

Maurer/Stier 2006 Annual Letter

smaurer1@swarthmore.edu <http://www.swarthmore.edu/NatSci/smaurer1/franstier@comcast.net> <http://home.comcast.net/~franstier>
lnmaurer@comcast.net <http://www.dartmouth.edu/~lmaurer/blog/blog.html>
ajmaurer@comcast.net

206 Benjamin West Ave
Swarthmore PA 19081-1421
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Fran writes. A quatrain's been going through my head all this fall:

Like as the waves make for the pebbled shore
so do our minutes hasten to their end
each changing place with that which goes before
in sequent toil all forwards do contend...

Time has speeded up this year. Aaron's applying to college, Leon's almost 21, Steve turned 60, Mom and Sid each had bouts of illness. I started looking back through my binders of diaries as I tried to settle down to write this – 10 years ago, I was wrapping Leon in a towel after his shower each night, and Aaron loved to take a running start and leap into my arms. Last year, I was mostly joking when I ended my part of the Annual wondering what I'd write about when I no longer had journal entries about my huge, scornful, hairy darlings.

Mom & Sid: Mom's colon twisted last New Years Day. She spent a week in the hospital on clear liquids – pining for a biscuit with honey. Aaron (bless him) got up early to make biscuits the day I went up to spring her from the hospital & grocery shop. She needed to have a length of colon removed – my sister Beth (an MD) came down from Boston to be with her, bringing 4 month old Alex, and I came up to hold Alex while Beth was with Mom. So, 5:30 AM in early February, Mom, Sid, Beth, Alex and I piled into a cab and headed for Sloan-Kettering (where Beth worked before moving to Boston).

Alex and I spent the morning in the huge waiting room. Four-month olds are adorable – I'd lay him on the seat of a chair and smile down at him, and he'd fling his arms out and kick in delight and chortle. When he fussed, we'd look out the window at the traffic. Then he'd chortle some more. The operation went fine; they could do it laparoscopically. We saw Mom in the recovery room, Beth headed home with a headache, and I hung around feeding Mom ice chips and sponging her mouth.

Within a few months, she was back to docenting and water-aerobics. However, Sid was diagnosed with a lymphoma during the summer. He spent the fall in chemo and thankfully is now in remission.

Aaron: Lots of milestones this past year: drivers license (and a parking space at school, since he drives back and forth to classes at Swarthmore College), first girlfriend, Junior Prom.

He continued football, on varsity (because all Seniors are varsity). He never started, but played in about 1/2 of the games. I'd never been to a high school football game before this year (Friday night being Shabbat) – was amazed at the hoards of uniformed

StrathHavenites, all in black uniforms with white trim. Cheerleaders in sleeveless dresses with white ribbons around their pony-tails. The band in plumed hats and capes (the band is huge—11 tubas, for example), and drum majors in tuxes. Flag-wavers and dancers with braided hair in sleeved black dresses. There are band tunes for kick-off and offense and defense. The half-time show fills the entire field.

He continued weight-lifting. Football practice consisted largely of the starting tackle (270 lbs) crashing into him over and over, and THEN he lifted weights afterward. Eating was a major activity: His typical breakfast was 4 cups of Cheerios, or a 5-egg omelette, with sausage and cheese. The team goes out for pizza on Wednesdays, and there were pasta dinners on Thursday.

Parents' night, I had to work late (of course), missed the picnic, and barely scurried into the line of proud parents and sons on the field before the photos started. I'd never seen Aaron up close in his pads and uniform – goodness, he looked huge. He patted me on the head, and hugged me for the photographer.

A teacher he liked gave AP US history, and he came home with great quotes: John Winthrop describing Anne Hutchinson's baby as "twenty-seven lumps of man's seed".

A spent most of the week reading the review book for his US history AP, & took it Fri. The exam included a long documentary question on women: about how their role shifted from mothers of citizens to the cult of domesticity. A had never heard the phrase cult of domest. before: he said he looked over to the next student and both of them mouthed "oh, fxxx".

He took Swarthmore's honors multivariable calculus last spring (Apostle, volume II) – what the better-prepared Swarthmore freshmen take after honors Linear Algebra. (It was heavy going, but he kept up and got a B.) He took intro to Econ at the college this fall (which meant school started at 8:30 instead of 7:35, and gave him two days/week to sleep in).

World of Warcraft took a lot of time:

A has a new Worlds of Warcraft avatar named (I think) Sir Joo. I asked, what had happened to Joobus? He was just tired of a fireball-throwing gnome & wanted to be something else for a change. (but today, Joobus was back).

