding core curricula in the nation" ( <url><http://admissions.caltech.edu/only/unique/></url> ), and for

those "uninformed applicants," it is definitely "their own stupid fault" for choosing a college too difficult for them as choice of a college is definitely an important decision, and taking this decision lightly is definitely not a wise thing to do.

\* I will disregard interviews because, as someone mentioned earlier, they give a disproportionate advantage to extroverted students. Although someone made an argument that a shy student may perk up and speak excitedly about something they love, often this is not the case as some people are simply inarticulate. It is probably easier to teach someone how to convey ideas than it is to teach someone to be brilliant, so I'd imagine that Caltech would place smarter students over more articulate ones. There are in fact classes (required by the core curriculum "Science Communications" requirement) in which students learn to better express their ideas.

\*\*I say 4-8% despite the fact that our six-year graduation rate is 88% because more than 2% of the people in my house were freshman over 6 years ago and given Stanford's, Yale's and Harvard's 6-year graduation rates of 93-96%, MIT's 6 year graduation rate of 92%, and ignoring UC Berkeley's 4-year graduation rate of 53%, I think it's fair to say that a certain percentage of people anywhere will not finish college in 6 years. Graduation rate data obtained from [princetonreview.com](http://princetonreview.com).

<<<tech\_fan>>>  
Well said, ninja.

<<<sakky>>>  
First of all, I would point out that while it is of course true that Ben Golub's opinions are his own, my opinions are also my own. I respect his right to his opinions, yet I believe that everybody should respect my right to my opinions.

Now, let me say this. Omgninja, I'm afraid to say it, but it seems to me that you are displaying the precise sort of mentality that I've been talking about - that the only person who deserves blame for bad academic performance are the students themselves, and the school bears no responsibility whatsoever. I find that pretty cold.

Let me explain. It looks like you are pinning poor performance solely on a bad fit, or, even worse, just on misrepresentation, as if everybody who flunks out of Caltech must have misrepresented themselves to the adcom and therefore to flunk out. That's pretty harsh, don't you think? The fact is, there are plenty of reasons why one would have academic difficulty. Even those students who fit the school like a glove may have academic difficulty. Some people simply have problems adjusting to life away from home, and so they would have homesickness wherever they went to school. Some people go through a horrifically bad romantic breakup. There are plenty of reasons why a person would be a perfect fit for Caltech, yet still do poorly.

Yet the point is, Caltech doesn't seem to care about that, and not to put words in you and Ben Golub's mouth, you guys don't seem to care about that either. Correct me if I'm wrong, but it seems to me that for those people

who go through those sorts of things, you are saying, oh well, that that's simply too bad for them, and if they can't pull themselves together, that's their own fault, and Caltech bears no responsibility to help them out.

I am asserting that that's exactly the sort of image and mentality that scares some otherwise highly qualified students off. You say that people should be able to assess whether they are a good fit for Caltech, and if they aren't then they should come, but come on, how are people really supposed to figure out whether with certainty whether they are a good fit or not? And even if they are a good fit, what assurance is there that something won't happen during their 4 years that will cause their performance to plummet? No such assurance can be provided in either case. Yet you are basically saying that if you screw up, it's your own fault, and Caltech has no obligation to help you out. Hence, I believe that many otherwise perfectly qualified students, upon hearing that message, will simply choose to go elsewhere. We're not talking about peanuts here, we're talking about whether you are going to get your degree or not. That's a big deal.

And I take it back to what was said previously in this thread. It's not like Caltech is perceived as being worlds-away better than HYPSM. If Caltech really was considered to be heads-and-shoulders above every other school, including HYPSM, then you might be able to make a case that Caltech's difficulty is worth it. But it's isn't. Caltech graduates are generally not viewed as worlds-away better than HYPSM graduates. Maybe a little bit better (and even that's debateable), but certainly not worlds-away better. I've met plenty of Caltech graduates, and they're obviously good, but they're not clearly 'way above' the HYPSM graduates. Hence, a lot of people simply see Caltech as being a bad choice of risk-versus-reward.

Consider Caltech's yield rate, especially head-to-head against HYPSM. Caltech often times loses students to HYPSM. Many of those students that are lost could have done very well at Caltech, but just chose not to take the risk. Nor is that an invalid reason or does that make that person somehow 'unworthy'. Safety is something that people value. If I choose to live in a safer neighborhood rather than a dangerous one, that doesn't make me a 'wuss'. It just means I value my personal safety and I don't want to get jumped at night. Similarly, if somebody chooses another school over Caltech because they want 'graduation safety', that doesn't make them weak or cowardly, it just means that they view Caltech as a bit risky. I am proposing that if Caltech were to decrease its risk portfolio, it would be able to get even better students.

<<<tech\_fan>>>

sakky, omgninja just meant that my opinions don't necessarily agree with those of the committee -- I'm just a guy on a message board.

As for the fact that we lose some people to HYPSM because they prefer a safer school, that's true. Caltech is, for the average student, more expensive in a certain sense -- it comes at the cost of a higher risk -- than HYPSM. This is why our yield is lower.

The first delusion you have to shed: we are not out to maximize our yield. Other schools might be, but we aren't. We explicitly tell students that some of them are ill-suited to this place. Why you think that all schools should maximize yield is a complete mystery to me (and you, too, will soon see how misguided that is). So every time you say "you could get more of those kids" as if that should convince us, don't bother. We don't want every potential student to come here, just the ones that are well-suited to this environment.

Lots of things that have high (opportunity) costs have low yields. Very few people who could in theory afford a Rolex watch actually buy one. The yield -- the ratio of actual buyers relative to potential buyers -- is low. That's not a flaw of Rolex watches. It's just a fact about life. Only the people who value a Rolex watch above a certain amount of money buy it.

The people who choose Caltech despite the fact that it is more expensive (in terms of risk) are like people who choose a Rolex despite its high price (in money). Both groups value the product above the price. Your blithering about how Caltech degrees are not far and away better is irrelevant (just like your opinion about whether a Rolex watch is "worth" that much money). What matters to the people making the choice is not some metric you choose (how respected the diploma is, for instance) but what they value in a school -- the environment, the rigor, the classmates, etc. This is a major amateur mistake made by people who haven't taken an intro econ class or didn't understand it. You don't determine the value of goods to people. They do, and it's whatever they say it is. The values aren't objective. There's nothing irrational about choosing a higher cost product if it's worth it to you.

Once again you see that by reducing the price (the risk) of Caltech, we could attract more buyers. If a Rolex cost \$50 (which would be feasible, by the way), a lot more people would buy Rolexes. This is a trivial point. It doesn't mean the price should be reduced. (In the case of both Caltech and Rolex, the relevant cost is a large part of what makes the good attractive in the first place to its buyers.)

Let's take another example -- extreme skiing vacations. These have high costs associated with them (above and beyond the sticker price that you pay in money) because of the risks inherent in extreme skiing. As with Rolex watches, very few of the potential buyers become actual buyers of extreme skiing vacations. This is because the costs of the vacation (mostly risk costs) for most people are not offset by the value they would get out of it.

Converting extreme ski resorts to average-difficulty slopes would cause the yield to skyrocket -- all sorts of potential buyers who didn't even consider a resort before would ski there, and the loss in "extreme" skiers would be decidedly negligible compared to the gain in average skiers. But this does not mean that the conversion should take place. For many reasons, it's good to have some extreme skiing resorts. For some people, the fact that it's risky is part of the value.

Oh, and by the way, extreme ski resorts lose out \*massively\* head-to-head to even fairly challenging mainstream ski resorts. This doesn't imply that they're "worse", whatever that means.

But you're like a person arguing that if you only placed padded foam on both sides of the steeper slopes, it would be attractive to so many more people. You don't understand that attracting more people isn't the point. Not all business (or all colleges) are designed to be high-yield enterprises. Disneyland is, extreme ski resorts aren't. Wal-Mart is, Rolex isn't. McDonald's is, the Four Seasons isn't.

So your main point (about how higher costs mean lower yield) is trivial. It's clear to a horse. It's not interesting. It's not new to us. And it's not a reason to change the costs. You should first go talk to Rolex and extreme skiing resorts and encourage them to make their product lower cost, to make it higher yield.

As for Hopkins med school being hard but having a high graduation rate, you have to realize that they have the luxury of much better data on which to screen. College grades at good undergraduate institutions are a much stronger predictor of medical school grades than high school grades and scores are of college grades. Not to mention that people's interests and abilities are more solidified at 22 than 18. So you're comparing apples to oranges in an uninteresting and illegitimate way.

Finally, your accusation that Caltech is cold and uncaring is nonsense. We have free psychological counseling, free tutoring in core classes, a strong undergraduate peer support network, and many many other ways to make Caltech manageable. This is akin to an extreme ski resort having good medical services, checking for unintended hazards on the mountain, and offering detailed tours of the slopes. They're doing everything they can to make the enterprise safe SHORT OF ruining the point of the enterprise in the first place, which is to offer a more challenging skiing environment than most, WITH MORE FEAR OF FAILURE! (Ask any extreme skier, that's what makes it worth it.) Similarly, we at Caltech are doing everything we can to make this education safe SHORT OF ruining the point of this enterprise in the first place, which is to offer a more challenging college environment than almost any other, WITH MORE FEAR OF FAILURE. (That's what makes it worth it for us, too, as alleya has pointed out.)

And remember, you can't now say that the extra risks of Caltech aren't "worth it" -- that not enough value is added to offset those costs. Maybe not for you. Certainly extreme skiing doesn't add enough value for me to offset its risk costs. But I'm not arguing that the resorts should be made more failure-proof. Obviously they're valuable for some people.

As far as I can tell, this takes care of all the persistent nonsense you have been spewing. Yes, Caltech has higher risk costs. Yes, this reduces yield. No, this is not a problem, any more than extreme ski resorts having low yields is a problem. It doesn't even matter whether you think the value added is worth it. It's worth it to some buyers (like me), and we don't falsely advertise to deceive other buyers into thinking it's worth it to them when it isn't.

So hush up, go away, and stop telling us how to run our ski resort.

<<<joemama>>>

I would like to propose a few reasons why students drop out of CalTech at a higher rate than the other elite academic shools, other than the punishing workload:

1. CalTech has a very, very small enrollment. That's good from a teacher to student ratio standpoint but I've been on the campus--which is big-- and it seems sort of empty and quiet. I think some small percent of students--especially ones who have come from High Schools bigger than CalTech-- will feel that some "excitement" is missing from their college experience--and go elsewhere.
2. CalTech also has a really lousy male to female ratio. I'm sure there are guys who feel, once again, that something important (female companionship and dating and sex) is missing. It's hard enough to get dates with a 50-50 ratio.
3. CalTech campus is really beautiful but it is in a major metro area known for having a chronic air quality problems. I'm sure some students from more pristine environments find the urban campus unattractive. Face it, Los Angeles is not for everyone.
4. CalTech narrowly focuses on science and engineering (it is a technical institute after all) and all the other programs play second fiddle and are second rate. If a student wants to change majors outside science and engineering, there's nowhere to go. If they want a high quality Business, Humanities, soft-sciences or Arts education, they have to go elsewhere.
5. CalTech is also primarily a research institution staffed with researchers. A brilliant researcher is not necessarily a brilliant teacher. Some may be dissatisfied with the quality of instruction.

Put all these potential reasons together and it might account for the unusually high drop out rate at CalTech.

What do you think?

<<<rtkysg>>>

No Joemama,

Only extreme workload really causes the high drop out. The rest do not count. One variance would be the fact that Caltech difficulty level has turned off the science 'passion' of some students and makes them feel they are better off in other majors. Another would be the smart prestige whore but not hardworking students, they could bear the workload, but they don't like the pressure. Typically these students transfer to Stanford and sometimes Harvard after one year at Caltech.

<<<alleya>>>



I don't agree with #3. Caltech is definitely not an urban campus -- suburban would be a much more apt description. There are no tall buildings around (in fact, our library is the tallest building in Pasadena and will remain that way since there is now a city ordinance banning buildings that tall) and the campus and surrounding area is filled with trees and flowers (anyone heard of the Rose Parade -- it's not a problem that it's in January, because we have roses almost year round). Only people from the rural midwest might think the campus is too "urban". Granted, LA is nearby and the pollution in LA is dreadful. But, it's a full 20 minutes away and students rarely find the time to leave Pasadena. I swear, it's like there's a bubble around Pasadena which keeps most of the pollution out -- I really think it's because all the greenery in Pasadena keeps our air much cleaner than LA proper. The one exception is in October when the mountains are burning, and then sometimes the ash in the air gets really bad. (I also can't vouch for what it's like in June-September). Either way, I've never heard students complaining that the campus is too urban for them.

<<<joemama>>>  
rtkysg,

I know CalTech admits who did not enroll (as well as kids who did not apply to CalTech) for reasons 1, 2 and 4.

It is reasonable to think that these same reasons might apply to a student unhappiness and their ultimately dropping out.

Here's reasons 1, 2 and 4 for your reference.

1. CalTech has a very, very small enrollment. That's good from a teacher to student ratio standpoint but I've been on the campus--which is big-- and it seems sort of empty and quiet. I think some small percent of students--especially ones who have come from High Schools bigger than CalTech-- will feel that some "excitement" is missing from their college experience--and go elsewhere.
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alleya: I like LA. But I know tons of people from Northern California and out of state that Hate it. Depending on where the kid is from, it could be an issue.

<<<rtkysg>>>

I'd rather disagree with your proposition joemama. They could be the reasons why a student choose not to enroll at Caltech, but definitely not the reasons for drop out cases.

<<<omgninja>>>

I doubt 1 (small size of student body) could be changed without relocating the campus entirely; although 1 may stop people from applying/matriculating, I doubt it would contribute to a student's decision to transfer.

House life is definitely not lacking in excitement at all. Everyone's always up for some fun. Walking around campus this may not seem the case, but I think that in general, the social life isn't bad. In fact, the small size of the student body actually tends to bring out the social side in some of the more introverted students (myself including). The house system is excellent at bringing people together, and with 7 houses you have 7 social teams each putting on a social event every week. If by excitement you mean "huge sports game" or "huge party with lots of alcohol," or those are both smaller and less frequent here than they may be at other schools, so one would have to go to LA for that kind of thing. However, they would have no trouble finding something to match their tastes there.

3. is definitely a factor for some people here, despite the fact that some students date people from Occidental, UCLA, and USC. There is nothing good about a 2:1 male to female ratio, and it is probably the 2nd greatest stressor after the workload. However, I do not think I would feel comfortable attending a school at which affirmative action were a deciding factor in my admission, and in such a school students might look at under-represented minorities/genders (regardless of their actual ability) with less respect due to the fact that they *could* have been admitted under lower standards than the rest of the students. Although the male:female ratio is an ugly consequence of the fact that the admissions office does not practice affirmative action, it is necessary in order to ensure that everyone here is as talented as possible.

Alleya addressed 3. Caltech is not in LA. Pasadena is quite different, our campus is in a suburban area, and I doubt anyone would enroll here, decide they don't like LA, and then transfer out because of this.

I don't think 4 can be changed without detracting from the quality of other areas, but I think the bigger issue is the one rtkysg brought up: the difficulty level could turn off some students' passion for math or science.

Although a brilliant researcher is not necessarily a good teacher, a brilliant researcher will definitely know their stuff in the area that they're teaching. If a student wants to learn high-level physics, it is unfortunate that difficulty could be added by a sub-par teacher, but it's also unfortunate that there are so few excellent teachers that know the topics taught here.

<<<joemama>>>

Thanks. I wonder if the school does any interviewing to determine cause on a cases by case basis.

<<<alleya>>>

Yes, joemama, many people from Northern California or out of state hate LA. (My roommate, for instance, thinks that no place in the world can come close to San Francisco.) But, I'd argue that the majority of these people know BEFORE coming that they hate LA. (And remember, Pasadena is very different from other parts of LA proper.) I agree with rtkysg that while a few of your points may be a deterrant for people enrolling in the first place, they aren't the types of things that would make a student go through the trouble and stress of switching schools.

<<<joemama>>>

Decisions often result from a confluence of factors, i.e.

Wow, courses here are tough.

I thought I could hack LA, but this is worse than I thought.

Damn, where are the women. I havn't had a date in months.

Jeez, more problem sets?!

4. more years of this?

Maybe CalTech isn't for me after all.

<<<webhappy>>>

"Damn, where are the women. I havn't had a date in months."

LOL, I haven't a date since \*UNDEFINED ERROR\*

<<<Penthesilea>>>

Maybe it's just you. j/k. Next time it rains offer to walk a girl without an umbrella to her next class. I thought it was very sweet when a guy at MIT did that for me. You could also ask to borrow a girl's calculator and leave a note on it. It's very cute.

Back to my point... bad for you, good for me. :)

<<<joemama>>>

Hey, maybe we can turn this into a dating thread.

Here's a hint for the girls and guys. First you do group dates--maybe dorm with dorm. Then, if you find someone you like and (very important) they like you back, you start dating as a couple.

<<<sakky>>>

Ben Golub, what do you want me to say?

Basically, what you are saying is the same thing that I hear from all Caltech people who try to compare them to a 'luxury economic good'. Basically you are saying that Caltech derives value from its high-risk profile.

To that, I have the following points

- \* Don't put words in my mouth - I never said anything about maximizing yields as a whole.

The point is not that I think it's good for Caltech to maximize its yields among everybody. The point is that Caltech could maximize its yields among people who could do very well at Caltech and would otherwise come to the school were it not for the relatively low graduation rate. I am not talking about Caltech bringing in people who aren't good at science and math. I am talking about Caltech bringing in people who are very good at science and math, and probably would do just fine at Caltech, but don't want to take a risk with their academic career. Surely you're not saying that Caltech has a monopoly on science talent and every other school has no talent.

- \* Secondly, you continue to, I think deliberately, turn a blind eye towards those students who do come and don't make it.

Whether they flunk out and get no degree at all, or successfully transfer to another elite school, what is undeniable is that everybody that Caltech brings in and doesn't graduate represents a human cost. Even in the best case scenario, which is that that person is able to successfully transfer to another elite school, it still would have been better for that person to have never come to Caltech in the first place (i.e. that person should have always gone to that school that he/she ultimately transferred to). But you don't seem to care about that. Some people get hurt. Some people don't make it. However, looks like you either don't see that, or you don't want to see that. In essence, you are sacrificing these people in the name of your prized Caltech 'risk-luxury'.

