Residences and Overview

Long Beach, California (3500 Wise Avenue)   1957 – 1971

I was born August 30, 1957, five weeks before Sputnik launched the *Space Age.* My parents were literal rocket scientists: licensed pyrotechnic operators active for several decades in experimental rocketry, and leading members of an amateur rocketry group, the *Reaction Research Society (RRS)*. As a child I kept a scrapbook of Gemini and Apollo news clippings.

https://www.rrs.org/ (Reaction Research Society website)
https://en.wikipedia.org/wiki/Reaction_Research_Society
https://en.wikipedia.org/wiki/Sputnik_1
https://en.wikipedia.org/wiki/Project_Gemini
https://en.wikipedia.org/wiki/Apollo_program

My earliest memory is of my uncle Dana teaching me how to tie my shoes at a party for my fourth birthday at my grandmother's house in Lakewood, California. In 1969 Dana completed his PhD in Chemistry from the University of California, Riverside, with dissertation entitled *"The Photochemistry of Cyclopropyl Ketones".* From there he went on to Xerox in Rochester, NY to invent the color copier. He developed further inventions in the field at Kodak, and taught at Rochester Institute of Technology (RIT). There's a photo of him at the top of this article on the RIT webpage.

https://www.rit.edu/science/news/coming-age-describes-how-signature-program-shaped-rits-future
https://patents.google.com/?inventor=Dana+Marsh

In Long Beach I walked to and from school each day. My elementary school (K-6) was John Muir. My junior high school (7-8) was Stephens. My kindergarten teachers were annoyed with my mother because I already knew how to read when I got there. My first grade teacher would send me down the hall to a second-grade classroom during reading time.

I turned twelve years old the summer of 1969: the summer of Woodstock and the summer mankind first set foot on the moon. Two months later the first experimental data packet crossed the beginnings of what we now call the Internet. Two months after that I got for Christmas my first computer: Digicomp, a simple programmable mechanical digital computer.

https://en.wikipedia.org/wiki/Woodstock
https://en.wikipedia.org/wiki/Apollo_11
https://en.wikipedia.org/wiki/ARPANET
https://en.wikipedia.org/wiki/Digi-Comp_I

Butterfield Ranch, Kern County, California (Front Gate: 35.3675, -117.8256)   1971 – 1975

In 1970 my parents bought 144 acres in the California desert from Bud and Verna Jones. It was located a mile or so east of Koehn (dry) Lake in Fremont Valley, about 3 miles southwest of Garlock, and 1.5 miles northwest of the RRS rocket range (the *Mojave Test Area,* or *MTA*). We moved out there from Long Beach at the beginning of summer 1971, right after I finished eighth grade. We named it the Butterfield Ranch. I turned 14 at the end of that summer.

https://www.google.com/maps/place/35.3675,-117.8256 (Google map showing Butterfield Ranch site)

In fall of 1971 I started ninth grade at Burroughs High School in Ridgecrest. My mother was teaching grades 5 to 8 at the three-room K-8 school in Johannesberg; my brother Roger was one of her sixth-grade students. Mom would drive us the ten miles from the Ranch to Randsburg and drop me off at the school-bus stop for the ride into Ridgecrest, then continue on to Johannesburg where her schoolroom was.

I turned 16 the summer before my junior year of high school and got my driver's license. After that I drove my brother and myself from the Ranch to school in Ridgecrest and back each day, about 30 miles each way.

The nearest town to the Butterfield Ranch was Randsburg, an old mining town about ten miles east with a population of maybe 150. Garlock was closer, about three miles northeast of the Ranch, but it was a ghost town with only the old Starry couple living there.

Randsburg had a US post office (93554) and a general store with a soda counter immediately next door. I think the woman who ran the store was the same woman who ran the post office. We had a post office box (#386) there for a couple of years before we switched to a PO box (#352) in Ridgecrest.
https://en.wikipedia.org/wiki/Randsburg,_California

Roberta Starry lived with her husband in Garlock *(population: 2)* about three miles northeast of the Butterfield Ranch. They had a little desert antique or curio shop. I remember visiting there a few times as a younger kid, during trips to the rocket range the 1960s while we still lived in Long Beach. Long before cell phones, Roberta's place happened to have the nearest telephone to the *"Goler"* curve in the Garlock Road, which drivers tended to take too fast – while living at the Ranch there were a couple of times I used her phone to call for an ambulance.
https://en.wikipedia.org/wiki/Garlock,_California

Some other characters lived up Mesquite Canyon, the entrance to which was approximately north of the Butterfield Ranch, somewhat closer than Garlock. At the bottom of Mesquite Canyon [dirt] Road where it meets the Redrock-Randsburg Road is Mesquite Springs, a rare source of water spontaneously emitting from the ground in the middle of the desert. There are a few trees, and someone built a small concrete reservoir (maybe a couple of feet across and a few inches deep) to pool some of the water for wildlife to drink from.