The major themes in my journal entries about Aaron are lack of communication and fretting:

At one point, started imagining getting A a tux for the prom, and told him about it. Oh, didn't I know? He was going with Grace (Grace WHO???? I asked). He wouldn't tell me her last name, only that she was a sophomore, & had reddish hair. WELL, of course, that put me into a total little maternal flutter. Emailed FS, who ...hazarded a guess that it was Grace B (she'd seen A at the Healthplex talking w/ a thin red-haired girl & had asked Julia). Told me to press A less; maybe I'd learn more.

Both kids joke that most mothers wouldn't take 20 years to figure out that teenaged boys talk less than teenaged girls.

A ate dinner at Grace's, special dinner to welcome brother Richard home. I asked afterwards, what was Richard like? Short, and goes to Harvard. and that was

ALL he'd say. What did they talk about at dinner? Stuff. What did they have for dinner? Spaghetti. he wouldn't even say what kind of sauce, for godssake.

5/23/06: Long day, yesterday. At dinner, I was an upset mess. Also upset at A – why wouldn't he talk to me Sun night? Why was he so curt? All he had to do was prattle a little about dinner table conversation & tell me what kind of sauce it was, and I'd be content. He said he'd been tired & hadn't felt like talking. He's a simple being, he claims: he eats, sleeps, and lifts heavy objects.

8/14/2006: Steve went and got A (from Cornell's summer school) on Tuesday. He wasn't awfully communicative. The kids in the program were rich – he was the only one in his group whose family didn't have a summer house. Moral Issues was ok, Greek Mythology was good (they read Hesiod & the Odyssey). Grace broke up w/ him in the course of the program. Was he upset (I asked). Mom! It's only high school.

I worried Aaron needed to prepare more for his SAT's:

Of course I was anxious abt A's SAT's, and kept nagging him to at least try writing an essay (since they only get 2 sides of paper to write on, and A's writing is large) or do a little grammar. [I mentioned my concern] each day as I dropped him off at school... one day he burst out that he could have solved Fermat's last theorem and the next day I'd be telling him his brains were rotting & dribbling out his ear.

I worried that I nagged too much:

7/1/2006: Only real news: A got 5's on both AP US History & Mechanics (highest possible). Imagine what he could do if he studied. So all my squawking and nagging was totally unnecessary. And I keep thinking, gee, I'd get along so much better w/ him if it didn't drive me crazy to see him lying on the sofa, switching channels on the boob tube.

I worried when he procrastinated on college apps:

10/28/2006: A still hasn't started app. It's to the point where I have only to give him a look at dinner & take in my breath in a certain way and he says "MOM! will you stop bugging me" and Steve says angrily that He Has To Make His Own Decisions, and it goes downhill from there. Yesterday, I was telling Leon about RC's Bat Mitzvah, with great excitement about how musical she is and how clear her trope is, and how she read the whole Torah part and he finished "and she'll write her college essays long in advance". And I had to laugh.

(Aaron, on reading this in draft, pointed out I should say his SAT I's were lovely, in spite of all my worrying).

It's such a joy to hear him at the end of the table singing along during Seder (he pointed out that he's been hearing the same tunes twice a year for his whole lifetime), and joking about Swarthmoreans who want their cattle to be happy and grass-fed before being slaughtered & dismembered. (He wants his hunks of dead cow full of growth hormones & GM crops). As I worried aloud about walking back to our hotel near Wall Street

Christmas Eve, he speculated we risked attack by gangs of Jewish lawyers & accountants, full of Chinese food & overpriced wine, searching for misadventure.

Leon: (much less to say, and he's writing his own account). He was in Hanover through winter, spring and summer (the Dartmouth plan), and home for the fall, working as a lab assistant for a professor. When I picked him up at school (late August), he had a wonderful Plan of Action pinned over his desk, resolving to do Algebra homework the day it's assigned, bike at least 80 mi/week, eschew WoW and electronics, and eat no desserts on the days he didn't bike.

He appreciated the self-stocking refrigerator at home (and the self-emptying laundry baskets), and enjoyed tussling with Aaron and talking geek to Steve.

Work: Sarbanes Oxley means huge amounts of documentation on sign-offs by the Department Head and Region Head and Regional Pricing Actuary. I used to write myself in as Regional Munchkin to see if anyone would notice (and seldom got caught). Early in the year, we hired a student (that is, an actuary who hadn't yet finished qualifying exams), which helped a lot.