Well, I suppose since you're not the one paying the price, maybe that's why you can afford to be so glib about it. If you were the one going through academic difficulty, maybe you'd have a different attitude. So how would you like to be the one that is really struggling at Caltech, only to hear somebody talk about how it's really great that Caltech has this high-risk model of education, and if some people don't make it, that's their problem. What would you think if that were you? Oh wait, I forgot, according to you, Ben Golub, these people aren't important, so who cares, right?

- \* Furthermore, consider the changes at Caltech in the last few decades.

The graduation rate at Caltech is significantly higher than it was just a few decades ago, because Caltech is doing exactly what I have been saying. Looks like Caltech has in fact added other departments to attempt to broaden its course offerings. And Caltech in fact seems to be targeting who it admits with greater precision such that whoever does come is more likely to graduate than the people it admitted in the past. The point is that, for various reasons, Caltech's graduation rate is probably at an alltime high. My point is that it is still not high enough, and in particular, the other schools have been increasing their graduation rate too.

But Ben Golub, according to your logic, Caltech shouldn't have been doing any of those changes. You said it yourself- you want to compare Caltech to

a high-risk extreme skiing resort or a high-luxury Rolex. So that means that all of the things that Caltech has been doing in the last few decades are obviously wrong, because they are taking away from that risk-premium that you value so much. So I want to hear you criticize the Caltech administration for all their changes, and with the same fury that you use on this forum. I want to hear you castigate the administration for making Caltech softer and obviously taking away from that hard-edge that you like so much. Caltech should instantly close down all those extra departments that broaden the school's offerings, because they're taking away from Caltech's hard edge, right? All the things that Caltech has been doing to target its students more and more, Caltech should not be doing, right? In fact, Caltech should really go back to the "old Caltech" where far less students graduated. You mock my ideas as 'training wheels' and 'ski padding', but what exactly has Caltech been doing lately, if not adding 'training wheels and ski padding'?

<quote>So hush up, go away, and stop telling us how to run our ski resort.</quote>

You know, Ben Golub, I used to respect you. I thought we were having a civil discussion, and even though we disagree, we were still behaving professionally. Until now. So basically, you just want me to stop writing - in other words, censorship. Hey pal, isn't the whole point of a discussion forum to hear different ideas, even if you don't agree with them? Why even have a forum if people aren't allowed to express their ideas? So basically you are saying that if somebody expresses an idea that you don't like, then that person should just go away? By that same logic, you are expressing ideas that I don't like, so maybe you're the one who should go away.

<<<joemama>>>

Saaky: I think it's a structural issue.

An elite school that is a TRUE university can graduate students at a rate in the mid to high 90s.

A school like MIT that has grown beyond the "Institute" level can graduate students at a rate in the low 90s.

A school like CalTech, which is a Science Institute pure and simple, is handicapped since even the smartest and best intentioned undergraduate often want to change majors, sometimes outside what the Institute offers.

Harvey Mudd, which in some respects mirrors the offering of CalTech, has a graduation rate of about 80%

<<<red\_dragone>>>

I think the most important question that has not been answered is 'why take the risk?'

I think that attitude is what separates those who do apply to Caltech from those who don't. Techers are taking a big risk with a big payoff, if they make it they will forever hold one of the most difficult-to-attain diplomas in the country. Sure, Caltech is extremely focused in a few areas, so what? Caltech isn't running around proclaiming their amazing

humanities departments to applicants. Tech makes it extremely clear what it's focus is and that leads to their having top-notch focused students. I am sorry, sakky, if Tech does not cater to the wishy-washy student who changes their major every few years. There are colleges for that, and those students are free to attend them, no one is holding these Tech applicants at gunpoint to apply. And I understand that despite how focused an 18 year old may be as they enter college, they may want something entirely different by their sophomore year, and Caltech indeed does NOT have the facilities to help a student transition from physics to business, and these students leave. But this can be viewed in a positive light, why not be 'forced out' of Caltech in college rather than bum through a less rigorous program and then end up in industry with the realization that the student hates their field of study?

Why should Caltech make itself 'safe' for you, sakky and itsallgood? Not every student wishes the 'safety' of grade inflation at HYP. Feel free to take the safe route and graduate from a less hardcore school and achieve a wonderful career with a nice salary. I, on the contrary, would take the risk and do something extraordinary. And I find it rather rude that this topic on comparing two schools' engineering departments has been hijacked for an ego-boosting anti-Caltech session

<<<slippythekid2002>>>

First of all, for posterity, I'd like to apologize for Ben. Please, get a hold of yourself.

There are a lot of things wrong about Caltech, but the good thing is that with a little help from friends, it doesn't matter in the end.

Before I get on topic, I'd like to just reiterate that the weather here is absolutely awesome.

Now, on the subject of failing out. Frosh do it to themselves. Our first two terms are on p/f, and upperclassmen encourage frosh to take it easy for a reason. There are several reasons frosh fail out:

- \* They don't listen to upperclassmen (ie, they take too many classes)
- \* They don't want to work
- \* They don't want to collaborate

These are all consequences of the very special matriculants we get here. Some frosh are really ambitious. You often don't learn until later that basic classes are really not that useful. You learn how to teach yourself here. The reason why biologists and chem-majors learn epsilon-delta proofs as frosh is so they can follow proofs in their own textbooks, not for "rigor." In any case, if you talk to any upperclassmen, or (god forbid) listen to your faculty advisor, the first problem is eliminated.

The second is unavoidable, and a little related to the first. Some people get here, and realize that they just don't feel like doing work. Whatcha gonna do? I know only one case of this in my class: one guy just sat in the stairway, doing puzzles--just didn't want to work.

Lastly, collaboration is a necessity. The lone scientist is a myth, and collaboration is what makes life here fun. If you can't work together in a team, don't like sharing insights, etc, then you learn quick. If you don't learn, then Caltech sentences you to misery until you do. A lot of things work like that here.

The switching majors argument is lame. Many people switch from phys to geo or astro, chem to bio, etc. You can sometimes switch even up to the end of 2nd year--certainly after first. However, part of the reason some frosh beat themselves up is because they're unsure, and so want to take a little of everything. I know I did, but it all worked out.

---

Now that that's done, here's my take. We do some pretty cool stuff here--science /and/ engineering, parties and fun stuff. And people really don't give our humanities classes enough credit--they are top notch. If you don't make life hard for yourself (ie, emphasizing class # vs. class grades) then you'll do alright here. If you can find a spark that gets you going, you'll be a star.

<<<CC Admin>>>

Thanks, slippy, for the very informative post about failing out. That really answered a lot of questions I had about Caltech, especially with all the talk about those who don't graduate. Your take on this subject has made me feel more optimistic, and thanks for the great advice. :D

<<<joemama>>>

slippy, thanks for the 1st person report from the inside. It, of course, raises many more questions but I, for one, am moving on.

Best of luck in your studies and career.

<<<sakky>>>

I stepped out of this thread and recently come back.

RedDragone, I don't want to have to point this out, but the fact is, you are displaying the same attitude, dare I say arrogance, that other people have expressed on this forum. I am not necessarily talking about people who change their major or are otherwise 'wishy-washy' and end up in a less rigorous curriculum. The fact is, the risk of not graduating is a legitimate concern, and has nothing to do with a person's inherent ability to do hard work. What are you going to say to 2 guys I know who both got into Caltech but both turned it down to go to Harvard, with one getting his degree in physics summa cum laude, and the other getting a degree in mathematics summa cum laude? Are you saying that both of them are 'weak' and 'unworthy of Caltech'? I think it is fair to say that they could have been 2 of the best students that Caltech has ever had. Yet again, it seems that you are saying that everybody who hesitates to go to Caltech because of its relatively low graduation rate must be weak and unworthy. You're basically saying that there is no legitimate reason for anybody to ever feel concerned about Caltech's relatively low graduation rate, and anybody who does feel concerned is clearly a wuss and is obviously not good enough for Caltech. Again, I would dare you to tell that to the 2 guys I know.

And again, I would say that, even more poignantly, think about who else may be visiting this forum. In particular, think about those current Caltech students who are doing poorly, or who may have already flunked out. How exactly are they supposed to feel when they read quotes from you like "Why should Caltech make itself 'safe'..."? Not every student wishes the 'safety' of grade inflation at HYP. Feel free to take the safe route..." Put another way, how would you feel if you were doing poorly at Caltech and then you read the comments from other people about how Caltech has no need to be safe, and that those who want safety should have gone to HYP? Maybe you should end up doing poorly at Caltech, and then we'll see whether you still feel that Caltech has no need to be safe for its students. I would posit that it's easy to say that Caltech has no need to be safe if you happen to be one of the students that is doing well. It's a far far different story when you are the one who is experiencing difficulty.

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The bottom line is that I have to say that, I regret to put it this bluntly, but the attitude of a lot of Caltech students towards their own classmates who aren't doing well seems quite cold and forbidding. The attitude seems to be that if you aren't doing well, you are obviously stupid, unworthy, and/or lazy, and so you deserve your hardships. That's a rather cold-blooded way of treating your own classmates, don't you think? I would posit that not everybody who does poorly at Caltech is lazy or stupid.

<<<tech\_fan>>>

sakky, what's the point? Here you are making all sorts of normative statements about the way we "should" be, or "should not" be. What do those words mean? Do you mean that Caltech would be a better institution if we took your advice and made failure rarer?

Maybe you're right, but "better" is in the eye of the beholder. This institution charts its own course based on what we think is best. Sometimes we've become more rigorous (the 1930's), sometimes less (the 1980's and 90's). We (in particular the board, administration, faculty, students, in rough order of influence) decide where it's best to move, and then we move there.

You've told us what you think is best, but the bottom line is, why should we \*care\* what you think? Your analysis of the pros and cons has been often pretty good. Yes, we do lose strong students to HYP because they fear failing out. That's one drawback of having a risky university. That's a fact. But it doesn't follow from that fact that we should change our policies; it only follows if we value those students more than we value the benefits we get out of having an extra-risky environment.

We know all the pros and cons, but what we do depends on the values we attach to those pros and cons. They're not the same as your values. We don't care, at bottom, what your values are. We care what our values are. Currently, they don't favor becoming unrisky according to the HYP model. There's not much you can do or say to change that.

<<<SteelPangolin>>>

"What are you going to say to 2 guys I know who both got into Caltech but both turned it down to go to Harvard, with one getting his degree in physics summa cum laude, and the other getting a degree in mathematics summa cum laude?"

Probably something along the lines of "Hah, you went to Harvard over Caltech? Sucker." followed by some jokes about how terrible the weather/food/drivers/accent is/are in Boston. (Note: very.)

Speaking as a Techer in danger of having to retake quantum and who's lost more than one friend to the Big Red Drop Card, it's not the best thing when someone can't hack it any more and leaves, but honestly, what are you going to do? It's like being a fighter pilot. If Johnny Crewcut decides he doesn't want to be a fighter pilot because he gets the shakes every time the radar warning comes on, or the Air Force decides he's blown up one too many Canadian sniper teams by accident, the other pilots might knock one back for Johnny the next time they're at the local bar, but none of them

are going to suggest that the Air Force should lower the standards for being a fighter pilot. It only looks cold-blooded if you ignore the membership requirements.

So I've had a few conversations that went something like, "You're transferring to Purdue? Why? ... Well, good luck." or, if they were closer friends, "Lucky bastard, you're getting out early. Have fun at Columbia. I'll drop by next time I'm in New York, crash on your couch, insult your roommates, and drink your refreshing beverages." It's sad, it happens, and then there's the next homework set. You get used to it after a while.

I don't know what you're trying to prove here.

<<<joemama>>>

steel: Nicely done and Funny as all get out. It reminded me of an advertisement run by the explorer Ernest Shackleton to recruit men for an expedition, it goes:

"MEN WANTED FOR HAZARDOUS JOURNEY. SMALL WAGES,  
BITTER COLD, LONG MONTHS OF COMPLETE DARKNESS,  
CONSTANT DANGER, SAFE RETURN DOUBTFUL. HONOR AND  
RECOGNITION IN CASE OF SUCCESS."

Despite the ad's stark warning (maybe because of it), Shackleton had no trouble finding volunteers.

Good luck with Quantum.

<<<tech\_fan>>>

joemama -- you have the Caltech philosophy figured out. We certainly have nothing to argue about here : )

<<<SteelPangolin>>>

To address some other things said about Tech, if you're a guy and you can't get a date, you're not trying, or you suck, or both. Sure, the girl to guy ratio (note: this is called Ratio in common Tech usage; in speech, you can actually hear the capital R) is pretty low, but the human to \*\*\*\* ratio among guys. I think it's genetic. \*\*\*\*, by reason of their aversion to sunlight, have given up most attempts at social contact, let alone dating, so the effective Ratio is much closer to 1:1 than you'd expect. If you care about dating, just get out and talk to chicks once in a while and don't be a creepy stalkerish bastard about it. Worked for me.

If you have any interesting or horrific counter-examples for dating at Tech, post details. If you're Ben Golub and go through women like a Vulcan chaingun goes through 20mm ammunition, post a how-to guide. If you're a girl, I promise the stalkers will give up by the end of Rotation Week and then you get your choice of boy-toys if desired. Also, stay away from Ben.

<<<joemama>>>

steel: you have a gift.

ben: live long and prosper.

joemama has left the building

<<<omgninja>>>

Note for SteelPangolin's post: a \*\*\*\* is someone who studies excessively, does their work ahead of time, etc. rather than doing their work the "correct" way and doing the work the night before it's due. So a \*\*\*\* is "a good student."

<<<SteelPangolin>>>

No, a \*\*\*\* is someone who is obnoxiously antisocial regardless of workload. There are plenty of good students who get their work done ahead of time without becoming cloistered monks in the process. I'm not one of them, mind you.

<<<paulhomework>>>

Here's my two cents on the whole CalTech issue:

Before my senior year, Caltech was my top choice. However, this changed once I started to learn more about it, to understand Caltech beyond its prestigious name. During the last summer and fall I researched the institute, visited the campus and stayed in Pasadena. I attended several info sessions and talked to a lot of alumni. I even wrote my application essays and finished my application.

But ultimately, my application was not submitted. Although there is no doubt in my mind that Caltech has the best science undergrad department in the whole nation, and its theoretical engineering is arguably the best, I realized that math and science might not be what I would like to do after all. It just was not the right fit for me. Honestly, I was also turned off a little by the terrible male-to-female ratio, and was scared of the workload. I had spent numerous years in an Iranian gifted and talented school in Tehran, in which studying and research are all that students do. I absolutely did not want to go back to that and become "\*\*\*\*\*" so to speak.

Clearly, Cal Tech is not the right fit for me. But that doesn't mean I can bash the school. People who drop out are at fault themselves for deciding to attend such a school in the first place. True, I chickened out, but I believe that was the right thing to do, or I might have ended up transferring to some other place (assuming I would have gotten in, which was very unlikely).

<<<sakky>>>

Ben Golub, of course you don't have to care what I think. I never said that you are forced to care about what I think.

However, the whole point of a discussion board is to hear a set of diverse opinions. Not to sound like a Founding Father, but it is precisely through freedom of expression that you are able to formulate better ideas. I don't see you going around challenging anybody else on CC by telling them that you don't care what they think. The point of the Caltech subsection of CC is not to post ideas that you, Ben Golub, or anybody at Caltech necessarily care about. This is not your private forum, nor is it the

private forum of the Caltech administration. There are plenty of people on CC whose posts I don't care about, but I don't get in their faces about it. The point of a discussion forum is to hear different opinions, even if you don't like them or don't care about them.

And to Steelpangolin, again, you have tagged me with saying something that I never said. I never said anything about Caltech lowering its standards. I said that Caltech has a problem with students who aren't able to complete the program. I never said that Caltech has to lower its standards to fix this problem. Another way, which is the one I support, is to simply not admit those students who aren't going to make it anyway. After all, what exactly is the point of bringing in students who aren't going to graduate anyway? Let them go to another school where they will be able to succeed.

Some would say that you can't really tell who is going to graduate and who isn't, and of course you can't do it perfectly. But there are ways to make it better. For example, you can look at the statistical data of who made it and who didn't over the last X years, look at their application data, find some common themes of those students who didn't make it, and simply admit fewer of those students.

For example, maybe Caltech will find that those applicants who score less than a 700 on their Math SAT-1 have an extremely high chance of flunking out (I don't know if this is true, I am just using this as an example). Then Caltech should admit fewer such students. True, Caltech already admits few such students anyway, but the data would indicate that Caltech should admit still fewer. Or maybe Caltech finds that certain high schools produce a high percentage of poorly-performing Caltech students. Then Caltech should simply admit fewer students from those high schools. I don't claim to know what the key factors will turn out to be, but I am saying that Caltech could go and find out if it wanted to.

The issue seems to be not that Caltech can't find out, but that it doesn't really want to find out. Why not? It gets to something I've been pointing out here for awhile - I think that Caltech deliberately wants to flunk out a higher percentage of its students relative to its peer schools, because they see it as 'proof' of its rigor. In other words, Caltech seems to actually enjoy it. And that, to me, seems pretty harsh. You are elevating yourself by stepping on the bodies of your fallen students. Lest you think that I'm being too harsh in my characterization, just go back through this thread and you'll see the quotes of several Caltech people here who all seem to relish in stereotyping everybody who has problems at Caltech, that all those people who have problems are all just stupid and lazy and hence they deserve what they get. Who's really being harsh here, me or them? How would you like to be one of those students who is having difficulty at Caltech, only to have other Tech'ers calling you stupid and lazy and so you deserve to have problems? Hence, the attitude among some at Caltech seems to be "Who cares if we are stepping on some of our fallen students? Those students suck, so they deserve to get stepped on." So not only are they being stepped on, but you have a bloodthirsty crowd who is saying that it is right that they be stepped on. Talk about adding insult to injury.

You (steelpanglion) ask what am I trying to prove here? Well, first of all, I think that that whole attitude that 'those who have problems at Caltech deserve to have problems' - that attitude ought to be repudiated. You (steelpanglion) at least don't go around implying that your fallen comrades deserve to be fallen because they were clearly too lazy and stupid to survive.