My friend from Provident, Louise, got a part time job with another AIG sub located in Wilmington—that helped even more. We could once again lunch and chatter about husbands, kitchen appliances, friends, friends' daughter's wedding plans (including a vodka luge) and children. She'd notice when I got a different goat cheese for my salad (I bring a hummus sandwich & goat cheese salad every day), and tell me about the intrigue in her section over who got windowed offices.

I worked on my Spanish, attended Budget meetings in Mexico City and Santiago Chile during the summer (where the Ritz Hotel is still \$150/day), and then spent a week in the office of a joint venture with a Brazilian bank, in [São Paulo](#). Sao Paulo's a megalopolis (19+ million). Crime's a major problem, the traffic is out of control, and there's a notice in Portuguese by every elevator, warning riders to be sure that the elevator cab has arrived at your floor before entering. However, it's a burgeoning multi-cultural city, full of excellent restaurants, and the actuaries I worked with were bright and funny (once I got used to colleagues a few years older than Leon). The local synagogue has an egalitarian minyan. Trying to figure out Portuguese from Spanish was a challenge (reading's not hard, but I couldn't understand people speak).

In October, I got promoted a level, to "Head actuary" (actually, only actuary) for Brazil. (Not that this was a post other actuaries were vying for – the venture is understaffed for reporting, and it's hard to get answers to even basic questions from anyone but the actuaries and one investment munchkin). I'm supposed to start traveling there more – try to build relationships; understand local financial reporting and assets better.

Each morning, now, if I've gotten up and run early, I do Portuguese in the car on the way to work – the ride just covers a unit. Jorge and Maria have endless discussions about whether or not they want to eat and drink, and how many reais and dollars they have (always less than 10, at this stage). The company authorized lessons with a human teacher, but I haven't found one yet.

Synagogue: I'm still Social Action Chair; we're still reading with the shelter's after-school program. We did another fund-raiser brunch and netted about \$3,000, mostly because the lady we honored was a beloved former president of Hadassah. (Our speaker was local news-radio reporter born in Israel – [Hadas Kuznits](#)). Last year's Federation grant (to us and a nearby Reconstructionist congregation) funded a trip to a local petting zoo

([Linvilla](#)), and a bowling party. The other congregation gave me a little award ("Friend of the Community"), which, combined with leftover brunch funds, bought a computer for the after-school program.

Scrounging for volunteers (constantly) and writing upbeat pieces for the synagogue bulletin is a strain – really almost a ¼ time job – but it has benefits. (I'm a shameless cold-caller now. I guess I could go into fundraising for a second career if I needed to). There are moments of pure joy. At the petting zoo, the other congregation was doing all the logistics, so I could walk around with this adorable 5-year-old girl who'd never fed animals. She was too scared to feed the emu, but put grains of corn in my hand and laughed as she watched the emu peck at them. We got over to the hens before anyone else, and stood there throwing in corn and watching the birds scamper to pick them up. Pretty soon, the whole group – kids, parents, teens – were all throwing in corn and chortling at the birds' antics. The little, feel-good things we do are not going to fix Chester's abysmal schools, or get the kids speech therapy (which several need), or get the parents decent jobs, but Moms and kids like it & the shelter staff are grateful.

Steve: This was the year of the Green Beans that Wouldn't Die. Steve's huge thicket of pole beans bore and bore, into November, in spite of heavy damage from Japanese Beetles early on. We steamed them and ate them with pasta and pesto. I tried pasta fagioli, but the kids pronounced it a mommyglop.

It was so wonderful to see all the people from all the parts of his life that came to his 60th birthday party: Swarthmore College people, relatives, and friends from Silver Spring and Exeter. Ex-students from Exeter, from Swarthmore (in vintage Math Dept T-shirts) and Princeton: the wonderful babysitter Leon had at 14 months, now a math teacher herself, with an adorable, tiny 2 year old of her own. An old flame from South Africa (who'd answered a personal ad of his 28 years ago, later emigrated to the US – she stayed with my grandmother for 6 months, 23 years ago). A high school classmate, now a judge on LI. The downstairs filled up. The tent filled up (and the rain held off). The upstairs filled up with children. There were funny speeches, hugs. I was so, so glad.