And secondly we can debate whether students who come to Caltech and don't succeed deserve some of the blame for choosing the wrong school. But I think what is clear is that Caltech also deserves some of the blame for admitting them. Caltech can't just slough off all responsibility onto the students. Caltech had a hand in the situation as well. The same question arises again - why admit people who aren't going to make it?

<<<tech\_fan>>>

"I think that Caltech deliberately wants to flunk out a higher percentage of its students relative to its peer schools"

What nonsense. We would pretty easily be among the top 3 on the U.S. News list every year (which unfortunately is such a big deal) if we raised our graduation rate. There are plenty of incentives to do it. Caltech doesn't TRY to keep that number low -- we are just unwilling to sacrifice our core mission to raise it, despite all the gains if we did.

As for admitting fewer students who will fail, can I just say flat out (though I've tried to say it courteously before) ... I've sat on the admissions committee thinking about these things for a year, and looking at the data, etc. I've spent lots of time talking to people who have been looking at this data for 20 years each. I'd be willing to bet you've never read applications for undergraduate admission at selective admissions, let alone Caltech.

The outcome: Caltech COULDN'T be any more rigorous in screening out students who won't make it. Almost the slightest sign of weakness already gets you excluded. By the way, a large number of the kids who fail out came with pretty much flawless applications. Failure has more to do with character, perseverance. We read closely, we try to catch that stuff, but the data just aren't good enough... The point is that it is simply \*impossible\* to screen for a 95% graduating class based on high school data. You can't point to an institution as hard as Caltech that does that with high school data to use as a counterexample. Shoo, shoo!

<<<SteelPangolin>>>

Are you claiming that your school, which I'm guessing is MIT, knows exactly which candidates are going to flunk? If your school doesn't, why would mine? We've got an even smaller sample size. If it does, at what point do you fit the cameras and tracking collars to your candidates?

<<<tech\_fan>>>

MIT does better than Caltech for graduation rate. But I was just waiting for sakky to make that claim so I could have a good laugh and point him to my earlier post about how much more rigorous the minimal requirements are here than there (quantum, etc.)

<<<Joe (Caltech '04)>>>

"I know a girl who failed spectacularly freshman year, got into Duke as a transfer, spent a year there, and came back because she liked it here better. Is Duke a third tier trashbag?"

I know her too... how is she doing now? I had sort of thought maybe Caltech wasn't for her. I think the reasons she came back had very little to do with academics, which is kind of scary.

<<<Joe (Caltech '04)>>>

To CotoDeCasa:

It would also be worth pointing out that some of the people on that list were Caltech UNDERGRADS: Kip Thorne (perhaps the most famous current member of the faculty), Ken Libbrecht (the head of the physics department) and quite possibly others.

<<<magefile>>>

I'm applying with a B in the second semester of AP Physics B, but a 5 on the exam, and an explanation (in recommendations and in essay form); specifically, susceptibility to respiratory infection. It's a pattern that lots (ok, maybe 1 or 2 a year) of my grades follow; my grades during the year are lower than you would think if you looked only at my AP scores. I end up learning all the material as well as or better than most/all of my classmates, but my GPA is only a 4.4 weighted, because I am learning as I turn things in, rather than learning in class.

Is this going to be a problem for me?

<<<shanghaiwes>>>

I visited Caltech yesterday and talked to a bunch of kids there. Here is a few quotations:

A: "Do you remember when was the last time you slept?"

B: "You mean like...real sleep?...Uh...I've fallen asleep..."

C: "I'm in the middle of a 4-hr f\*\*king exam...the people next door are having sex, I can't even concentrate!"

D: "Caltech sucks...Don't go here."

E: "yeah. Life sucks. In high school, you should just get high, get drunk...and here in college you do the same!"

A: "Do you love science?"

Me: "Yeah, I love physics."

A: "Right...I remember when I was like that."

I am DEADLY serious about it. I can't say anything about MIT though cuz I haven't been there.

<<<tech\_fan>>>

You did visit final exams on the last (most crunched) day... plus the people who hate it are always more outspoken.

But there is some truth to some of it. The place is not for the weak.

<<<shanghaiwes>>>

Firstly, I love Caltech. I'm just telling the truth about my trip. I've seen lots of good things about Caltech too: the amazing wind tunnel, beautiful fountains, and met some extremely nice professors. JPL is there too, so there're good opportunities. Overall, Caltech is one of the best colleges in the world, no question about it. It is hard for most people, but some might love it. It's always like this; though the fact is that lots of people aren't liking it there--maybe they'll thank caltech after they graduate.

<<<webhappy>>>

Whoa, what house(s) did you visit Shanghaiwes?

This has been a decently easy week for the pass/fail frosh. My roommate, for example, started relaxing after Saturday (only two finals). I can't believe your sample is that skewed...!

BTW, I think i2hub rocks! I've downloaded ~14 gigs the past few days. My last real final was Tuesday :)

<<<rtkysg>>>

shanghaiwes,

LOL! Many Caltech students will say it aloud: "Life is hell here, Caltech sucks, it's crazy, I should've gone to Stanford, This is the worst time in my life and so on ...". But you missed the implicit pride of being in the school, i.e. at the same time claiming that: I am studying in science geniuses school, the workload I have is the toughest ever, Caltech is the hardest school in the world, only best of the best can survive here and so on ...". Hence you need to look at both side, don't take words for granted :)

<<<sakky>>>

Ah, Ben Golub, once again, you can't stop with the personal insults, can you?

First off, are you really truly saying that Caltech is demonstrably more rigorous, overall, than MIT? Forget about minimum requirements and all that, I'm talking about the whole thing. Top to bottom, are you conclusively stating that Caltech, overall, is a more rigorous school than MIT? Not equivalent, but that Caltech is more rigorous, overall?

If you are, then I'm sure that that's news to all the MIT people who hang around on CC. So if you are, then perhaps we should debate this very point on the MIT board. I'm sure the MIT people would have something to say about that.

If you are not, then that begs the question of why exactly is it that MIT has a higher graduation rate than Caltech does. But again, we can go and

debate this on the MIT board if you'd like. If there really is "no way" to figure out who is going to graduate and who isn't, then that's news to MIT. So, who's the one who's being mindless, Ben Golub?

And finally, Ben Golub, I am not going to "shoo" just because you say so. What is this, censorship? This isn't YOUR personal discussion forum, the last time I checked. So what exactly gives you the right to tell people to go away? If you don't like and don't agree with my posts, fine, but I still have every right to say it. Do it again, and I'm afraid I will have no choice but to bring the moderators in.

<<<tech\_fan>>>

Yeah, sakky, I am saying it. Caltech is, for the average student, much harder than MIT. The graduation rate is higher for MIT students because they don't have to take the courses that account for most dropouts here (quantum mechanics and proof-based analysis and linear algebra). MIT cutting off the math and physics requirements at year of easier courses means weaker students can move sooner into easier majors with nicer grading. Simple relationship. Easier overall coursework on average = more graduates on average.

Further, if MIT required the same courses we do and had the same standards for passing, their graduation would be less than ours because they have more affirmative action beneficiaries who are academically marginal.

Is that straight enough for you?

<<<Shortbus Slaughterhouse>>>

<quote><a rel="nofollow" href="/profile/Ben%20Golub">Ben Golub</a>  
wrote:</quote>

Dude, I find your comment offending. How can you justify that the AA admits at MIT are academically marginal? Are you implying an utmost importance of SAT scores in Admissions? I really know great minority admits who've gotten into MIT and are majoring in Mathematics/Physics there (and I hope that wouldn't count as an academically marginal major for you).

<<<tech\_fan>>>

I don't claim that all MIT affirmative action admits are academically marginal. Some are geniuses. But it is an uncontroversial fact that there are more academically marginal AA admits than marginal white male admits, only because the unfortunate socioeconomic history forces colleges to dip a bit lower into the minority pool to get a sufficient number of minority admits.

(My phrasing was a bit unfortunate... what I meant was "a larger number of marginal students who are affirmative action beneficiaries" as opposed to "a larger number of affirmative action beneficiaries, all of whom are academically marginal." Similarly, saying that "they have a larger number of blue dogs who are happy" would mean that they have a lot of happy blue dogs, not that they have a lot of blue dogs, all of whom are happy. Anyway, apologies for the confusion.)



<<<2bad4u>>>

wouldnt that imply that easier departments have a large proportion of AA admits

<<<2bad4u>>>

I think the more logical reason is that MIT has more majors, everyone does what they want to do no need to take quantum mech if your an econ or business major. Could there possibly be a good reason why a business major would need to take quantum mechanics. Caltech has less choices if you decide you dont want to be a math major your out of luck and probabably wont graduate and hence the lower graduation rate. It has nothing to do with difficulty, 8 and 18 majors will take the same courses at either school.

<<<tech\_fan>>>

<quote>Could there possibly be a good reason why a business major would need to take quantum mechanics.</quote>

Yes. Doing quantum mechanics makes you smarter, and better qualified for complicated business analysis too. Just ask the Wall Street firms who hire so many physics majors over business majors.

<quote>8 and 18 majors will take the same courses at either school.</quote>

I've certainly never denied that, and have been pointing it out for some time (although in truth the math and physics majors require a few more courses at Caltech, but I'll concede the point for the sake of argument.)

<quote>It has nothing to do with difficulty</quote>

But this, of course, is unintelligible nonsense. Caltech, with harder courses taken by the average student (even the econ major takes quantum, which he wouldn't at MIT), is on average a harder school\*. That difficulty is due partly to harder core requirements, although it comes from other things too. The increased difficulty accounts for lower graduation rate.

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\* Another way to put all this: two students of the same caliber and major will, on average, have to do tougher coursework at Caltech than MIT. It's true that for some majors, like math and physics, the work is just as tough at both places, that is, MIT = Caltech. But for a variety of other majors, the requirements at MIT are acknowledged to be less stringent than those at Caltech, that is MIT < Caltech, since, for instance, a bio major at MIT takes the same bio courses she would have taken here, but no quantum physics. There are very few fields in which MIT makes you work harder than Caltech.

So, on average, Caltech is harder.

<<<2bad4u>>>

The difficulty is imposed at Caltech by core requirements, the student could have the same level of difficulty at either school but in one its a choice (kind of depending on major) and in another its imposed. Not every major is going to need quantum mechanics or analysis (they would probably go on more from other courses). Im a physics major and will take those classes as req and just because they are interesting but I still dont see why all majors would need to take them and I dont believe they make you

any smarter(you might gain a better understanding of probability in quantum mech but you could get the same understanding in a probability course which business majors have to take as req)

<<<tech\_fan>>>

First, we weren't arguing where the difficulty of Caltech comes from, just that it's there. Also: being able to run off to an easy major to avoid the hardest courses, if the going gets tough, doesn't make things easier? That's like saying a long-distance runner who has a car escort to take him home whenever he wants has it just as hard as the guy who runs alone through the forest for three hours with only his own endurance to rely on. As you can see, it doesn't pass the laugh test.

<quote>(you might gain a better understanding of probability in quantum mech but you could get the same understanding in a probability course which business majors have to take as req)</quote>

Well, one thing is for sure. Anybody who says this has definitely never actually taken a quantum statistics course and a business statistics course (I say this as a math/econ major), or talked to typical business vs. physics graduates. Made for an excellent laugh though.

But seriously, you manifest a particular persistent confusion. I agree that an econ major might not \*need\* quantum mechanics and proof-based analysis. My claim is: it is undeniable that someone who has made it through those courses without failing -- regardless of major -- is guaranteed to be at or above a certain (very high) intelligence cutoff. Somebody who took easier classes is a wildcard.

The powerful signal of having overcome very difficult stuff gives the Caltech diploma a great deal of value in terms of communicating truly extraordinary intelligence and tenacity. If someone is a Caltech grad, you know immediately they made it through that stuff. That just isn't true at MIT, where someone can take the (easy) basic math and physics and then spend the rest of the time in photography classes.

Being at a very hard place, where everybody has to have it in them to make it through truly demanding material, is not for everyone, but it makes Caltech an amazing place for some of us.

<<<joemama>>>

Just a few random observations:

Whenever I hear Ben and others bragging about how tough CalTech is on its students, it makes me think of the movie Animal House...especially that scene where Kevin Bacon is being paddled as part of a Fraternity initiation. Poor Kevin keeps yelling "Thank you sir, may I have another" , as a sadistic character named Doug Neidermeyer whacks him over and over again with a heavy paddle. Moral of the story: A good education doesn't have to be painful and humiliating, just look at MIT.

Regarding the RIGOR INDEX: I can find no independent, third party that researches RIGOR and ranks all the Engineering Schools accordingly. It seems to be purely an invention of CalTech students. Not surprisingly, CalTech is always #1 on the rigor index. Despite their shortcomings on

RIGOR, MIT and a few other schools are usually ranked ahead of CalTech in most engineering disciplines.

Regarding Econ majors being required to take Quantum Physics: come on, that requirement is just plain stupid. Wharton, Harvard and all the great business schools don't require Quantum Physics and somehow keep churning out great Economists, Analysts and Business Managers. When you give a kid a hammer, everything looks like a nail. At a small, inbred physics school, I guess everything looks like a physics problem. It's an incredibly parochial way of looking at things. Maybe CalTech doesn't have enough high level Econ courses and so has to dip into the Engineering to create enough credit hours for graduation? Anyway, it would be silly to go to CalTech for Econ--is CalTech even ranked in the top 500 for Econ?

<<<2bad4u>>>

"My claim is: it is undeniable that someone who has made it through those courses without failing -- regardless of major -- is guaranteed to be at or above a certain (very high) intelligence cutoff"

I think people have different niches, someone who can pass those classes isn't by default a great economist or biologist, those courses show he/she's a good physicist or mathematician but not necessarily good at their major.

" When you give a kid a hammer, everything looks like a nail."

LOL,

<<<tech\_fan>>>

Caltech is ranked in the top 20 for Econ (USNWR), having been seriously started up that department 15 years ago (we go fast, whee). If you ask anyone (say, at MIT) they will confirm that it is generally agreed in the econ community that Caltech has among the best game theorists and microeconomists anywhere in the world. (Colin Camerer, Peter Ordeshook, etc.)

Incidentally, more Nobel Prize winners in economics during the last 20 years studied math or physics as undergraduates than studied economics. Just goes to show how little you know about the fields you heap your worldly CC wisdom upon. You do know a lot about Kevin Bacon films, for which I applaud you.

(This is harder to document than the Nobel claim, but it's also true that high-level investment banks vastly prefer to hire out of math and physics programs for their quantitative business and economics departments. They almost never hire economists for that, because most undergraduate economists are very weak mathematicians, unless they come out of Caltech. You can confirm this by placing a call to a recruiter at any top five firm.)

And by the way, who said we were talking about engineering? You seem to persistently think this, whereas most students at Caltech are scientists. Nobody ranks ahead of Caltech in physics, and we're top three in all the

hard sciences. I'm not going to fight the engineering battles, and I tell most engineers at prefrish to go to MIT or Stanford. Maybe you're one of those people very far outside the quantitative world who classifies anyone in a quantitative profession as an engineer? (I adore the short-order dinner cook at Avery House who tells me to persevere so that I can be a "math engineer" when I grow up.)

As for "may I have another" -- yeah, we look like masochists from the outside. We like brutally hard, seemingly impossible work. It makes us feel like we deserve the grades and the diploma, plus we just get pleasure out of difficulty. Not many people can understand the Kenyan marathoners who log 20 miles a day, either. The good thing is that most of us don't care whether you understand ;-).

<<<joemama>>>

Top 20? Hmmm! Tell me how highly you regard the 20th ranked Physics program...especially when you find it so easy to demean the higher rated programs at Stanford Berkeley and MIT.

Undoubtedly Math is important to Econ, banking etc. No one would argue that. It's a different situation for Quantum Mechanics, which is what that comment was about....Unless you can find an Economist, Nobel Prize or not, who attributes their success to Quantum rather than calc and other math.

Ben, you obviously have a lot of brains and determination. I hope that you will continue to persevere.

<<<tech\_fan>>>

Well, thank you for your kind words joemama.

I wish what you said about math were true. To my chagrin, investment firms seem to prefer (all else equal) phys to math candidates, just because physicists have more expertise in \*modeling\* phenomena. So quite a few investment bankers out there would probably owe at least their hiring to a physics major. Quantum mechanics isn't as useless as you think, even to bankers.

<<<dLo>>>

What Ben means (correct me if I'm wrong) is that the material of Quantum Mechanics is not important to Econ majors, but the difficulty of the class trains their mind. It's like weight training for athletes. Athletes never have to lift weights in their sports (except wieght lifting of course) but it trains their muscles for their specific sports. Quantum Mechancis and Caltech's slew of advanced math and physics trains the brain for other subjects.

<<<tech\_fan>>>

Well said, dLo!

<<<joemama>>>

As I said before, my comment (if you care to read back and decide to play fair) was specific to Quantum, not the more general world of physics. Physics is not just Quantum Mechanics; i should hardly have to instruct someone from CalTech in this matter.

I looked up some of the recent nobel prize winners in Econ, they were varied sample of math, econ or physics. I'm certain the IB community hires the same way.

dlo: that's a stretch. But if you persevere, someday you will be a certificated math engineer fellow and your parents (and the cookman) will be proud.

<<<sakky>>>

Well, this conversation took an interesting turn.

I like dlo's comment, for I think it captures a lot of the spirit of the discussion.

<quote>What Ben means (correct me if I'm wrong) is that the material of Quantum Mechanics is not important to Econ majors, but the difficulty of the class trains their mind. It's like weight training for athletes. Athletes never have to lift weights in their sports (except wieght lifting of course) but it trains their muscles for their specific sports. Quantum Mechancis and Caltech's slew of advanced math and physics trains the brain for other subjects.</quote>

I can accept the weight-training analogy. In fact, I think it is a quite useful analogy. One could say that you are using a difficult class to train your mind.

The last 10 posts or so have been about the economics community, useful skills to be in business/banking, and so forth. I would invoke another one of Ben Golub's posts.

<quote>Doing quantum mechanics makes you smarter, and better qualified for complicated business analysis too.</quote>

I might buy some of that. When you couch education in that fashion, that is noncontroversial.