Me: I'm grateful the kids are risk-averse and law-abiding and do their schoolwork and talk at dinner. Sometimes I fret a more savvy Mom would have steered Leon into a different 3rd grade class (and gotten his writing problems diagnosed sooner), or gotten Aaron into the "gifted" 6th grade reading class that would have kept him away from the evil Ms. D. I fret a more confident Mom would have taught them respect, and gotten them to do more household chores. I meant to instill table manners and teach them to cook. Every year at this time, I think how I meant to take them to the Nutcracker Suite.

But, for good or for ill, I'm mostly done with active mothering. Aaron will go to college somewhere next year, and I'll put away the 10 giant pairs of sneakers in the mud room. Steve and I will go to Italy next fall (our 25th wedding anniversary), take as long as we want in museums, and stay in fancier hotels (now that we only need to use one room). Steve'll be away in July again (at MathPath).

We got a chaise long in the living room last year, with a light and a table by its side. I love to sit there on Sunday mornings, with the NY Times and my second coffee, looking out the windows, and reading about the wide, wide world. I love to curl up after dinner with a library book, in my sheltered corner of a peaceful house in a quiet town.

Wishing you health, and peace and quiet in the coming year.

Steve writes. When I became associate provost back in 2000, the head of IT got MeetingMaker installed on my computers. This is the shared calendar system all the administrators use. It really was ideal for me. Soon, not only was I listing appointments as soon as I made them, but I also used it to send future reminder notes to myself and to print out calendars for our family Sunday night weekly coordination meetings. I know that many people have electronic calendars on Palm Pilots, and indeed, I can sync MeetingMaker with the Palm Pilot Fran bought me a few years ago. However, I rarely use the Palm Pilot (mostly at doctors' offices to see if I am free for proposed future appointments), I guess because calendars on computers are so much more convenient, and I am rarely far from my computers, at home, at work, and on business trips. Anyway, I have found another fine use for this calendar: Before writing my annual letter I click through my MeetingMaker for the past year. Gee, it feels good to see all the things I did. And it actually reminded me of some things worth telling you that I had forgotten, like the very next thing.

Swarthmore, like many colleges, has an annual Latke-Hamentashen Debate. Why we continue this debate puzzles me, because I settled the issue definitively back at Princeton in 1977, when I proved *mathematically* in their annual debate that Latkes are superior. See Maurer, S. B., On an application of geometry and graph theory to an ancient unsolved problem concerning Jewish ritual food, *International Journal of Mathematical Modeling and Religious Studies*, Vol. 426 (Feb 1977) p. 36–54. However, it seems this article is little known, and those who do not read the literature are condemned to repeat it. So I volunteered to come out of debate retirement and settle the issue once again. Naturally, I encouraged all my math students to come and cheer. Anyway, on Thursday March 23, 2006, truth was served and a rousing good time was had by all. (I even have to compliment my opponent, Music Prof Tom Whitman, for putting up a good if losing fight, with his sly attempt to make Hamentashen *sound* better.) Maybe I should put my proof on the web, so I don't have to come out of retirement again, but for this I suspect in-person timing makes a big difference. Here I'll just say that my proof has something to do with characterizing n -Chanukah plates and Latke Topping Graphs.

This past summer I returned to MathPath. In fact, this time I was Academic Director, so I did somewhat less teaching and more organizing, including lining people up for several months beforehand. The program went well, perhaps the best ever, so I was pleased. Perhaps you saw the front-page article about MathPath last July in the Wall Street Journal. See <http://www.mathpath.org/newspapers/wsj.2006.pdf>. The author doesn't mention me, but I spent hours on the phone with him in advance and while hosting his visit. Anyway, MathPath 2006 was at UC Santa Cruz, in a beautiful location, about a mile back from and 500 ft above the Pacific, with magnificent views over grassland to Monterey Bay, or over the fog that often rolled in. The university is on the coastal ridge, at the end of the inspiring redwood forest that descends from the crest. Our location on campus was just below the redwoods. (The only problem: It's not supposed to get above mid 80s in Santa Cruz, and so there is no AC in the buildings; but for one week this summer it got up to 105.)

I'm Academic Director again for next summer, at Colorado College in Colorado Springs. I've already spent a lot of time setting up staff, and just in the last few days, working on the brochure with the Executive Director (currently in India) and the Camp Director (usually in Norway, currently in China). If you know any precocious middle school kids who love math, tell them about MathPath, or have them contact me.