The problem is that Caltech doesn't just use those classes to train students' minds. There 's a subtle, yet tremendously important point to be made. Training people's minds is only one purpose. As Ben Golub has himself admitted, it seems that one of the other purposes of those classes is, basically, to flunk certain people out. For example, consider the quote of:

<quote>The graduation rate is higher for MIT students because they don't have to take the courses that account for most dropouts here (quantum mechanics and proof-based analysis and linear algebra).</quote>

Aha, so the truth comes out. The purpose of the class is not just to make some students stronger. It's also to make bad students to drop out. It's not just weight training - it's also about weeding.

For example, let's say that I go to Caltech and I want to major in economics, yet I flunk out because I can't pass QM despite the fact that economists don't really need to know QM. Now, again, is it useful for economists to know QM from a "mind-training" aspect? Of course it is. Do

they need to know it? I don't think so. After all, I would argue that the majority of all Economics Nobel Prize winners never took QM. Yet here you are, potentially denying somebody an economics degree because he can't handle QM, when the fact is, QM is not necessary to become a good economist. Useful but not necessary.

Hence, I have no problem in recommending that econ students take QM. That's fine. But to make the granting of the economics degree contingent upon passing QM - you go too far.

However, all of this discussion misses the basic point that I've been making which is that I think there has not been a proper focus on those Caltech students who don't do well. We can talk about all those Caltech students who have done very well and that's great for them. But what about the ones who don't? What about the ones who come and really struggle? The prevailing attitude seems to be that they shouldn't have chosen Caltech in the first place, and so they're stupid and deserve to get screwed. That's a very flip and cold attitude. That's like looking at a bunch of maimed and dead soldiers and saying, well, they shouldn't have chosen to join the army and so they're stupid and they deserve to be maimed and killed. I think we have to be a little more compassionate than that.

<<<joemama>>>

sakky: Looks like you found a "smoking gun" to win your long-running argument. With that kind of determination and persistence you might make a good engineer or, even, an economist.

<<<tech\_fan>>>

I never said or implied that the \*purpose\* of the QM requirements is to flunk certain people out. That's just a side effect.

Since you like war analogies. Suppose a general says "The accidental civilian casualty rate is lower for the other generals because they don't attack enemy positions as aggressively as I do."

(To make the analogy explicit "casualty rate" = "dropout rate"; "attack enemy positions" = "require hard courses")

Has he admitted that part of his \*purpose\* is killing innocents? Of course not! He's just admitted his other purposes (fighting hard) have unfortunate side effects. We also admit that our purposes (training minds rigorously) have unfortunate side effects (losing the weak).

<<<sakky>>>

Whether it's a side effect or a purpose of a particular class, what does it matter? At the end of the day, the result is the same - people are flunking out because of that class. And you have to ask the question whether that's a good thing or not.

To extend your war analogy, so just because a general does not make it an explicit goal to kill innocents, so are you saying that killing innocents is now perfectly fine? So when you go to the battlefield afterwards and you count up the dead bodies of innocents, well, hey, as long as the general didn't make it an express PURPOSE to kill them, then it doesn't

matter that all those innocents died , right? All these innocents die, and you just shrug your shoulders and say "who cares", right?

What I'm saying is that your attitude, Ben Golub, is easy to have when you're not one of the 'dead innocents'. It's easy to say that your school should have a lot of rigor when you're one of the ones that is doing well. What if you were not doing well? Sorry to be blunt, Ben Golub, but I think they'd find all your chest-thumping machismo about the rigor of Caltech to be grotesque.

Here's what I want you to do, Ben Golub. I would like you to find a Caltech student who has either just bombed their exams and is on the verge of being thrown out, or has already been thrown out of Caltech, and I want you to tell him that it's great that Caltech is so rigorous and that those who don't do well here were foolish to have come, and all the other stuff you've said on CC. If you really believe all the things you've been saying here, then you should have no problem in saying it to those people, right? Go ahead, do it. I would just advise you to make sure your medical insurance is up to date, because they're probably going to want to kick your tail.

<<<joemama>>>

sakky and ben: the "generals" at the Institute know that there is an approximate 15% casualty rate. They have created a gauntlet that all must run; those that don't make it are by definition "expendable" on the way to the Institute achieving its goal of running a rigorous program. It is a cold way of viewing your troops, but that's what all general do.

I really don't have a problem with this attitude so long as prospective students are clearly aware of the high risk of being blown out of the program. I suspect the viewbooks and presentations to Prefrosh do not adequately inform the eager new recruits of the dangers, instead couching it in terms of being a "challenging and rigorous program."

Maybe before a freshman recruit is allowed to sign on, they should have to read and sign a statement that details CalTech's high flunk-out, burn-out, blow-out rate. That way, there are no "innocents."

What do you think?

By the way, I've always wondered--If 15% or so actually leave CalTech, how many more would like to, but don't. Another 10%? Another 15%?

<<<tech\_fan>>>

I agree it's sad when people fail out, but sakky lied by saying that was our purpose, and it just isn't, so I thought I would call him on that. Now I will paste my response from a parallel debate on the MIT board that takes care of sakky's other points:

sakky --

You make me out to be far more heartless than I am. First, I personally know one person and know of several others who have failed (miserably

\*failed\*) out of Caltech and transferred to Duke. Duke isn't so terrible! I must say I don't feel all that bad for them. So your assumption that Caltech leaves these people screwed and dead is just ridiculous. I do empathize those whose lives are severely disrupted by not doing well here, and I wish it didn't have to be that way.

But it *does* have to be that way, unless we want to give up the mission of Caltech (I'll just use that example because it's where I go; lots of what I say, especially toward the end, applies very well to MIT, too). You have said before, "screen out those who will fail with stricter admissions" to fix the problem. I told you (truly): that's impossible; no institution as hard as Caltech can use high school data to screen out nearly all the students who might fail. When you brought up MIT as an alleged counterexample, I pointed out the requirements are not as hard (no required quantum mechanics, e.g.). You have, since then, been arguing "get rid of the QM requirements for econ majors, it doesn't make sense, etc."

But THAT's exactly the point where you start telling us to change the education. The very idea of Caltech is that everyone here understands quantum mechanics. It's our quirky little idea, and it's what gives the Caltech name a special unique something (not necessarily better) that nobody else has. In telling us to loosen the requirements for some people, you've acknowledged that we can't reduce the hurt on the bottom 10% without changing the nature of our school.

**<b>And the main thing that you don't see is that those changes would hurt other people; probably the entire top 50%. There wouldn't be a school anymore where even economics professors can make casual references to the wave equation and be sure that everyone will understand. I would be a very sad person if there weren't such a place. Yes, I could take the same hard courses, but it wouldn't be the same -- there wouldn't be the same ambience, the same spirit of the <i>place</i>. And why don't you care about me, heartless sakky, or the thousands like me at MIT and Caltech? Why don't you care about how much worse our lives would be?</b>**

I'm just glad that people with unthoughtful views like yours don't actually have any influence, at least at my school.

So yes, some worthwhile ventures end up hurting some people. The NBA makes lots of people's lives somewhat worse than they would have been otherwise -- development league players who never make it big and waste the best years of their lives striving for something they'll never achieve. Should we abolish the NBA or reduce the requirements for playing pro ball? But that would destroy pro ball and not give the truly great a chance to shine. Either way, someone gets hurt. That's not a reason to hurt the best people.

If you seriously espouse the views you put forth, misguided sakky, you are an enemy of greatness. Shame on you.

<<<alleya>>>

sakky,



You asked on the other forum (but I'm posting here, since it has nothing to do with MIT), about the students who are doing poorly academically. You asserted that anyone who doesn't graduate isn't happy with their school. I completely disagree with that. Just from my own experience, I've known many people who may not graduate who still love Caltech. First example is the one Ben gave of the girl who transferred to Duke. She realized soon after that she really missed Caltech and transferred back. But, she's still been having academic difficulties and currently isn't a student. If it turns out that she doesn't graduate here, I think she'll still say she loved Caltech, as evidenced by her continued attempts to continue here as a student. Another example is of someone who transferred here, loves it here, but had difficulty adjusting to the academics. He also currently isn't a student, but he works in one of the labs on campus and has been offered some wonderful job opportunities. I've had lengthy discussions with him and he's perfectly happy -- both with his life and with the school. In fact, he helped cheer me up when I failed a class for the first time recently. And no, I didn't consider transferring at that point -- not because of the trouble of transferring, but because I truly love the academic education I'm receiving here, even if my grades demonstrate that I'm nowhere near the cream of the crop.

Like Ben pointed out above, it's perfectly acceptable for many schools in the nation to cater to the average student and do everything possible for them to graduate. But shouldn't SOME schools cater to the above average students, and concentrate on giving them the education they need, rather than devaluing it to increase a yield rate?

<<<joemama>>>

Alleya and/or any other current CalTech student:

How does a CalTech student ever fail a math, physics or other science course? Is it lack of effort? Lack of available time? Bad professors or TA? Just not smart enough?

<<<tech\_fan>>>

Very good question, joemama.

High school math is largely technique. Learn this (small) bag of tricks, get some problems (so that it's fairly obvious which method to use in each) and apply the methods.

Caltech math (and to some degree physics) is largely ingenuity. Get this problem that seems very hard, rack your brain until you find an approach. The field is very wide open; it's rarely "obvious" what to do.

Some people are quite brilliant (or very experienced) and get all the answers. Some people are not so good at it, but very hardworking. They ask the TA, they talk to the profs, they ask their classmates, and pass the courses.

If you got into Tech, there is no question you CAN pass, either through smarts or hard work.

The problems arise when somebody doesn't exactly get everything instantly, but likes the idea of the free time had by some of those who do, and leaves work til last. Those people have no time to go to office hours, etc., and don't do the work or understand how to solve such problems.

So flunking out is almost always a combination: a lack of very good aptitude for the class, combined with some laziness.

<<<sakky>>>

And how exactly am I heartless and hurting people? I am not stopping anybody at Caltech from taking whatever hard courses they want to take. If you want to take hard courses, feel free. But to require if ot people for which those courses have nothing to do with their major.

What I am saying is that perhaps if you don't want to take difficult courses that have nothing to do with your major, perhaps you shouldn't have to. If it's rigor that you're so concerned about, then the Caltech economics department should create a highly rigorous (but still related to economics) gateway course. You and I both know that QM has only a tangential relationship to economics.

I would also say that that's where your NBA analogy breaks down. To make it in the NBA, you have to play good basketball. Nothing more, nothing less. The NBA doesn't have a requirement where you have to also be great at hitting a baseball. Hitting a baseball has nothing to do with whether you're going to be a good basketball player or not. Look at Michael Jordan - a mediocre baseball player, yet the best basketball player ever. Yet here's a place like Caltech, requiring QM of an economics student. What's up with that? In the NBA, the only requirement is that you know how to play basketball - not these other requirements that have nothing to do with basketball.

And to Ben Golub, you have constantly insulted me over and over again. Do it again, and the gloves will come off. I have absolutely no problem in reporting you to the moderators and getting you banned. It's one thing to disagree with me. But to constantly resort to personal attacks? Shame on you for constantly resorting to personal attacks.

<<<tech\_fan>>>

If we followed your suggestion, abolished required physics, and replaced it with an econ course (for econ majors) of comparable difficulty, you'd complain that we don't care about the people who fail that. There's no winning with you, sakky; I suspect your ideal solution would be just handing the diplomas out during prefrosh weekend. ;-)

<<<porcupyne>>>

students may not like it, but there are bound to be classes that are seemingly (probably) useless to their major. if i were an art or music major, i would still need to take college algebra, statistics, or pre-calc in order to transfer to a lot of universities. while it may be useless to me and my major, it is still a condition of transferring.

quantum mechanics and linerar algebra is pretty much the same thing at caltech. it might not have much to do with econ, but like it or not, it's

still a requirement for graduating. i suspect that the school even provides tutoring or some other form of help to students who might have problems.

<<<tech\_fan>>>

It does! The Dean's Office pays for upperclass tutors for students having trouble.

<<<sakky>>>

Ben Golub, you say that that I would complain anyway even if Caltech abolished required QM for econ majors, replacing it with an econ class, then Caltech should simply take my talking point away. In other words, let Caltech indeed do away with the QM requirement for its econ majors, and then we will see if I still complain. Go ahead - take my talking point away.

Again, nobody is saying that a guy who majors in Econ isn't allowed to take QM. He can do it if he wants. The point is why should it be required of them? So far I have heard the 'weightlifting' argument (that QM builds mental discipline and strength), and the 'culture' argument (you develop cohesion in your community by forcing everybody to take the same core, and if you don't do it, you're not a "real" Caltech student).

However, I would further the point by saying that I am fairly confident that Caltech has plenty of economics graduate students (in the Social Science PhD program) who have never done QM, yet Caltech doesn't seem to have a problem with admitting them. Are you saying that these guys are not properly 'mentally weight-trained' because they never did QM? Is anybody accusing these guys of not being "real" Caltech students because they never did QM? I find it odd that Caltech would require QM of its economics undergraduates, yet Caltech seems to have no problem in granting doctorates to guys who have never done QM. It seems to me that if the benefits of QM are really so appealing, then you should require it of ALL your students, not just your undergrads.

<<<tech\_fan>>>

Well, the debate started with you saying we're heartless because we have a relatively high dropout rate. Now you seem to be backpedaling and saying rigor is okay when it's in the field that a person asked to pursue. I.e. very tough physics courses are okay for physics majors.

What I'd say to that is that it's essentially acknowledged everywhere that a degree from Caltech in ANYTHING is essentially a Physics degree PLUS whatever else they study. I promise, our viewbook makes this abundantly clear. We don't hide it from our prospective students that incidental to their other studies here will be a almost a full physics major by the standards of almost any other school.

The students who come here ask for the rigor, and it would be unfair to deny it to them.

Plus, you never answered the culture argument! It's important to have some places where everyone is very hardcore. Your only response has been "yes, unless it hurts people." But it's not like we're taking these innocent

people and forcing them to learn QM for my entertainment. They asked to come here, and we're giving them what they signed up for. If you take away the culture, you hurt me -- it won't be the same if only a fraction of the people takes the hardcore core, even if I take all the same courses. So why should you ignore that you'd hurt me?

<<<2bad4u>>>

the econ grads should have to prove that there hardcore and take QM to get grad degree.

<<<Edward A.>>>

"What I'd say to that is that it's essentially acknowledged everywhere that a degree from Caltech in ANYTHING is essentially a Physics degree PLUS whatever else they study."

So what would you call people with an actual degree in physics or applied physics at Caltech? Physics supergrads? :)

<<<SteelPangolin>>>

Sakky: we don't consider graduate students to be people.

<<<benjones>>>

<quote>Caltech is, for the average student, much harder than MIT... if MIT required the same courses we do and had the same standards for passing, their graduation would be less than ours because they have more affirmative action beneficiaries who are academically marginal. Is that straight enough for you?</quote>

First of all, both MIT and Caltech are phenomenal schools and debating which is "better" is futile. Some students will be happier at MIT and others will be happier at Caltech. And still others would be equally happy at either. It depends on the unique priorities of any given student.

My job is to relay to prospective applicants what is wonderful about MIT. Do I need to take stabs at Caltech in order to do this? Of course not. And why would I? I have enormous respect for both places - this is why I don't get involved in these one-is-better-than-the-other debates.

The truth is, as an MIT admissions counselor I personally like to think of Caltech as our main ally in this messy world of top-tier schools. Why? Because, generally speaking, MIT and Caltech don't tend to get caught up in the elitist crap that so often flows from some of our peer institutions (who shall remain nameless but who should be obvious). Both MIT and Caltech know who they are, know the worth of the educations they provide, and enjoy a well-earned self-confidence.

So Mr. Golub, with all due respect - you (and Caltech) are MUCH better than that elitist quote up there. MIT and Caltech should join together to stomp that kind of thing out, not perpetuate it. Both of our cultures depend on it - are *built* on it, for that matter.

<<<dLo>>>

Well said, Ben Jones. There should really be more respect between the 2 schools.

<<<tech\_fan>>>  
Mr. Jones --

Thanks for your post. Your point is well-taken. At the same time, I'd like to point out that I certainly didn't start this discussion with the paragraph you quoted. (Indeed, as I say a few lines down in this post, it started as a respectful conversation about the differences between the two schools' approaches.) As I mention quite frequently, I have a great deal of respect for MIT and think that arguing about "prestige" of "eliteness" is incredibly dumb. On this point, you and I agree.

That doesn't change the fact that, even in the MIT-Caltech market, lots of people make their decision based on those factors. And this thread, which was initially a very subdued pro-and-con discussion in which I went out of my way to point out MIT's many virtues (diversity of curriculum, practical relevance, etc.), turned into a Caltech-bashing party officiated by some \*\*\*\* (pages 4-10, or something).

While I hate that they do this, I really can't sit around quietly while a prestige-focused individual like sakky insists that we are an evil place with far too high a dropout rate while MIT provides an education exactly alike in difficulty with a lower dropout rate. I also hate that, unless I spoke up, far too many people would take the claims of sakky, etc. at face value. How do I know that they would? People whom I know in real life have told me that they believed some of the (ludicrous) Caltech-bashing posts on this board when nobody bothered to correct those posters.

I promise, Mr. Jones, if I thought that most people ignored trollish "Caltech sucks, MIT is better" nonsense as the nonsense that it is, I wouldn't waste my time on this.

Unfortunately, sometimes what they say about Caltech (e.g. about our relatively high dropout rate) is true. What's false is the claim that other places have few of our problems and all of our virtues. In this case, the only way to answer the objection (as opposed to folding and letting my school look second-rate) is to point out that those other schools -- sometimes MIT -- don't share exactly all the same virtues.

In fairness, I think that you would probably not be too happy yourself if somebody persistently bashed MIT for being too hard on its students ("driving some to depression", etc.) and lauded Harvard for being "more prestigious," less depressing, and offering just as rigorous an education across the board. At the very least, that would be unfair. So hopefully at least you can understand my feelings.

I am very much with you in the hope that MIT and Caltech can remain the noble places that they are without being dragged into stupid arguments like this one. I also hope that the \*\*\*\* who initiate bashing of one school or the other will stay in the forums of the other schools to which you alluded, where that kind of thing is more appropriate.