This year I also got involved in political campaigns, with satisfying results. I started in May, when I found Sack Santorum bumper stickers on the web and ordered them for our cars. But I mostly concentrated on our congressional race. For once, the PA 7th was in the national news. For most of the last 20 years, Republican Curt Weldon has won with 60% of the vote, but this year Admiral Joe Sestak took him out, and in the end it wasn't even close, 56% for Sestak. Our 29-year Republican state representative also got taken out, though narrowly. The Philly suburbs have been Republican strongholds for some time, but they have been turning pale blue, at least in national elections. (The Borough of Swarthmore is deep blue, and has been for maybe 15 years.) I knew Weldon was beatable when Kerry won our county in 2004. Over the years Weldon had angered enough of us (despite being moderate in some ways) that once a good candidate came along, and the national mood was right, people came out of the woodwork to work hard to defeat him.

What did I do? Mostly I did visibility, holding signs at major intersections and freeway exits during rush hours once or twice a week. One of Leon's friends, who saw me at headquarters, said his Harvard econ professor would say this activity was not an efficient use of my resources. Yes, but I didn't have to phone people up for money or knock on their doors to canvas. I hate doing those, though in a pinch I did do some. Anyway, Fran and I got to go to the election night victory party. I've only been to a candidate's election night party once before – my Mom's party in her 1970 losing congressional primary bid in Maryland. (She recovered nicely, going on to be State Treasurer, a position she held for many years, almost until her death.)

Fran and I also co-hosted a fundraiser for Sestak. Attending was Congressman Chris Van Hollen from Maryland, since elevated to chairman of the Democratic Congressional Campaign Committee, and a Swarthmore grad. I went up to him, pointed to my nametag, and asked, "Recognize this name?" "Lucy Maurer!" he exclaimed.

So now the hard part. Will anything good get accomplished in Washington, or will there just be stalemate for 2 years? I see that Presidential campaigning is already starting. I wish we could limit campaigns to 30 days, the way they do in some European countries, but the free speech clause of the Constitution seems not to allow this – one of its few downsides.

In addition to political wars, I have been involved in math wars. I've mentioned in past years that I am a consultant to the writers of Core Plus, a reform secondary math curriculum that is developing a 2nd edition. Core Plus has gotten a fair amount of flack in some parts of the country, and now the controversy has come to eastern PA. This fall I served on a math review committee for the Quakertown school district, about 50 miles north of Philly, where Core Plus was adopted some 4 years ago, and some parents are

mad. I volunteered to serve because I wanted to see what was happening on the ground. I also was one of two people who rolled out the committee report at a parents' meeting. I got a lot of flack. One local blogger later wrote, basically, that of course I couldn't be trusted because I was a paid NSF hack. (NSF = the apparently evil National Science Foundation, which *has* funded the development of Core Plus and other new curricula, and which did fund the greater Philly Math Science Partnership that paid me a small honorarium for my time on the review committee.) Oh well. You can't please all of the people all of the time. As I've told students and colleagues in a related context, if I agonized too much over the occasional student who doesn't like my courses, I would have died long ago.

Travel. We took no family trips this year – scheduling proved impossible around summer programs and business travel. But that will change next year. Next September, we finally push both kids out the door, and I am on leave for the year. Hence the plan for Italy Fran mentions. Fran naturally wants to see Rome and Florence, but I also want to head south and to Sicily, to see various Punic War and Archimedes sites.

And then I may spend Spring 2008 in Berlin.

I would visit ECLA, the European College of Liberal Arts, an attempt to plant the idea of an American liberal arts college in Europe. The students come from all over Europe and the language of instruction is English. See <http://www.ecla.de>. But, they have started small (they only do one-year interdisciplinary programs) and have no math or science. They want to become a full 4-year institution, but need to figure out how to get from here to there. I may help them with the math part. Right now, the students they attract tend to be arts, humanities, and politically oriented. They are intellectual, but not particularly quantitative. So for doing the bridge from here to there, I've got to show the current students and faculty that mathematical thinking has value that interests them. A tall order, but since I am a great fan of liberal arts colleges as well as mathematics, this project appeals to me.

It appeals for personal reasons too. My father's mother's family came from southern Poland, but many of them moved to Berlin around 1900, and my grandmother stayed with relatives there on her way to the US. All of the relatives who stayed in Berlin were killed by the Nazis, but we have some letters and other artifacts from them. It may be moving to bring my 1910 Baedeker and see if I can trace out where they lived. In any event, I would be pleased to contribute in a small way to the rapidly reviving Jewish life in Germany.

And I would get to practice German, the foreign language I know and like best.

Finally, I could spend my spare time riding back and forth on the wonderful German rail network!

I will be going to ECLA for a week starting January 13 to meet people, test the waters, give a lecture on math in the liberal arts, and run some sample seminars. All of this

involves topics fairly far from what I usually teach, and I've got to be flexible because I don't really know the audience. But if it works out well, I'll go back for a term or two a year later. So I've got my preparation work cut out for me (not to mention preparations for small talks at the national math meetings in New Orleans the first week of January, and preparation for two spring courses at Swarthmore that I haven't taught in many years – how did I arrange that?)

Aaron. Fran indicates above, and I said last year, that Aaron's approach to schooling disappoints us greatly. He watches TV incessantly and turns to schoolwork and college applications at the last moment, evincing little more than utilitarian interest and modest standards. Actually, she downplays how frantically she has nagged him this fall, and how angrily he has responded. She paints me as his protector. Well, it's just that over a year ago I decided complaining would not accomplish anything. There is no need to repeat our position to him; he understands it. Also, his diffidence to any activities other than physical is fairly typical teenage boy. It's just that other boys are not Maurer-Stiers, and don't generally have 5s on all their APs, 800s on verbal and history SATs, 790s on math, and many other high scores. Sigh, he's just not going to change his ways any time soon. He got stubbornness genes from both parents. Besides, he does seem to know just how much brinkmanship he can play and still make deadlines. At this point, I feel the best chance that Aaron will eventually use his intelligence is if we leave him alone. I just hope he wakes up before an expensive college education is wasted on him.

The expense of college education is actually an issue of general interest to me. I agonize over whether a *Swarthmore* education is worth the cost, for anyone (not Aaron – he isn't applying here). Sure, we have outstanding graduates in every quarter, but maybe that's because they were outstanding when we admitted them, and we're simply a holding pen for 4 years, and oh yes, pay us \$175,000 while you're here. Of course, I *believe* my colleagues and I add real value, and so does residential life with other bright, diverse, high-achieving kids. But what proof do I have? Or more pointedly (for surely we add some value), how do I know we add 4 times the value of a state university education that costs $\frac{1}{4}$ as much? Actually, under pressure from the Middle States Accreditation Board, Swarthmore is trying to make some progress on determining value added, and so work on assessment has been taking up part of my time as department chair this year.

Anyway, Aaron was deferred Early Decision at Amherst, no surprise to me. I half expected him to be rejected, but it turns out Amherst rejects very few early applicants, unlike Swarthmore. He is now finally in the process of turning out many more applications for Jan 1 and Jan 15. He is mostly applying to small colleges.

Leon. I think his lab assistantship with physicist Michael Brown at Swarthmore was a very good experience for him. The one downside is that, unlike the assistantships at major labs that he did not get, the job at Swarthmore had him working mostly alone. However, he got a broad range of experiences, and a strong recommendation, that should make it easier for him to get a major lab job for this coming summer. Leon seems to have clearly decided in favor of physics over econ. The hard part, which we haven't discussed, is what will he do after he graduates in spring 2008? He knows that if he goes

on in academic physics, his prospects after a PhD are for many years as a postdoc or assistant before any faculty job is likely to open up.

Anyway, Fran bubbled over with joy to have both kids home all fall. This is probably the last time all 4 of us will live here.

Aging. Last August 15 I turned 60. I'm in good health – I better be, given the number of pills I take and the frequency doctors bring me in to watch this or that. (As my pulmonologist once said, when after a year he was confident the nodule that had showed up at the top of an abdominal MRI was not lung cancer, “If everyone got as many scans as you, we'd find all sorts of false positives.”) Still, I can tell I'm aging. I don't have as much physical stamina; it takes several weeks in the summer before I can build up to swimming more than a few crawl laps without taking a break. (I still got my yearly 1000 lap shirt!). But mostly I feel less smart. I can't do calculations as well as I used to and thinking about unfamiliar math gets harder. Driving around, I used to just know where to turn to get from here to there, but now sometimes I have to think about it. More and more I can't type without leaving words out and making odd word substitutions. I forget names even more frequently than before. Once I asked my internist, who is about my age, whether this all sounded normal. He smiled and said, “We're all struggling.”

Anyway, in October, Fran held that very nice 60th birthday party for me, which many of you attended. In fact, so many of you came that I worried it would be too crowded, that not everyone who wanted to speak would get to, that even so the speeches would go on too long, that there would be too much wine and not enough beer, and so on – in short I made myself a complete pest to Fran, who was running it. But she put up with me, it worked out very well, and I have to thank her. Many of you came, from all periods of my life, whom I had not seen in many years. I was touched.