All the best,  
Ben

<<<benjones>>>  
Hey Ben,

Thanks for your response. Some brief thoughts...  
<quote>I... think that arguing about "prestige" or "eliteness" is incredibly dumb. On this point, you and I agree. That doesn't change the fact that, even in the MIT-Caltech market, lots of people make their decision based on those factors.</quote>

But are those the kind of people you really care about? The kind of people you really want to help recruit? Don't you want people coming to Caltech because they truly want to be there, not simply for the name?  
<quote>People whom I know in real life have told me that they believed some of the (ludicrous) Caltech-bashing posts on this board when nobody bothered to correct those posters.</quote>

This saddens me. It seems to me that anyone who truly belongs at a place like Caltech or MIT can distinguish between reliable and unreliable sources of information. People with enough brains to get into these schools do their homework before choosing. Visiting campus, talking with current students... depending on <i>informed</i> primary sources - not anonymous \*\*\*\* on a message board.

Other readers - please correct me if I am wrong. But I give applicants of this caliber the benefit of the doubt.  
<quote>In this case, the only way to answer the objection (as opposed to folding and letting my school look second-rate) is to point out that those other schools -- sometimes MIT -- don't share exactly all the same virtues.</quote>

I respectfully disagree. You can correct the falsehoods and dispute the exaggerations being made by the \*\*\*\* - and put a positive spin on Caltech - without speaking negatively about another institution in an attempt to supplement your point. I would argue that being forthright about the merits of Caltech - without feeling the need to compare the school to any other, either positively or negatively - shows a quiet, affirming self-confidence. By defending Caltech so rigorously using comparisons, however, it makes it seem like you feel the need to prove something. I say this respectfully: Caltech doesn't need to <i>prove</i> itself to anyone, at least not to anyone who matters. And by trying to do so, I fear that you're accomplishing the opposite of your intention.  
<quote>So hopefully at least you can understand my feelings.</quote>

I wholeheartedly do. I am just suggesting that, as representatives of two of the coolest schools in the world, we set a standard of class and respect for others to follow. I've attempted to do this with all of my messages for MIT. And as I said, I like to think of Caltech as an ally in the battle against the elitist tendencies of some of our peers.

Care to join me in a bi-coastal mission to keep our respective forums on this board positive? Caltech and MIT should have each other's backs on this.

<<<tech\_fan>>>

And thank you, Ben, for responding. One quick point of substance before I gladly accept your invitation.

<quote>I respectfully disagree. You can correct the falsehoods and dispute the exaggerations being made by the \*\*\*\* - and put a positive spin on Caltech - without speaking negatively about another institution in an attempt to supplement your point.</quote>

I agree that speaking unkindly about other institutions is never necessary, and I apologize for that. The challenging situation for me arises when people say

<quote>(i) Caltech loses about 10% of its kids, while  
(ii) MIT is just as hard and keeps nearly all of them.

Hence

Caltech is worse at helping its students manage a difficult program.</quote>

Note that (i) is true. Hence, if (ii) holds, Caltech really does take poor care of its students compared to peer schools. So the only way to deny the conclusion that we take poor care of our students (which I think is false, and you probably agree) is to take issue with claim (ii), which unavoidably concerns places <i>other</i> than Caltech.

I think the right answer would have been to point out that there are academic hurdles at Caltech that don't arise at other schools, and that other schools would face similar problems if they had the same hurdles... in those words. I probably wouldn't have ruffled any feathers had I said it that way, and I should have said it that way. (In fact, I did say it that way at least twenty times, starting on the first page, and then lost my temper, but that's not an excuse... losing one's temper with \*\*\*\* isn't a thing for a self-respecting person to do. I apologize for that.)

Most importantly, I think the mission you propose -- to keep these forums free of nonsense -- is an extremely good idea. We are more than halfway there; it is a blessing that there are no losers \*\*\*\* the MIT board "on behalf of" Caltech, for that would embarrass us greatly. And I certainly know that virtually everyone affiliated with MIT would immediately renounce the "Caltech sucks, MIT wins" sort of \*\*\*\* we saw in this thread, if they were told of it.

It is still hard not to lose one's patience after the reasonable response repeated twenty times does not silence the \*\*\*\*, but you've certainly convinced me that the annoyance is more than worth it to keep these discussions worthy of our institutions. I promise to join you in striving for that goal.

Many thanks,  
Ben

<<<tech\_fan>>>

I make this a separate post because it concerns a broader clarification that I owe to Ben and to MIT (and it would have blurred the point of the previous message).

I hope you believe me when I say that I truly do hold MIT in the highest regard. I think it is an absolutely amazing place. Our schools have taken different approaches to recruiting, admissions, core requirements, and many other things. Both approaches present unique challenges and considerations about long-term strategy. But I would never claim that one set of choices is "better" than another; the world desperately needs a diversity of practices in this area.

I get frustrated when people assume we should have precisely the same goals and the same results, and that goes both ways. I think its ridiculous when people say MIT betrayed some duty (sold out) by seeking a broad, and less exclusively scientific focus -- it has gained immensely in social and humanitarian aspects as a result. And I think its equally ludicrous to say Caltech is inhumane in not copying the exact practices of its esteemed peer schools (and not achieving the exact same numbers) -- if we did that, we would lose so much of our unique value.

This is all a rather long-winded way of saying that my frustration, expressed so inappropriately in that passage you quoted earlier, does not indicate disrespect for you or your institution -- just a desire that people would leave each school to pursue its own focus, without claiming that either place is evil for doing so.

So, please accept my apologies, and thank you for your reasonable and kind words throughout this discussion.

<<<benjones>>>

Thank you Ben for your kind and heartfelt responses, and thank you for accepting my invitation. I hope that others in our communities will embrace this, however idealistic. It is representative of the cultures of the schools for which we speak - which happen to be the same schools that consistently find themselves at the forefront of that which changes the world for the better. No coincidence, if you ask me.

I do understand where you were coming from when responding to the post you quoted in the first of your two responses above. Believe me, I know what it feels like to have to correct false stereotypes ad nauseam and to constantly ensure that folks are comparing apples to apples - it can be immensely frustrating.

I just took issue with what I perceived as an insinuation that we were lowering the standards of our curriculum to accommodate our "academically marginal affirmative action beneficiaries." The reason that I called you on that is because I am familiar with your respect for MIT and the general integrity of your posts, and thus that comment seemed out of character. I now know that this was not your point - and I won't give it another thought.

I wholly believe that you hold MIT in high regard, no worries there. What you respect about MIT is what I respect about Caltech - the differences



between us. As much as the schools are alike in some ways, they are also very different. These differences should be celebrated. They create a wider spectrum of thought and opportunity in the world, which will no doubt bring us all closer to solving the world's great problems.

So Ben, thanks again for accepting my invitation. Here's to working together for more productive threads (and fewer false stereotypes for both Caltech and MIT) across both forums.

: -) B.

<<<JerseyMom>>>

A note to the Public Ben Golub:

By way of introduction, I've been a lurker at CC for the past several months, as my daughter has been involved in the college application process. After she was accepted early to both Caltech and MIT, I began skimming these boards to learn what I could about the personalities of the students and life at both schools. In the interest of fuller disclosure, I will add that I know personally only one young woman other than my daughter who was accepted by MIT; she was also accepted by Caltech.

In the past few months, I have been disconcerted by the anti-female bias that has been evident in your posts regarding MIT. I have not responded before today because: a) I told myself I was too busy to become involved in a message board war (and I am); b) you are a very young man, and I am older and wiser (mathematicians may peak early, but mothers don't); c) you are not an official representative of Caltech, and I am aware that the administration does not share your viewpoint.

Ben Jones has taken the high road and reminded us that both schools are truly amazing institutions who on their own are enough reason for Americans to have pride in our youth and hope for our future. But it is my concern for that future that brings me here today. I don't represent MIT or Caltech. I'm here as a mother, as a mother of a girl who when she first accessed the Internet sought out the websites for NASA and the JPL and Caltech, a girl who at seven began saving her pennies for her future at Caltech. How many other girls are out there now, filled with the kinds of dreams our country -- our planet -- needs? Are any of them reading your comments? Worse, are their brothers reading them? Their fathers? Their mothers?

Only a few days ago, you wrote that MIT is accepting "girls and minorities of middling academic talent ... who would get mauled by many Caltech kids in a head-to-head academic match-up." Excuse me? Out of the hundreds of thousands of girls pursuing STEM degrees today, what logic is there in assuming that a world-renowned institution such as MIT couldn't skim five hundred or so from the top of the talent pool who could hold their own against a Caltech man? Do the arithmetic.

What concerns me most is that over the months of your increasingly bold statements about the women at MIT, other Caltech undergraduates have not risen to the challenge and argued against you. In fact, on one of my visits to Caltech, a tour guide told me that Caltech would be a better

choice for a female than MIT, because a young woman accepted at MIT would run the risk of being treated by the men around her as if she were an "affirmative action" candidate. Is the culture at Caltech based on the underlying assumption that the thousands of female mathematicians and physicists and engineers who don't attend Caltech should expect to be treated as inferior?

One day you may be in a position at a university, or a corporation, to hire a woman who graduated from MIT (or Cornell, or Georgia Tech, or Stanford). Would that woman have to be twice as accomplished as a man from the same institution to meet your requirements? No problem, actually. Women are used to that. I'm willing to wager that a female engineering grad from MIT will be able to meet the double standard.

But your generation should know better.

The future of the human race may depend on it.

<<<G2sus4m6aug11b15>>>

I thought Ben was trying to comment on the borderline girls at the two schools, not the top female students, since MIT has a gender affirmative action policy.

And doesn't Ben count as an "administration" member?

<<<bean001>>>

My vote's for MIT.

<<<gryphon>>>

Jerseymom, Ben never made any comments which presented any bias one way or the other on the issue of gender. Statistically men deal with numbers more and more men apply to Caltech. Women also apply and are admitted based on the exact same criteria as a man. When a girl walks into an interview, the only thing the interviewers see is achievement. They do not have any quota to fill. If 50 women get into Caltech one year, awesome. If none get in it's the same to the school. I've been reading up on Caltech admissions pretty heavily because I am hoping to transfer and this is my understanding based all of the information I have gotten.

Ben was saying that the above scenario does not exist at MIT. Obviously they are still going to take extraordinary applicants over ones with more average achievements but, instead of looking only at achievements, there is a quota they fill every year. It's nothing about sexism above what MIT does. I know girls at Caltech and they were all lucky enough to have done research since middle school because their family members ran labs. They got in on merit, not because of any special consideration.

I'm sure in Ben were hiring people for a project and he saw a woman went to MIT then he would probably have a bias towards a woman at Caltech. He will also be an alumni of Caltech and there is an inherent bias which comes with that. If the girl from Caltech got average grades and the ones from MIT got exemplary ones and had many achievements, do you really think he would hesitate to hire them?

Have you ever asked Ben would he thought instead of writing that post? He's a very helpful guy and i'm sure he would explain what he meant. Everyone here has a very straight and arrogant writing style. I can really understand how you may have gotten that idea but I personally think that the posts may have been misinterpreted.

By the way, congratulations for you daughter. That is really great and it's good to hear she was actually set on this from early childhood. That is really pretty rare these days.

<<<tech\_fan>>>

JerseyMom, thank you for your brilliantly written post. It is wonderful to read such cogent prose and such a closely argued position. As a lover of good writing and good argument, I couldn't refrain from pointing that out.

First, to dispose of preliminaries, you correctly surmise that my posts here should never be interpreted as officially representing the position of Caltech on any issue. On this forum, I'm just a Caltech student on a message board, like many others, irrespective of whatever else I do with my copious free time.

All that aside, I owe you a substantive response to your main points. You cited the comment made by me in another thread:

<quote>There's no doubt that [MIT] is denying Axline-quality scientists to admit, in their place, girls and minorities of middling intellectual talent, plus singers, dancers, water polo players, etc. who would get mauled by many Caltech kids in a head-to-head academic match-up. Let me say, first, that there's nothing wrong with that in itself. It is certainly MIT's right as a university, and it makes for a diverse and vibrant community.</quote>

I was alluding here to the fact that MIT sometimes does not accept students who win Caltechs highest full-ride Axline academic scholarship for freshmen. Admittedly, this happens quite infrequently, but it does happen. A typical winner of the Axline has perfect scores, perfect grades in every subject, and, most importantly, scientific extracurricular achievement that completely tops out even in the extremely research-heavy Caltech pool original research or university coursework that blows away even the Caltech professors who read these applications (not a low bar to hop, I promise you). Also, it is just simply true that there are students at MIT who, on any mildly reasonable evaluation of <i>broadly scientific</i> talent and achievement at the time of their admission, would rank substantially below these Axline students. Usually, those admitted students are exceptionally desirable for MIT due to their mind-blowing nonacademic talents or the valuable diversity that they would bring.

(To be intellectually honest: I have just <i>asserted</i> this proposition, without including an appendix bearing it out with rigorous data. It would be tedious to do this, and it would certainly require more effort than I can typically expend on a CC post. If anyone familiar with the relevant talent pools would like to seriously challenge the assertion, I would probably go to the trouble of compiling such an appendix to defend my integrity; it would only require the side-by-side comparison of two

people for all to inspect, though you can see why this presents various difficulties. But, to be honest, I doubt that anyone informed thinks that what I said is in doubt.)

As I earnestly say over and over again, there is nothing either *dishonest* or *wrong* or about MITs policies in this respect. Yes, the university values nonacademic prowess and diversity of experience *comparably with* pure scientific achievement. Sometimes, one applicant beats another in the first two categories so overwhelmingly that he is more valuable to the school, despite the superior book smarts of the latter student. But to admit the most worthy students *given the schools aims and values* is not only MITs right, but its duty. The fact that some people and institutions do not share the same values does not render MITs pursuit of those values suspect.

None of that changes the straightforward truth elucidated above that sometimes, for MIT, nonacademic qualities trump pure scientific strength. The one serious (and inexcusable) flaw in my quote is that the word *comparatively* should have been inserted before *middling*. I wrongly assumed it would be understood. It is indisputable that everyone admitted to any top university is head and shoulders above the broad social average. But, as I argued at length above, some of those admitted to MIT for their nonacademic gifts or diversity value are significantly less impressive academically than some of those denied despite their overwhelming scientific talents.

I should say that Caltech, contrary to occasional perception, does not have a magical and completely academically meritocratic process. But we do as I have come to understand it consistently and unabashedly try to have a process in which scientific accomplishment and curiosity trump almost all other types of achievement.

Are the nonacademic and diversity admits at MIT quite amazing at science, compared to the vast majority of their high school peers? Undoubtedly. Are they *nearly as accomplished* in science as some of the people MIT could have had instead for those spots? Certainly not. And the bottom line is that Caltech tries very hard always to resolve these dilemmas in favor of the scientifically superior applicant.

I hope you now understand my view, which I do earnestly hold, that admission to Caltech is more reliable signal of pure academic talent focused on science than admission almost anywhere else. It is not hard to see why this is so. A students admission to Caltech means that, in our quite imperfect evaluation, the student was, **in scientific talent, achievement, and curiosity,** one of the top *n* people among our applicants, where *n* is the number we could admit. It is hard to make that claim of, say, MIT. (Remember the Axlines that they denied did MIT really admit *1735* better scientists than one of the *15* best in our pool? Even if you think that MITs pool is stronger, it would be a difficult case to argue. Even factoring in the inherently human and subjective nature of these evaluations, its a pretty hopeless case.)

So *thats* why Caltech students often say that a female or minority or athlete getting into Caltech need not worry that she is there for

reasons other than her academic talent because our process is more purely focused on talent. For those to whom that knowledge is important, the purity of the Caltech process is precious.

And, relatedly, to answer your question: if I were hiring for a job in which the most important thing was scientific talent, of course I would take admission to Caltech, *a priori* as a more reliable indication of it. With other schools, I'd have to think about what nonacademic factors could have swung this person toward the top of a list he would not have topped on talent taken alone. But I should note, in fairness, that if I were hiring a person for a people job, as opposed to a purely analytical one, I would (before I knew anything else about the candidate) probably value MIT's diploma more, and Princeton's more than that; MIT admits have a tendency to be more socially polished, and Princeton's even more so. Different diplomas send different signals. As Ben and I so amicably agreed in this thread, the beauty of these schools lies in their contrasts.

So, to answer your other accusation: *of course* I don't assume that any woman or athlete or minority from another institution is inferior to one here (that's a cheap shot). I just know that, due to the complexity of the admissions values at other schools, those students' presence at those institutions, in itself, does not send an academic signal as strong as their presence here would. And in view of the points above, I doubt even you would dispute the soundness of that judgment.

I won't devote much airtime to your cheapest shot that this knowledge makes me a sexist. Knowing the fact that some people are evaluated in a certain process under different standards does not, in any sane person's mind, constitute a prejudice, in the usual negative sense, against those people.

To conclude, I'd like to convey my praise and respect for your daughter. Our world desperately needs people like her. I'd like to think that my institution and I convey our respect most palpably through the purity of our process by giving her the fairest scientific shake we can.

<<<tech\_fan>>>

By the way -- the original short message (about how MIT denied Axlines, etc.) was written hastily a few days ago and I got involved in a discussion I should have avoided. I did just write 1500 words defending the position about how MIT's admissions priorities are different from ours, and how that leads to academically superior students sometimes being tabled in favor of ones valuable for other reasons. I don't want people to think that my statements are baseless or untrue or unjustifiable. If I didn't respond, it might have seemed that way.

But as Ben has pointed out, all schools win much more by emphasizing their own virtues rather than discussing the attributes of other elite schools, and I agree wholeheartedly -- which is why I don't like having had to write that previous message to tie up loose ends. In any case, I don't want this to drag on much... hopefully it's clear that I wasn't being sexist or evil, and we can go on to more productive threads.

<<<TheColorofPain>>>

I am personally acquainted with a student who averaged Cs and Ds in his high school math and science classes. Frequently, his test scores were the lowest of any student taking the course.

His parents had regular conferences with teachers regarding his atrocious academic results.

If I had to name the former or current students at my high school that displayed a frightful level of ignorance and stupidity, his name would be near the top of the list.

He was accepted into MIT.

This student was neither a minority nor a girl.