Of course, I gave a speech, but because it was a festive occasion, I did not say everything I wrote. Here is the rest.

I come from a very high achieving family. I have the rare distinction that both my parents had obituaries in the New York Times. It was understood as I was growing up that you should always try to excel and you should also do good deeds. So, I have to ask myself: Have I accomplished in 60 years as much as I could? Have I lived up to my potential, mathematical and otherwise? My answer is No. But looking back, I can say this. I have led a charmed life in that I have almost always gotten to do what I wanted and I have almost always liked what I have done. I may not have chosen to work on the most important or respected things, or spent my time most effectively when timing was important, but it was my choice. I am grateful to the people and institutions around me who have let me make those choices. I wish the same good fortune for all of you.

Leon writes. I'll start off by ending the last letter's cliffhanger — what would I major in? I was oscillating between physics and economics but unable to decide on one. It was like the Pit and the Pendulum less Vincent Price. However, on April 6th (coincidentally, the last day to choose a major) I narrowly avoided the blade that is the registrar's office and became a physics major — an appropriate choice considering the (approximately, for small perturbations) simple harmonic motions in this overextended metaphor.

I don't quite remember what prompted this choice. I had very good experiences in my Economics classes — better than in my physics classes actually. The problem with the economics classes is that they weren't challenging enough. Unlike physics, I didn't do much work and still ended up above average — apparently I would rather serve in heaven than rule in hell. I'm sure there could have been more mathy versions of some of the classes — some other schools have them.

The chronology of my year was unlike that of any other year — I took classes in the summer and was off in the fall. This was a result of Dartmouth's "D-Plan" — all students take classes the summer after their sophomore year, and take another term off. This was started as a stopgap measure — when the college went coed they had to grow quickly, and staying open year round was part of their solution. It was later decided that this bug was really a feature so it's still around.

Now a rundown of events.

Winter term had two classes I'd wanted to take since before I got in to college, and neither was a letdown. One was *Electronics: Introduction to Linear and Digital Circuits*, an engineering course cross listed as a physics course. As long as I can remember, I've had an interest in electronics. The problem was, despite some effort at self education, I rarely managed to make anything that worked (some of my circuits failed in spectacular fashion with smoke and sparks — I still have a prototyping board with a melted section due to a short circuited chip). In the summer after 11th grade I was employed in Carl Grossman's physics lab at Swarthmore, and I finally received some instruction and created a non-trivial working circuit. After that, I had more electronic success, including a game show buzzer system of my own design for my high school computer teacher (it indicated who answered first, unlike the previous system which simply registered if someone had buzzed in). However, this was all digital stuff, and to paraphrase Steve Wozniak, any monkey could do that. I wanted to learn about analog electronics, which seemed dark and mysterious. It's something of a black art, but thanks to this course, I can now throw together working analog circuits chock full of RC filters, operational amplifiers, diodes, transistors, and other fun devices. The professor was excellent and gave what I feel were the best lectures of any class I've had.

The other long awaited class was *Games and Economic Behavior*. I had been interested to learn about game theory since my uncle Andy bought me a copy of Micromotives and Macrobehaviour for my birthday years ago (it made the 2003 annual letter). The group of students was more math oriented than in other econ classes (it included several math majors). Again, the professor was good and I learned a lot — the professor joked that we left the class knowing more game theory than most people with economics PhDs.

My other class winter term also warrants mention — differential equations. After high school, I was mathed out. I took multivariable as a freshman then didn't take any math for a year. However, Physics required DE, so it was time for more math. Most DE classes are cookbook like — solve this type of equation this way, another type another way, and so on. This class was no different, but I did well in it and even found it interesting — thanks in no small part to the professor, who was an entertaining Russian who encouraged me to take more math classes, and I've followed that advice.

Finally, I should mention the one really disappointing aspect of the winter — it lacked snow. Storms usually went to the south of us, and the snow we did get promptly melted. I had signed up for a weekly snow shoe hiking PE class but we were only able to go out three times, and even then, the shoes were unnecessary. Skiing suffered too — there was only one good weekend at the college-owned skiway (thankfully, it happened to be the weekend a HS friend was visiting to ski).

For spring break, I went with the cycling team to Asheville, NC. It's a beautiful place — we rented a house overlooking the city, just uphill from the Blue Ridge Parkway. The crew was awesome, and the trip was focused on two of my favorite activities — biking and eating. However, I didn't get a chance to ride up Mt. Mitchell (the highest point east of the Mississippi) and I got schooled in a pulled pork eating challenge (even though eating is my strengths — more than cycling). We're going back this year, so these wrongs can yet be righted...

Spring term was somewhat painful because I took 4 classes (3 is a normal load). The most interesting of these courses was *Introduction to Hebrew and Israeli Culture*. It was taught by a entertaining British Jew who was the college's first Professor of Hebrew since the last one died around 1812. The course spanned the entire history of the Hebrew language and Jewish culture in a surprising amount of detail — it has proved a great source of trivia, some of which even my Mom doesn't know.

The most painful of the classes was graph theory. It was the first math class I'd taken that emphasized proofs, and while the methods weren't new to me, I hadn't seen many of them since the discrete math course at Swarthmore I took during HS. Things improved when I read the textbook's appendix, which should have been titled, "Things Leon doesn't know but should." That happened too late in the term to really save my grade, but it did save my interest in taking more math again.

Continuing to summer term, going to school felt fairly natural — the only problem was that I didn't have much time for summer activities. Dartmouth has a program to get undergrads doing research (for the amazing rate of about \$6.75 an hour) and I got in to a physics lab working on a far-infrared free-electron laser (I'll be working in the lab again this winter). Far-infrared falls between (surprise) near-infrared (which is in turn close to visible light) and microwaves, but is a region of the spectrum that we have trouble working with — we can make and measure near-infrared light with well understood optical tools, and we can do the same for microwaves with well understood radio tools. Far-infrared light (also known as Terahertz radiation) also has practical applications, for example it can be used to look through many materials like x-rays, but — unlike x-rays — far-infrared is non-ionizing, meaning it won't cause cancer or damage delicate substances. The free electron laser we're working on functions by firing a beam of electrons over a metal grating, causing far-infrared light to be given off due to the Smith-Purcell effect. Free electron far-infrared lasers (as well as other types of far-infrared lasers) have already been developed, but they are generally large, finicky, and inefficient. In contrast, the one we're working on is small, finicky, and inefficient, but we're making progress on the last two. The goal is to commercialize it eventually — we're working with a group at Sarnoff Laboratories (formerly known as RCA laboratories) near Princeton.

I also took a class on digital electronics, which was a lot of fun and I found it fairly easy (as I had learned a fair amount about digital electronics on my own). My lab partner (a fellow physics major) and I were always the first group done the labs. My one regret is that we choose a simple final project — a skateboard speedometer. Most groups made games of some type — one even made checkers with an intelligent AI to play against. It was very impressive. On the other hand, my group was able to sleep during the final week before the projects were due...

This fall, I've been working in another physics lab, this time at Swarthmore College. There had been a postdoc in the lab for several years, but he had left to teach at Haverford College, leaving behind grant money for his salary. Since undergrads are cheaper than postdocs, professor Brown (know as Doc after the character in *Back to the Future*) was able to hire me. Both he and his fictional counterpart do plasma physics — the lab's main device can fire two rings of plasma (the fourth state of matter — essentially a superheated gas) at each other where they merge together. While that doesn't sound too interesting, they can vary the conditions and use different probes to conduct widely varying experiments — NSF gives them money for their experiments simulating solar flares while the DoE gives them money for their work on plasma containment, which is useful for Fusion energy. Not a bad deal for one 15 year old device, eh?

They weren't running any of these sexy experiments while I was there because everyone was busy with classes. I did a lot of odd jobs — maintenance on the vacuum system, replacing a heater blanket, updating the website (not touched since 2001), making CAD drawings, writing some code to interpret computer simulations of the experiments, etc. It wasn't always the most exciting work, but I was being paid (a good bit more than \$6.75) and it was good experience.

I lived at home, which was odd since I hadn't been home for more than a month straight since HS. Things were much as they were when I had left — in the case of my room this was a problem, since due to a hasty departure from Dartmouth, I was unable to store any of my belongings at school, and there wasn't enough room at home for all my old junk and my new junk. I'm only now fully unpacked and approaching a state of organization — just in time to start packing again (classes start 1/4). The big change was that my HS friends were off at school. Sure, some went to school in Philadelphia and I visited others in Boston, but it wasn't the same.

There certainly are upsides to living at home, including a low price (monetarily free), laundry service, and a self-stocking refrigerator (a phrase I'll take credit for). Despite these benefits, and the generally good behavior of my parents, I'm ready to go back to school.