One of the smartest people I have ever met in my life (Axline caliber intelligence and ability) was waitlisted from MIT. (Accepted by Harvard and CIT)

Ben is absolutely correct about MIT accepting weaker applicants than they used to.

Who precisely these applicants are, I don't know.

But anyone doubting his general thesis lacks a fundamental knowledge of college admissions at MIT.

<<<2bad4u>>>

hmmm i dont find that believable, he must of had extremely high SAT scores and done some type of science achievement to have been accepted into MIT but in that case he was most likely accepted to Caltech because they put a bit more emphasis on SAT's but then again if he could reapply he might been accepted at Caltech and not MIT

<<<webhappy>>>

Wow, I don't know if there are stories as extreme as ColorOfPain's, but there are plenty of anecdotes detailing surprising results from MIT. Even a famous student (current frosh at MIT) from TJ noted such occurances.

Edit: They're not suprising, though, if you also watch for contributions to the student body's diveristy.

<<<2bad4u>>>

"Edit: They're not suprising, though, if you also watch for contributions to the student body's diveristy."

"This student was neither a minority nor a girl."

<<<tech\_fan>>>

Might have been valuable for extracurricular talents, certainly a form of diversity. As I always say, nothing wrong with that.

<<<benjones>>>

ColorOfPain - as a member of the selection committee, I can promise you that the case you have described would never have been admitted to MIT. While components other than academic achievement can certainly carry significant weight in our application process, an application isn't even considered if we do not feel confident that the applicant will be able to handle the work here. C's and D's in math and science are a red flag. A student with those stats, no matter how impressive otherwise, would not have been admitted.

I see from your previous posts that you attend Harker. A quick review of the admits from your school corroborates my aforementioned claim.

<<<tech\_fan>>>

Thanks, Ben J. I thought the claim was pretty suspect; it's good that there are people on these boards now who can knowledgeably debunk such nonsense.

<<<TheColorofPain>>>

Let me clarify;

When I said "Cs and Ds", I wasn't discussing final transcript grades.

I would never say this for the simple fact that such grades are rarely, if ever, given out at the school. The lowest final grade in any class is typically a B-, which is approximately the grade this student received in the afore-mentioned math and science classes.

Rather, the "Cs and Ds" referred to averages on tests and quizzes. Obviously, when one factors in homework, projects, and extra credit, the final grade rises significantly.

However, none of this changes the fact that this student received the low**est** grade in several of his math and science classes. This I know as a certainty.

Furthermore, this was in no way meant to degrade MIT. I apologize if that was the conclusion certain individuals arrived at.

I was merely stating an example that supported Ben Golub's contention about acceptance practices.

<<<tweaks>>>

So perhaps I'm a little late, but I'd like to say to throw in my two cents here and clear up some of the bad blood:

i) I'm a current Caltech freshman. When I decided not to apply to MIT it was solely because of location (I was in slightly unusual circumstances at the time, because otherwise this would not have been such a factor).

ii) I think MIT is a great school. I think Caltech is a great school. There are ups and downs to both, but that is true of anything in life.

iii) I think Caltech *is* a harder school than MIT. This is not simply because of the one-way rivalry; I was very suspicious of this claim at

first so I did my own research by looking at OCW homeworks, class websites, etc. I found that Caltech students typically take more classes than MIT students do (5 classes would be average at Caltech, but 4 for MIT), and that the level of rigor is a bit higher in the core curriculum. For example, whereas MIT has a basic intro Physics course, but special versions for those who want a more theoretical approach/hands on experience, Caltech only has the special versions.

So a student at MIT could take similar coursework if he wanted to overload and enroll in lots of extra stuff; it simply isn't required. I don't know what happens in the individual majors. This is just what I see in the core, general-ed courses.

iv) I feel there is *\*some\** justification in saying that MIT has a weaker pool of students, just going by the straight academics/test scores/etc. Caltech's SAT scores tend to be higher, for one, but more importantly, the general vibe I get is that the admissions committee just wants to make absolutely sure that you can survive this place easily. So that is to say, if you're extremely smart and scientifically inclined and can show this on your transcript, you're probably going to be admitted to Caltech. On the other hand, MIT would factor in other things like diversity more heavily.

Neither viewpoint is 'right' or 'wrong'. It's simply the flavor of the two that you get to choose from. There are lots of reasons to think why someone would prefer either one. And really, both are great places to be.

I'll stick to that claim. There is a popular rivalry here at Caltech against MIT, but on the personal level I don't think many people believe in it. It's just all in good fun.

<<<tech\_fan>>>

Very well said, tweaks.

<<<Joe (Caltech '04)>>>

"I'm not going to fight the engineering battles, and I tell most engineers at prefrosh to go to MIT or Stanford."

Well, I'm glad I didn't meet you at MY prefrosh weekend, way the heck back in 2000! Of course, it was clear enough then that MIT wasn't for me, and I didn't even apply to Stanford, so....

<<<tech\_fan>>>

Back in 2000 I was busy being a frosh in high school, as you know :)

Of course I think Caltech is an amazing engineering school. Plenty of our engineers get unmatched opportunities here and would have much more difficulty accomplishing the same things at a place like MIT (I gather you know this firsthand.)

It's just that when it comes to CC \*\*\*\* who try to demean Caltech in every respect, I'll take them on in pure science (where their claims are just an obvious joke) -- it's easiest for me that way.

Hope you're doing well, Joe.



-- Ben

<<<Joe (Caltech '04)>>>

Yes, it was the size of Caltech, frankly, that appealed to me the most. The fact that I developed a very close relationship with not just some, but literally MOST of my professors. The research opportunities. Etc.

I'm doing very well--I visited Pasadena the first weekend after spring break and had a great time seeing old friends, Tom Mannion, etc. I'm done with my master's program at Michigan, but going to keep working in the lab over the summer, then take most of August and September off to work a couple band camps, maybe substitute teach or something for fun, and get ready to go to the UK. Awfully excited about that! I got a new camera in preparation.

<<<Byerly>>>

I suggest that anyone interested in the differences between these schools examine the information at THIS link:

<url>[http://diversity.caltech.edu/dpg\\_reports/irvine06-04/Data.pdf](http://diversity.caltech.edu/dpg_reports/irvine06-04/Data.pdf)</url>

<<<tech\_fan>>>

Yes. Our admitted gender split is closer to our applicant gender split. From many points of view, that's a good thing, no?

<<<Byerly>>>

A significantly higher fraction of female applicants are admitted than male applicants, and a significantly lower fraction of those female admits actually enroll.

There is an obvious assumption from the link which must be rebutted - using hard SAT data - that there is an "affirmative action" policy favoring females in admissions at CalTech, no matter how they may choose to dissemble.

Props to MIT for being open and above board about its efforts to undo the severe gender imbalance that still persists at CalTech.

<<<tech\_fan>>>

Booo. I once made it a habit of getting involved in this nonsense. But Ben Jones has convinced me that it should be below me. I'll just tell you, having worked in Caltech admissions, that your accusation is wrong. But you have every right not to believe me. I just don't have the time to drive you into the ground today.

<<<Byerly>>>

I tend to see the admissions and enrollment statistics as self explanatory on the matter of "affirmative action" or whatever else CalTech wishes to call it..

The thing about CalTech that I find hardest to understand, however, is why they find it so hard to enroll a significant portion of their admits - male or female - given the tuition reductions and so-called "merit" awards they grant so liberally to those they are most interested in recruiting.

<<<tech\_fan>>>

I thought I made it pretty clear that I won't waste time on \*\*\*\*. Thank you for your thoughtful contributions to this board, Byerly.

<<<benjones>>>

Different places are good for different people, and different places have different ways of choosing the members of their classes. Differences are not a bad thing. For every positive thing we could say about one school, we could say something equally negative about some facet of the other (as people certainly have on these boards). But we don't accomplish much by singing one school's praises at the expense of the other.

I'll also say that people make assumptions about admissions (at both schools) that are based on very limited views of the overall picture. Admissions decisions at schools of this level are extraordinarily complicated, as is the concept of yield.

I guess I'm just trying to say that admissions and enrollment statistics are *hardly ever* self-explanatory. I do this every day and I still often cannot see in the black and white that many profess to be true.

So with that said, I renew my request to keep the MIT & Caltech boards positive, and thank Ben Golub for his earlier words to this effect.

<<<Byerly>>>

Being "positive" should not require dissembling about the extent of affirmative action programs, including efforts to achieve gender balance.

There is nothing, per se, wrong with such programs; indeed, many may consider them worthy.

What is a matter for concern, however, are efforts at CalTech - although not at MIT - to pretend that such programs do not exist.

It does not suffice to archly dismiss questions about this odd posture as the work of "\*\*\*\*."

Let us emphasize that a request for greater candor with respect to such matters on the part of CalTech advocates (we will not call them "\*\*\*\*") is in no way designed to undercut or deny the superior academic reputation of the school.

I have not understood, as the previous poster seems to imply, that we must censor ourselves here at the College Confidential - that we are to be "good news bears" exclusively - and that questions which make advocates for this school or that uncomfortable are to be dismissed as the work of evil "\*\*\*\*."

True enough, the site is famously skittish about "confrontation" and "ad hominem" attacks. I submit, however, that it constitutes just such an "ad hominem attack" to dismiss people who do not share your prejudices as "\*\*\*\*."

We are not, I do not believe, limited to "happy talk" only.

<<<SteelPangolin>>>

Well, maybe it's the royal "we" or maybe it's the Victorian vocabulary or maybe just the overuse of quotes, but I'd say we've got ourselves a Harvard \*\*\*\* here. How's the weather up there in Boston? Inflated reputation keeping y'all nice and warm?

Although Ben has wisely bowed out of the discussion, I'm going to have to back him up on this issue. There is no affirmative action program. Someone would have complained by now: you don't see a more rabid group of merit-based egalitarians than on the Caltech campus, and secrets are hard to keep at a small school. The admit percentage for girls is slightly higher because the female applicants are on average better qualified than the male applicants . This is how we do things.

If you're looking for reasons rather than a conspiracy, consider the differences in self-selection between the populations. An example can be found on this very message board: almost all of the overenthusiastic stats-laden posts with titles like "OMG\*\*\*BBQ what are my chances at cal tech" are from <b>male</b> no-hopers. From what I've seen, girls tend to have a more realistic inventory of their own abilities than guys.

<<<Byerly>>>

Unconvincing. Some supporting SAT numbers would be helpful.

Ad hominem attacks on people who ask questions you don't like is not an effective response.

<<<benjones>>>

I'm not asking you to censor yourself. I'm asking you to act like a decent human being. It's fine to ask legitimate questions that are of concern to you. But walking onto the Caltech board and saying things like <quote>The thing about CalTech that I find hardest to understand, however, is why they find it so hard to enroll a significant portion of their admits - male or female - given the tuition reductions and so-called "merit" awards they grant so liberally to those they are most interested in recruiting.</quote>

...has nothing to do with your AA argument and is quite obviously designed to get a reaction out of Ben Golub with its implication that Caltech "buys" their preferred applicants.

That is textbook \*\*\*\*. The community is not responding to your questions; they are responding to your confrontational attitude.

Come at it from a more respectful angle and people will be happy to engage in the conversation with you. That's all I mean when I ask people to keep things positive around here.

<<<Byerly>>>

My questions are legitimate, and are of concern to many people. If you are not interested in addressing them, so be it. But you are hardly the ayatollah of this or any other page.

<<<benjones>>>

I think you missed my point - I never said that your <i>questions</i> weren't legitimate. Read my post again. I think Ben G was right to bow out of this though; I will too. Carry on. Sorry for any misunderstanding.

<<<SteelPangolin>>>

SAT numbers are not helpful for the obvious reason that SAT scores don't matter here. They're expected to be within a few points of perfect, and if they're not, the applicant better have a good reason, but that's all the consideration they get. End of story. Caltech is not a "by the numbers" school; none of the top-tier schools are.

Despite your preoccupation with meaningless statistics, I always thought that Harvard didn't care much about them either, preferring to consider the kind of numbers that come from sentences like "Daddy donated three buildings to the Business School". Do they? What's with that? And for that matter, how's your Ratio? Been too long without a date? :P

<<<SteelPangolin>>>

Also, I hereby declare myself Ayatollah of this page.

<<<tech\_fan>>>

I will second Pangolin on his self-appointment, and trust that his rule shall be long and prosperous.

<<<thinkjose1>>>

I find it hilarious that Byerly's "confrontational attitude" is seen as troublesome, but no one makes the same claim of Ben despite comments like "I just don't have the time to drive you into the ground today."

In any case, I find it curious that Caltech's peer evaluation score is lower than MIT's, it retains less freshmen, and has a lower graduation rate than MIT.

<<<tech\_fan>>>

Mm, more \*\*\*\*. Did they fumigate the standard \*\*\*\* residence today, causing you guys to run around looking for new homes?

I already said I wouldn't take your bait on the Caltech/MIT stuff, so I won't.

But you're curious why people seem to object to my remarks on this board less than the \*\*\*\*, I will hazard a guess: because I spend the vast majority of my time here using my knowledge as a member of the admissions committee to answer questions about Caltech as helpfully as I can. I <i>don't</i> visit other schools' boards to engage in pointless insults that begin with "I find it curious that."

Posting specifically to annoy people and \*\*\*\* for fights is different from telling the \*\*\*\* to buzz off. I think people object to the former kind of confrontational attitude more than to the latter. That's the distinction which your subtle intellect appears to have missed.

(I realize it would have been wiser to let someone else say all of this, but sometimes it's more fun to do it myself.)

<<<thinkjose1>>>

"That's the distinction which your subtle intellect appears to have missed" more snide remarks. :)

so I won't No, it is more apt to say that you cant. They are facts.

"But you're curious..." - No, I wasn't curious. I found it hilarious. I must say, you answer questions whose answers that reflect on Caltech positively very well!

In any case, they were hardly insults-- simply objective observations. For my own good, I hope you don't have the time to "drive me into the ground!"

<<<tech\_fan>>>

If you read the 278 posts above yours, you'll find a complete response to each of your astute observations. Byebye now.

<<<thinkjose1>>>

Thanks for not "driving me into the ground!"

<<<tech\_fan>>>

You're very welcome.

<<<thinkjose1>>>

Well, I searched the thread. It seems that Caltech retains fewer freshmen and has a lower graduation rate because it is "harder." It seems like the "rigorous and academically focused" admission process (even relative to MIT!) isn't doing its job quite right.

<<<G2sus4m6aug11b15>>>

Caltech is clearly not for everyone. Unless you're trying to prove that it is an inferior school, in which case...

actually, never mind.

<<<SteelPangolin>>>

So far we've seen wandering monsters from Harvard, Yale, and MIT who apparently have nothing better to do than make unbacked and unclear accusations that Caltech will ruin your life. Is Caltech really attracting so much of your usual applicant pool that you feel the need to come here and try to steal them back?

Begone, the Ayatollah commands it.

<<<thinkjose1>>>

They don't need to: Caltech's 42% yield is hardly problematic!

<<<Byerly>>>

And of course the RD yield is lower than that. Most of those "carefully chosen" admits who have a choice go elsewhere, even when offered large "merit" incentives - odd for an elite.

<<<tech\_fan>>>

They're very persistent, the \*\*\*\*.

<<<deorwine>>>

Okay, here's another harvard \*\*\*\* :)

I did physics ug at Harvard and grad at Caltech, and spent a lot of time at MIT as an undergrad, and I would say the following:

- a) Caltech and MIT are MUCH more rigorous than Harvard, in terms of the physics and math degrees at least. This makes complete sense. Most of my classmates didn't go on to graduate school (in physics), and (almost) all of us welcomed the chance to take classes in other academic disciplines. The extremely flexible program reflected this. Caltech physics majors are expected to continue on in physics, and their rigorous program reflects that.
- b) Caltech is probably more rigorous/difficult than MIT, for somewhat similar reasons. MIT undergrads tend to be interested in industry, at least in my experience, and they have a much wider range of classes. Caltech (and parts of Harvard) also has a culture of "look how hard I'm working" which is both kind of cool and kind of unhealthy.
- c) I knew a lot of unhappy Caltech undergrads when I was there, as well as a couple of extremely happy ones. The unhappy ones were those who were interested in other fields besides science (as I knew lots of undergrads through choir, this makes up most of my anecdotal sample), or who realized after a couple of years that they weren't into astro the way they thought they were, or who started chafing (socially and sociologically, not intellectually) at the confines of a rather small school. Those who were extremely happy were those who took full advantage of the research opportunities and were happy as a clam pretty much doing research full time. These people, while they would've done quite well anywhere, were clearly very well suited for Caltech and its amazing opportunities.
- d) I would say the social scene at Caltech, although satisfying to many of those in it, is more skewed than that at MIT, just because there are fewer options. MIT may have a higher variance, but the mean is probably a little closer to the "real-world" mean.
- e) I would personally counsel any kid who is bright, ambitious, and interested in other subjects besides his/her (science) intended major to go to MIT. (Actually, I'd recommend a good liberal arts school before MIT, but that's another story.) I'd counsel a kid who is bright, ambitious, and is focused on one subject only, and thinks the arts are kind of bogus, to go to Caltech. I would never counsel a kid like me to go to Caltech ug, but I am interested in lots of things besides science.
- f) I recommend Caltech as a \*graduate\* school without reservation.

g) I think biology majors taking quantum mechanics is actually kind of ridiculous. I knew a fair number of pretty unhappy sophomores.

<<<tech\_fan>>>

Very informative and helpful post, deorwine : )

Thanks!

<<<webhappy>>>

Yes, I also want to thank you for that post. Very informative and supports what most people have said (although from a differerent perspective than what we usually get to read here).

<<<deorwine>>>

Thanks for the kind comments! Oh, I forgot; I also wanted to comment on what previous posters have said about grad students from prestigious institutions taking undergrad classes in classical (106) and quantum (125) physics. This is true, although I feel that it's not telling the whole story.

First, *\*most\** physics grad students at caltech do not take these classes, having already had them! Second, although the level of 106 is (somewhat) higher than that of the corresponding junior-level classes at Harvard (e.g., they use Jackson for E&M instead of Griffith), it is lower than that of the grad-student-level classes at Harvard (and I imagine at other institutions, but I can only speak about my experience!), which of course are open to undergrads who wish to take them. We were often a bit frustrated (in 106) that the material didn't go into as much depth as we would have liked. If there *\*were\** a more advanced grad school class available, that's what the grad students would take. But we run into this problem of Caltech being a small school again, plus which Caltech believes, I think rightly, that grad students should by and large be in charge of their own education and not dependent on Grad Classes.

(I won't talk about 125, as it's undergoing some interesting changes, including a possible bifurcation into a regular-major and advanced/grad pair of courses. But before this development similar things could have been said about that class. Also, I *\*think\** this may happen/be happening with 106 as well, but can't swear to it.)

What I'm trying to say in a rather roundabout way is that I think that the average physics major at Caltech takes more difficult and rigorous classes, and definitely more of them, than the average physics major at Harvard; but the top physics major at Harvard will have access to a larger variety of harder classes than his/her Caltech counterpart. That being said, for a scientist, taking classes should NOT be the chief academic experience, and I think Caltech does a better job of fostering that sort of atmosphere.

...But, you know, it's extremely common for grad students to justify themselves with respect to undergrads ("those little whippersnappers!") so you may want to take this post with a grain of salt :) (Also, apologies for hijacking the Caltech/MIT discussion, but I suspect most of what I said about Harvard here is also applicable to MIT.)

<<<4thfloor>>>

I agree with you completely that "for a scientist [undergrad major], taking classes should NOT be the chief academic experience," so it is good to read from you that Caltech is good at "fostering such an environment." Is it fair to conclude from what you wrote, then, that Caltech undergrads have enough free time after their classes and psets to actually "take charge of their own education"? I realize you speak from a grad experience; it would be nice if you can confirm this about undergrads. There is an impression, perhaps mistaken, that Caltech undergrads are -- to exaggerate somewhat -- completely consumed by their classes and psets, in which classes would indeed become the only significant academic experience. Or did I misunderstand you?

<<<lankylizards>>>

This was a while back in the thread, but I think I'll bring it up again. I'm a girl headed for Caltech this fall and I sure as hell wouldn't go there if I thought they favored girls in admissions. That's one reason I prefer Caltech over MIT. Some of us really don't mind having more boys around (odds are good and the goods...actually, I won't go there).

It would be nice if it were more even, but if the cost of a 50-50 ratio is denying well-qualified boys to allow less-qualified girls, that's always seemed wrong to me and I would seriously consider not going if that were the case.

<<<adides>>>

Just wanted to drop by and say that you guys are awesome! Both of you truly reflect the great schools that you officially/unofficially represent.

It is refreshing to see such a positive spirit of mutual respect and admiration between two of the best schools in the world. Thanks for keeping the overall positive tone and setting an example on how to avoid the \*\*\*\*.

<<<Not quite old>>>

Someone pointed me to this discussion and suggested I add my 2 cents. I am a Caltech alum who is now a faculty member in econ at another university. I absolutely agree with Ben Golub's characterization of the tradeoffs and benefits of going to Tech, but I thought I would add the perspective of someone who graduated in Physics but who is now in Econ.

As a former director of PhD admissions in our econ department I can say that Caltech's grades are taken very seriously. Most professors I've spoken to are aware that Caltech has tougher grading standards than other schools and we take this into account when considering grad admissions. That means that we usually consider a 3.0 from Caltech as better than a 3.2 from Stanford even in economics where Stanford is much better than Caltech overall.

It is true that students are still penalized for low grades and I would not recommend going to Caltech if your ultimate goal is law or med school. But because Caltech is known to be so tough, profs in econ and engineering will sometimes cut someone slack with grades that would get dismissed for



grads even from the Ivies. There's no set cutoff or formula, but if someone has 4 Cs but good recs from Caltech, we might make phone calls to figure out what's what.

When I went to grad school many years ago, I almost certainly had the lowest grade point average of my entering class in econ (with several Cs in science classes) but I also got accepted to Stanford, Berkeley, MIT, Minnesota and Northwestern econ partly on the strength of my degree in physics and partly on the basis of phone calls from my professors. In contrast many classmates from good schools with straight As were rejected by some or all of these departments.

It is worth noting that several prominent economists and political scientists were Caltech undergrads who did not receive their degrees in econ. These profs include Robert Barro, Vernon Smith (Nobel prize), and Roger Noll.

Having said all that, it is true that going to Tech is high risk. And there is the real possibility of "flunking in". I do wish that Caltech kept it pass/fail in the first two years (not terms) and used grades only internally.

But as I said, just my 2 cents and you can all flame away.

<<<tech\_fan>>>

A very interesting post, obviously with an insider perspective. It is good to hear that Caltech grades mean a good deal even in fields somewhat far removed from physics and the like.

You've made me rather curious about where you are, not that I'm asking : )

Incidentally, as you probably know, Caltech is aiming to hire about five new big-name faculty in econ to build the department, but this will obviously take a few years. We recently got Preston McAfee, who has done wonders for the popularity of the econ department among undergraduates especially, and with whom I'm lucky enough to be doing a summer project currently.

<<<Not quite old>>>

I should add that the Caltech grade problem is a microcosm of general problems with grade inflation nationwide. Studies have suggested that tougher grading in science courses relative to humanities courses in most schools tends to drive many people out of science. Why? Assume that in State U, one major, say physics, gives grades that perfectly track your class rank, in the other, call it lazy studies, all get an A. Then the latter is an uninformative A. Nonetheless, a student may prefer to get a useless A than an accurate C.

This is one advantage of systems (not in the US) with common nationwide tests in a discipline. There then exists a common standard for how well students at a school did relative to all other students.

<<<SHABIN>>>

=

QUESTION:

IF I WANT TO DO AERO-ASTRO/AEROSPACE ENGINEERING AND AM INTERESTED IN THE FOLLOWING SUB-FIELDS:

- DESIGN OF AEROSPACE VEHICLES
- DESIGN OF AIRCRAFT
- AIRCRAFT PROPULSION SYSTEMS
- SPACE FLIGHT PROPULSION SYSTEMS
- CONTROL, GUIDANCE & NAVIGATION OF AEROSPACE VEHICLES

WHICH INSTITUTE WILL BE THE BETTER : CALTECH OR MIT?

WHICH ARE THE OTHER INSTITUTES/UNIVERSITIES OF EXCELLENCE THAT OFFERS THE ABOVE COURSES AND HAS EXCELLENT INFRASTRUCTURE?

Please give details.

Yours truly  
SHABIN  
July 11, 2005.

=

<<<tech\_fan>>>

MIT generally has much broader offerings in Aero/Astro. I would recommend MIT for your interests.

<<<SHABIN>>>

-

Hello Dear Ben G,

One thing that impressed me about CalTech is the proximity/presence of NASA JPL.

- Does this factor count on as positive in the Aero-astro domain?
- Are the students of CalTech permitted to work at JPL? Does any restriction exist for international students in this regard?

Yours truly,  
SHABIN  
July 12, 2005.

-

<<<SteelPangolin>>>

- Does this factor count on as positive in the Aero-astro domain? Sure, whatever.

- Are the students of CalTech permitted to work at JPL? Does any restriction exist for international students in this regard?  
Yes, but only if you're an American citizen. International students get the shaft because some of the technology at JPL is considered sensitive or classified.

<<<sither>>>

So an American citizen can be trusted but an international one cant with "sensitive" information? That sounds rather dubious...

<<<alleya>>>

That's not Caltech or JPL -- that's the US Government. I worked at Lockheed, and there were a million and one restrictions on what I could tell the international company we were contracted by. It's called export control -- there are certain technologies (usually with military applications) which the US government controls the export of to other countries. Telling any member of another country is considered exporting the technology (hence the restrictions on international students working with classified technology).

<<<tech\_fan>>>

<quote>So an American citizen can be trusted but an international one cant with "sensitive" information?</quote>

Well, if it's American defense secrets in question, that doesn't seem much of a stretch to me... maybe you live in some different world, would *your* country just give away military technology to foreigners?

<<<SHABIN>>>

-

BenG: "would your country just give away military technology to foreigners?"

Well Ben G, it depends on the countries and the level(s) of trust between them.

- USA provides Patriot Ballistic Missile Defence Shield to Taiwan.
- Russia had been giving Mig class and Sukhoi class Su-30MKI fighter aircrafts to India.
- Russia recently provided India with complete technology of the worlds only supersonic cruise missile called BrahMos with a range of 290 km capable of carrying Nuclear payloads as well at nearly or above 2Mach.
- Russia had been giving India its Akula class deterrence submarines on lease for some years.
- Israel has shown its interest in providing advanced early warning systems to India.
- USA is lobbying at the Indian power circles to sell F-16 Falcon and F-18 Hornet.
- Packets of information are said to have been exchanged between North Korea and Pakistan regarding "Missile Stuffs" and "Fissile Stuffs".

So, the question's answer depends on the relationship between countries.

Hence another QUESTION:

-> The students of CalTech are permitted to work at JPL, as pointed out earlier. Does any restriction exist for international students from countries with which USA has Technology Sharing or Transfer in this regard?

Yours truly,  
SHABIN  
India  
July 14, 2005.

-

<<<tech\_fan>>>

<quote>-> The students of CalTech are permitted to work at JPL, as pointed out earlier. Does any restriction exist for international students from countries with which USA has Technology Sharing or Transfer in this regard?</quote>

Oh my. That is a very good question. From what I've heard, they're pretty strict about having to be a <i>citizen</i> but I might be wrong. Caltech employs some people specifically to deal with these issues, so I will look up their information and you can write them, since my expertise has obviously been exhausted.

<<<SteelPangolin>>>

The PATRIOT antimissile system doesn't actually work, so it's good foreign policy on our part. They think they're safe and we get to sell it to them at a no doubt ridiculous markup without giving away anything useful.

<<<SteelPangolin>>>

SHABIN: You have to be a US citizen (or permanent resident according to the directives for JPL SURFs). Even Canadians can't work at JPL.

<<<alleya>>>

Shabin,  
You don't understand the way it works. There's a difference between selling a country the use of a technology, and actually giving them the technology itself (such that they could reproduce it if they wanted). Think of it this way. When you buy a Dell PC, you're given the rights to use it, but you're not given the architectural details of how the components fit together, or the source code for the operating system, etc. So, with what Dell is selling you, you couldn't build a pc of your own from scratch.

This is the same thing -- we'll sell other countries the finished product, but we won't show them how we did it. Anyone working at JPL has access to latter, which we won't give to foreign countries or their citizens.

You are right that there are some countries (or foreign companies) that we have sold technology to. However, in my experience these are always incredibly specific agreements dealing with the project at hand. For

instance, I worked on a project which produced training jets (with old F16 technology) being sold to Korea. There were agreements in place for the export of some of the technology, which we gave to the Koreans working with us. However, all of those Koreans were actually employees of the Korean company we were working with. I knew of no Lockheed employees on the project that were Korean.

I would bet money that at JPL there's a policy that they won't hire any foreign nationals. Otherwise, for every foreign national, they'd only be able to employ them on a specific project, and they'd have to restrict their access to certain parts of that project. (For instance, sometimes we'll give a foreign company the object code for one part of a project, and the source code for another). Furthermore, they have to restrict the movement within the facility of all foreign nationals. At Lockheed, foreign nationals were not allowed to walk around unescorted. That would greatly hamper the usefulness of an intern.

So in summary, by all means, use the contact info that Ben posts, but don't get your hopes up.

<<<SHABIN>>>

SteelPangolin: "The PATRIOT antimissile system doesn't actually work, so it's good foreign policy on our part. "

I knew it by the end of Gulf War of 1991. Shooting down a missile with another missile is like shooting down a bullet with another bullet, which even Clint Eastwood can't do, I bet.

From Wikipedia:

"On February 25, 1991 an Iraqi Scud hit the barracks in Dharaan, Saudi Arabia, killing 28 soldiers from, Saudi Arabia, killing 28 soldiers from the US Army's 14th Quartermaster Detachment.

A government investigation revealed that the failed intercept at Dharaan had been caused by a software error in the system's clock. The Patriot missile battery at Dharaan had been in operation for 100 hours, after which time the clock had drifted by one third of a second, equivalent to a position error of 600 meters. The radar system detected the Scud and predicted where to look for it next, but because of the time error, looked in the wrong part of the sky and found no missile. With no missile, the initial detection was assumed to be a false alarm and the missile was removed from the system. The Israelis had identified the problem and informed the US Army and the Patriot Project Office (the software manufacturer) on February 11, 1991. The Israelis recommended rebooting the Patriot system's computers as a workaround; however, Army officials did not understand how often they needed to reboot the system. The manufacturer supplied updated software to the Army on February 16. The updated software arrived the day after the Scud struck the Army barracks.

On April 7, 1992 Theodore Postol of the Massachusetts Institute of Technology, and Reuven Pedatzur of Tel Aviv University testified before a House Committee stating that, according to their independent analyses, the

Patriot system had a success rate of below ten percent, and perhaps even a zero success rate."

An excellent account of the above can be found in the book The Guinness Book of Military Blunders by Geoffrey Reagan.

<hr>

SHABIN

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<<<SHABIN>>>

Alleya,

I would like to thank you for the clarification about the access to foreign nationals to JPL.

QUESTIONS:

- ARE NOT FOREIGN NATIONALS ALLOWED WORK ON PROJECTS AND RESEARCHES UNRELATED TO THE DEFENCE INDUSTRY?
- OR ARE THEY TOTALLY FORBIDDEN FROM ENTERING/SEEING THE JPL EVENIF THEY ARE STUDENTS OF CALTECH?
- WHAT ARE THE AVENUES OPEN TO INTERNATIONAL STUDENTS AT CALTECH TO GET HANDS-ON PROJECT AND RESEARCH EXPERIENCE?

CLARIFICATIONS:

The Indian-Russian relationship going on to higher planes with the complete technology transfer of Russia's front end fighter aircraft Sukhoi-30 MK which will be called Suknoi-30MKI (I for India). The first batch of Su-30 MKI have been inducted into the Indian Air Force.

The BrahMos supersonic missile technology has been sold to India, though called 'joint development', and India is making the missile on its own and plans are up for its sale to third countries as well.

People from Lockheed Martin were in India a few weeks ago to convince the Indian side to buy the 'finished' F-16s but India is asking for the technology. And if GW Bush continues as the president for some more time, you may be able to see some F-16 flying with a 'Made in India' tag.

I think that F-16s are already being made in Israel and India had approached Israel some years ago for the technology of the same. But by then, USA came forward and pushed Israel out of the field.

Yours truly,

SHABIN

India

July 14, 2005.

-

<<<SHABIN>>>

Dear All,

I am sorry for the postings unrelated to the topic.  
Please, everybody get back to the topic.

PLEASE CLARIFY THE ABOVE QUESTIONS.

<hr>

SHABIN

=====

<<<alleya>>>

First of all, just saying F16 is misleading. F16s have been around for 20 years or so, and they're upgraded every year. I can promise you that the F16s rolling off the line now for use by the US have more advanced technology than any technology rights sold to another country, and they're all produced in the US. Furthermore, a plant building an F16 in another country doesn't have any more access to the technology than if they were built here -- the technology isn't in the shell of the plane, it's in the software and other components but into that shell. It's that that US government restricts. (After having to read an 80 page document on my first day of work about what I could and couldn't tell the Koreans I was working with, believe me, I know how restrictive it can be. For some components, all we could tell them was the dimensions and what temperature it needed to be kept at. Sometimes we weren't even allowed to show them the output of the component.)

<<<silverdrake>>>

"QUESTIONS:

- ARE NOT FOREIGN NATIONALS ALLOWED WORK ON PROJECTS AND RESEARCHES UNRELATED TO THE DEFENCE INDUSTRY?"

At JPL? Probably not. And it may be that for actual employees, they CAN be foreign nationals, but there's some terribly complex paperwork and stuff.

"-OR ARE THEY TOTALLY FORBIDDEN FROM ENTERING/SEEING THE JPL EVENIF THEY ARE STUDENTS OF CALTECH?"

Um... I think you need to be a citizen to enter, unless you're a special consultant or something. I toured (before I was a tech student), and my family and I needed proof of citizenship. I'm doing a surf at JPL this summer, and I recall them mentioning a special badge for foreign consultants/assistants/researchers, and they needed to be escorted EVERYWHERE by their hosts.

"-WHAT ARE THE AVENUES OPEN TO INTERNATIONAL STUDENTS AT CALTECH TO GET HANDS-ON PROJECT AND RESEARCH EXPERIENCE?"

There are a bunch. Tech does LOTS of research. It's really easy to get an on-campus surf. Or one somewhere off-campus if you're willing to put in the extra work to find someone. And there are plenty of research assistant positions during the year. Aside from JPL, all of these are open to internationals.

<<<alleya>>>

For your questions:

Technology not related to defense is also controlled by the export restrictions -- I wouldn't be suprised if JPL has a blanket regulation against foreign nationals working there, but you can always call and ask again. They won't make any allowances for Caltech students that they wouldn't for others.

As for entering JPL, I know that even some of the tours given to Caltech students are restricted to US citizens.

I don't know of any research on the Caltech campus that requires US citizenship (though it's possible there are a couple), so an international student would have all the opportunities as US students for doing an on-campus SURF. I'd guess that every year the SURF's are 65% Caltech and 35% JPL. But I'm pulling those numbers from nowhere.

<<<benjones>>>

<quote>We'll sell other countries the finished product, but we won't show them how we did it.</quote>

It seems then, that there would likely be a high demand for reverse engineering in these places. Can anyone who knows what he or she is talking about (i.e. not me) offer additional thoughts on this? :-)

<<<alleya>>>

I don't know the full details, but when the export restrictions were explained to me (by people who did know what they were talking about), they said that the reverse engineering isn't possible in most cases. I worked in software, and for that we'd either give them the source code (rarely), the object code (if they paid extra for it), or the final executable. I think it is possible to partially reverse engineer from the object code, but it's not at all from the executable. Either way, the possibility of reverse engineering is considered by the people who make the decisions.

<<<tech\_fan>>>

So just out of pure curiosity -- it's not possible to reverse-engineer a final executable, or at least modify it? That's a bit surprising, I guess.

<<<alleya>>>

I think that's the case (that it's not possible), but I'm by no means sure. Anyone else know?

<<<SteelPangolin>>>

Depends on the language, the use of obfuscation techniques, and what you want to do. Java is almost perfectly decompilable, C much less so. It's generally much easier to tweak an executable slightly (no-CD crack,



maphack, function wrappers for code profiling) than it is to recover source code.

<<<benjones>>>

What about things other than code, such as an aircraft or a missile? Or a device that can look into the future, such as the one that Ben Affleck reverse-engineered in *Paycheck*? :-)

<<<shash\_rao>>>

the code is the key. you could reverse engineer a missile's superstructure and even stuff like the propulsion systems, but you can't really learn much from it. You can always make copies (although you'd be infringing on someone's IP rights :p) but without the code the entire thing is useless. And it isn't necessary that the code be on a conventional memory device like a hard drive - it may even be built into the hardware. In such cases, if you have the technology to reverse engineer a microchip, then you may not need to steal missile guidance systems :p

aircrafts are much harder to reverse engineer, too many parts. Again I think it'll be easier to make one yourself.

<<<Till>>>

As someone from Europe beginning to think about graduate schools, I find this whole debate very interesting. It gives some good insight into what universities in the US are really like, and what matters most to students there. It would be interesting to know how the "rigor" of the undergraduate courses at Caltech or MIT compares to the "rigour" of a top European university like Cambridge, but maybe that's taking this thread a little too far.

About applications of QM to economics, I do think it's more than a work-out. One of our maths lecturers used to joke about the importance of PDEs for the prospect of physics students to find a good job in finance, and our ability to handle PDEs being our main "selling point" in the eyes of recruiters. I think it's fairly obvious why that's true. However, there are also some more direct applications of QM to finance, which are more than just general problem-solving skills. Of course, all economics is not finance, but at least in some areas, the importance of QM could be very real.

Take, for instance

<http://arxiv.org/abs/quant-ph/0406129>

which gives a good non-technical introduction, as well as a list of references.

<<<tech\_fan>>>

Very interesting article! Many thanks.

<<<SHABIN>>>

**<b>DECLINING BY DEGREES </b>**

*<i>*May, 2005

When award-winning journalist John Merrow started work on his PBS documentary about the state of American higher education, "Declining by Degrees," he met with noted educators, policy makers, and researchers before he shot the first minute of video. Many of us here at Carnegie spoke with him at that time. Yet, even with this degree of preparation, John admits that he wasn't ready for what he found once he began to visit campuses and started talking to faculty and students.

In this month's Carnegie Perspective, John takes on one of the primary issues raised in the documentary, the decline in the quality of education experienced by many of America's college students. For anyone who cares about the state of the academy, it's a tough piece to read, just as his documentary may be uncomfortable for many to watch. Rest assured that during his frequent periods of residence as a visiting scholar at the Carnegie Foundation, John's role is often that of challenging all of us with equally uncomfortable questions.

<b>By John Merrow </b> </i>

Of all the students I met during nearly two years of working on our PBS documentary about higher education, I continue to be intrigued by a sophomore named Nate. After proudly proclaiming that he was maintaining a 3.4 GPA despite studying less than an hour a night, he wondered aloud, "It's not supposed to be this easy, is it? Shouldn't college be challenging?" Nate was one of the more enlightened students that we interviewed.

He talked about his "boring" classes, including an English class he described as "a brain dump." We sat in on that class. The teacher had assigned students to write parodies of The Road Not Taken, knowing that to do the assignment well, they would have to read and understand Frost's poem. She was meeting students at their level ... and trying to push them to go beyond it, attempting to move them out of their "intellectual comfort zone" and lead them in new directions. Tough job, because Nate and undoubtedly most of his classmates had obviously NOT read the assignment. Nate had succeeded in high school by figuring out what was going to be on his tests and doing as little as possible. And since that approach also got him into college and was now earning him a solid B average, he saw no reason to change. Ask Nate the purpose of college, and he would probably say something about "getting a good job." The learning part wasn't necessarily what he was paying good money for.

Although we found this English class stimulating, we could see how frustrating it became for the teacher because of the lack of student-directed engagement and motivation. In this case, the students' expectations didn't match the professor's. Teaching becomes a difficult transaction when students expect to get the diploma that they pay for without caring whether they learn anything in the process. The situation is made more difficult because professors begin classroom teaching at a disadvantage. Few have any training in how to teach. We were very impressed by Tom Fleming, a senior lecturer at the University of Arizona, who took advantage of a faculty development course offered by his institution on teaching theory and effective practices. Using technology in a huge lecture hall, he deftly engaged students, allowing very few to

merely get by.

College used to be a "sink or swim" environment, but today, either colleges are giving much-needed "swimming lessons"-investing in student success-or they're allowing students to "tread water"- giving decent grades for very little work. In the first case, students actually receive an education; in the second, they merely get a degree. It's all too easy for some students and faculty members to settle into a pattern of behavior that looks like an unspoken "non-aggression treaty," in which professors don't ask much of students and the students don't expect much from their professors (as long as they get A's and B's).

The good news is that many faculty members-those giving swimming lessons-work with energy and imagination to move their students beyond that simplistic "diploma=\$\$" formula. The relationship between Tom Fleming and his students falls into this category. Even more heartening is the fact that many students intuitively know that they're being denied an education and seek out campus experiences that give them what they need. But that 20 or so percent out there treading water are shortchanging themselves and future employers who think that a college degree indicates achievement as well as persistence. And those professors who find it more comfortable to demand little of their students are denied the satisfaction that good teaching affords.

The shift in the expectations of students and faculty members began around the time that America learned that college graduates made more money than high school graduates-as much as a million dollars more over their working lives. The mantra became, "If you want an education, then you pay for it." The old social contract-the idea that education of individuals is a public good and therefore should in part be publicly financed-is on life support and barely breathing. Instead, "Education Pays" is proclaimed on billboards around Kentucky, encouraging kids to go to college just to nail down that good job.

Kids arrive on campus determined to major in "business" and often remain impervious to the efforts of their professors to expose them to new ideas and new information. Our student financial aid system supports the "investment in me" approach by making less money available in the form of grants to needy students, and more in the form of loans to be paid back as a return on the individual's investment in themselves. The message our kids get is that they're not students; they're consumers. And if they're willing to settle for "purchasing" a degree that means nothing in terms of educational achievement, it's their right. It's their investment. In this environment, professors, colleges, and universities are forced into giving the customers what they want, not necessarily what they should want.

I admire students who squeeze as much as they can from the college experience, and I salute the teachers who dedicate their energies to seeing students succeed. Too much is left to chance, however, and too many lives are blighted by our national indifference to what is actually happening on our campuses during the years between admission and graduation. What we found is not the equivalent of a few potholes on an otherwise passable highway. Serious attention must be paid at a national level. Other countries are not standing still. Those that have not

surpassed us already in educational attainment levels are clearly visible in the rear-view mirror.

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<i> John Merrow, president of Learning Matters Inc. and a visiting scholar at the Carnegie Foundation, produced the documentary "Declining by Degrees: Higher Education at Risk," which will air on PBS stations Thursday, June 23. Check your local listings for exact times. To learn more, go to <url><http://www.decliningbydegrees.org/></url>.

Carnegie Perspectives is a series of commentaries that explore different ways to think about educational issues. These pieces are presented with the hope that they contribute to the conversation. You can respond directly to the author at <a rel="nofollow" href="/cdn-cgi/l/email-protection#93d0f2e1fdf6f4faf6c3e1f6e0faf7f6fde7d3f0f2e1fdf6f4faf6f5fce6fdf7f2e7fafcfdbdfcelf4"><span class="\_\_cf\_email\_\_" data-cfemail="a3e0c2d1cdc6c4cac6f3d1c6d0cac7c6cdd7e3c0c2d1cdc6c4cac6c5ccd6cdc7c2d7caccdd8dcd1c4">[emailprotected]</span></a> or you can join a public discussion at Carnegie Conversations.

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Declining By Degrees  
</i>  
<hr>  
1.106 words  
<hr>

<<<SHABIN>>>  
Ben,

Do you have anything to add, subtract, agree with or oppose with the quoted article above, which was sent to me by a friend.

SHABIN

.

<<<4thfloor>>>

It is interesting how examples of students "faking out" the professors (or of professors and students colluding in joint "non-aggression" pacts, as discussed above) tend to be in the humanities. In science, math, or engineering, you simply do not find as many such examples.

Maybe humanities education in America needs some fixing.

<<<tech\_fan>>>

A few things.

Obviously, this does not describe Caltech in the least. Pretty much the main selling point of the institute is how difficult it is. That reputation is what makes Caltech graduates valuable on the job market. If we lost that, we would go out of business. This is the opposite of some other, less well-known universities, which would go bankrupt if they stopped giving out easy diplomas. So our incentives are different, and that makes it less attractive to slide into meaninglessness.

I think it's possible to have no-nonsense rigor in the sciences or the humanities; but in practice, standards tend to slide in the humanities first.

It's curious why employers are willing to pay a premium for students with meaningless diplomas. (The fascinating economic explanation of [college as a signaling device](http://en.wikipedia.org/wiki/Signaling_%28economics%29) -- see also section 6.6.3 in [Principles of Economic Analysis](http://www.introecon.com/currentdraft.pdf) -- doesn't work here because that requires college to be easier for the competent than the incompetent, but this doesn't apply to the four-year diploma mills that have proliferated. This parenthetical remark is mostly for our occasional economist visitor.) Someone who has graduated from a college with very lax standards has, at the most, shown that his parents probably have money.

My personal guess is that we are currently in an adjustment phase. Employers still give some prestige to the notion of a college diploma in general. Pretty soon, that prestige by association will evaporate for the truly terrible colleges, and only a fairly small number of colleges, and a fairly small number of degrees, will be meaningful.

My prediction is that in twenty years, there will be a large set of colleges whose diploma statistically adds no earnings over having just a high school diploma, and then those colleges will rapidly go bankrupt. We will see if I am right.

<<<f9x9>>>

I have a quick question: what are some impressive courses to take at Caltech to get a really good job in economics and quantitative trading? PDE's? Quantum Mechanics? Nonlinear and Linear Programming?

<<<sakky>>>

<quote>My prediction is that in twenty years, there will be a large set of colleges whose diploma statistically adds no earnings over having just a high school diploma, and then those colleges will rapidly go bankrupt. We will see if I am right</quote>

One could already say that that is true about many doctoral programs, even some at Caltech. Let's face it. Many people with doctorates really don't earn that much more than people with just bachelor's, and certainly not enough to justify the return-on-investment of spending those extra years in school which you could have spent working. Yet those programs show no signs of disappearing. Far from it - many doctoral programs are swamped with applicants.

<<<tech\_fan>>>

I think the doctoral programs are slightly different. While you are right that many do not justify themselves in terms of lifetime earnings, (they are a net monetary loss), the people in them seem to enjoy what they're doing, and are willing to pay a premium for that enjoyment. The same does not seem to be true of the diploma mills -- the students appear to be going to college only for future earnings.

<<<webhappy>>>

Interesting... this week's issue of BusinessWeek happens to note that the change in real earnings for people with only a bachelor's actually went down -4.9% from 2000-04 (whereas owners of advanced degrees gained 2.5%). This is on page 48 of the Sep 12 edition; data is for 2004 from the Census Bureau, Bureau of Labor Statistics.

<<<sakky>>>

Webhappy, I think much of that had to do with that a lot of people in the late 90's got jobs that were far above and beyond anything they would have gotten in most other times in history. I wouldn't say that they didn't deserve those jobs (because who really deserves anything?), but I would say that there were some pretty darn high paying jobs obtained by some not particularly highly qualified people.

Especially at the dotcoms. I remember one dotcom where, except for the receptionist, everybody at the company was getting paid at least 120k. And these people weren't exactly the highest qualified people in the world. Some of them had just gotten out of college, and some of them didn't even have that, but were just high school graduates with a few years of work experience. Now things are far more normal and dotcoms are no longer throwing around obscene salaries to people who, quite frankly, aren't that good.

Nevertheless, it still doesn't usually 'pay' to get your PhD, except maybe in certain specialized fields like business administration or finance, and even then the payoff is highly questionable. But as Ben Golub says, it has something to do with personal enjoyment as well.

<<<SHABIN>>>

*<i>~"My prediction is that in twenty years, there will be a large set of colleges whose diploma statistically adds no earnings over having just a high school diploma, and then those colleges will rapidly go bankrupt. We will see if I am right.</i>*

I think that you may be right. Anyway let's wait and see how right you may turn out to be, unless something happens to change the currently rising trend.

SHABIN

.

<<<sagar\_indurkhya>>>

At least people have to call you "Dr. ..."

<<<sagar\_indurkhya>>>

Oh, and about the reverse engineering of software. A lot of people will just use a hex editor to look at stuff like passwords, CD key checking algorithms, etc. But if someone really wants to, they can do crazy stuff like write an entire interpreter to interpret part of the executable itself from within the executable. The question is how far one is willing to go in terms of sacrificing speed and efficiency (there are ways to lessen this) over protection.

Probably the easiest way is to create an interpreter, which will interpret a scrambled file that is embedded in the interpreter. I can't think of how to hack that unless you want to sit and reverse engineer the interpreter, and then study the embedded content.

<<<HelloFromTexas>>>

I'm not going to Cal Tech and I'm not even applying. These are serious posts with thoughtful discussion. You should read some of the Ivies' posts.

I suspect candidates are scientifically oriented and literature and fine arts is not your focus. However, your posts reflect a better command of the English language than most of the posts at the Ivies. Your concerns are more specific and less superficial.

Now I'm really worried. Will I be going to school with students not of Cal Tech calibre.

<<<rtykysg>>>

*<quote>I suspect candidates are scientifically oriented and literature and fine arts is not your focus. However, your posts reflect a better command of the English language than most of the posts at the Ivies. Your concerns are more specific and less superficial.</quote>*

LOL! Caltech students are very science-oriented, yes, but it doesn't mean that they are weak in common English knowledge, as it is easily reflected

on their high SAT Verbal scores. But they would generally not be so strong in terms of knowledge in literature, history and humanities. Don't be discouraged in anyway!

<<<tech\_fan>>>

I don't know about that, rtkysg... it may be true, but then again I've met plenty of kids at Caltech that are very strong at literature or history or foreign languages. I'd say the atmosphere here is somewhat more intellectual than at many of our peer schools, and that goes across the board -- (I say this having taken courses in both math/science and the humanities at Princeton for a year).

<<<tokenadult>>>

<quote>Someone who has graduated from a college with very lax standards has, at the most, shown that his parents probably have money.</quote>

Many employers are looking for no more. That is why a college degree is almost always a useful job-market signal, even if the degree doesn't signal intellectual prowess.

<<<tech\_fan>>>

I contemplated this for a bit, so I'm glad you thought of it too. But here's the question... why would employers want to sort based on parental wealth, as opposed to some other trait like competence? Maybe because parental wealth is the best available proxy or correlate for competence, but I'd really doubt that; wouldn't you?

There is a very nifty economic model suggesting that "pointless" college degrees are still useful job market signals, but it is a different kind of pointlessness at issue. Suppose I study something very esoteric and inapplicable (say, the history of Latin and Greek syntax and morphology between 300 and 200 B.C.). Suppose this thing has the property that is much easier for people who are very smart than for people who are not so smart. Now suppose employers were to hire business consultants only based on whether one got a degree in a subject like this. If you get the degree, you get the job, which pays you  $p$ , in dollars, over a lifetime. Now, even a dumb person can get the degree, but it'll be hard. So the cost in effort and pain, and money  $c$  (converted to dollars) to the dumb person is high; hopefully so high that  $p - c < 0$  and getting the degree is not worth it, even though it pays  $p$ . So stupid people wouldn't get the degree, even if they could with enough pain. But for smart people,  $c$  is smaller; studying is easier, and often less expensive in money too. So  $p - c > 0$ . So they get the degree, signaling they are smart, which gets them the job. Thus, even if the standard for employment is a degree in an esoteric and useless field, there is still a way for smart people to use this to inform employers that they're smart. The upshot being that college can be useful in the job market doesn't have to teach you anything applicable.

But this model had the crucial feature that learning is easier for smart people... so intelligence still comes in somewhere along the line. I don't see how this is so in the parental wealth situation.

<<<rtkysg>>>



<quote>but then again I've met plenty of kids at Caltech that are very strong at literature or history or foreign languages. I'd say the atmosphere here is somewhat more intellectual than at many of our peer schools, and that goes across the board -- (I say this having taken courses in both math/science and the humanities at Princeton for a year).</quote>

I would agree with the notion that Caltech has a very strong if not the strongest intellectual atmosphere among the US universities. However, I also met plenty of Caltech kids who know nothing about history, sociology, etc, but math and physics and science related subject. My perception however, would exclude the International (esp. Asian) students, since in Asia, strong literature, history and humanities are also absolutely required to be in the cream of outstanding students and hence let them have the chance to form the very small int'l student body. In this case, however, I refer to the general observation on the students and not any particular one. Pick one by one, Caltech students will overwhelm Stanford (or even MIT) students with their scientific knowledge. But in humanities, many Caltech student don't have the 'necessary' background to start with.

<<<SHABIN>>>

So, the first question arises again, finally :

[size=+1]<b><u> Caltech vs MIT for engineering</u></b>[/size]

[size=+2]<b>Did anyone win? </b>[/size]

<b>

?

[size=+1]? [/size]

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[size=+3]? [/size]

</b>

Or is it possible for anyone win over the other?

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<<<benjones>>>

They both win.

<<<tech\_fan>>>

w00t. Agreed.

<<<SHABIN>>>

Though I have always felt the proximity and presence of JPL to/at CalTech to be of positive value to the students pursuing Engineering there, especially Aero/Astro/Space Tech. But the inputs to the discussion on this thread has indicated that this factor may not be of much advantage to international students like me.

What does really appeal at CalTech is the Quantum Mechanics there, especially Ph 125. And with places like Institute for Quantum Information, the place is surely a gem, if you are a postgraduate student, plus a US citizen!

And shall I need to mention the Explosion Dynamics Lab!

Both MIT and CalTech are winners in their own domains, but what matters to me is the following:

<b>~Ben Golub : <i>"MIT generally has much broader offerings in Aero/Astro. I would recommend MIT for your interests."</i></b>

SO, THAT'S IT FOR ME !

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<<<omgninja>>>

Thanks for sharing!