Following Mesquite Canyon Road to the top there is Burro Schmidt's tunnel, a gold mine dug through a mountain over the course of 40 years by a lone guy with a burro and a minecart (and dynamite). The tunnel floor is flat, with rails for the cart laid on cross-ties from one end of the tunnel to the other. At the time I lived out there, Schmidt had long since died. There was an old woman named Toni Seger who lived in what I remember as a rather ramshackle house built a few feet from what had been Schmidt's cabin (itself reasonably well constructed and well preserved at the time).
https://en.wikipedia.org/wiki/Burro_Schmidt_Tunnel

Toni Seger was running the place as sort of a museum, and for a small donation would give little tours of Schmidt's cabin and equipment. She also had some old hand-held kerosene lanterns you could carry to light your way as you walked through the tunnel (the hike was maybe half a mile). Partway through the tunnel there's a little side tunnel that dead-ends under the mountain; one year I heard there had been a cougar living in there.

Partway up the road leading to Schmidt's tunnel there lived an old woman named Della Gerbracht. This woman had a camp on BLM land a short distance up a fork off of the main canyon dirt road. Where her bit of road forked off there were *"No Trespassing"* and other signs strongly discouraging anyone from taking the fork in her direction. Her dwelling was only a short distance off of the main canyon road and had mutual line-of-sight with anyone driving up to the tunnel. In 1966 she shot a guy who took the wrong fork. She had died by the time we moved out there.

Los Angeles County, California   **1975 – 1993**
      (Palms, Westwood, Brentwood, Sylmar, Culver City, Inglewood, Van Nuys)

In fall 1975 I moved to Los Angeles to attend UCLA, starting as a freshman majoring in *Physics*.
https://en.wikipedia.org/wiki/University_of_California,_Los_Angeles
Memoirs/Academics/1975-01_UCLA_Undergrad_Admit.jpg (UCLA Admission Letter)

My first car there was a 1972 Ford Pinto. I had a bumper sticker on it: MISSILEMEN HAVE MORE THRUST. This car was the model that infamously would explode when hit from behind. I was glad when they totaled it after the second time I got rear-ended.
https://en.wikipedia.org/wiki/Ford_Pinto#Fuel_system_fires,_recalls,_and_litigation

After two years I changed my major to *Mathematics and Computer Science* (that's a "major", not a "double major"). I didn't like that physics had become less intuitive, grinding equations to solutions without clear physical meaning. At the same time computers were a lot more fun, and they presented the constant challenge of doing what you told them rather than what you meant to tell them, with all the associated dopamine rewards.

After completing my MS at UCLA I founded Locus Computing Corporation with six other Computer Scientists. After ten years at Locus I moved to Sun Microsystems in 1992, where I remained for 14 years.
https://en.wikipedia.org/wiki/Locus_Computing_Corporation
https://en.wikipedia.org/wiki/Sun_Microsystems

I lived in Los Angeles County until the end of 1993. I was married to Michele Kay Coleman on August 16, 1980. We were divorced July 19, 1989. Michele later got a medical degree, D.O., and practices in Washington state. She is a fine person.

I married Patt Ane Himes Dubrin on April 9, 1992.
We started trying to conceive a child in fall 1991, around the time of a vacation we took to Scotland.
Our son Duncan Alexander Butterfield was born in Los Angeles August 5, 1992.

Dublin, Ireland (Trees, Brennanstown Road, Cabinteely)   **1994 – 1999**

Sun Microsystems had a small office in Dublin that was doing mainly localization of Solaris for various languages, and no software development. Janpieter Scheerder, the VP in charge of Solaris software for x86, wanted to start some software development work there.

I had been successfully managing the Solaris x86 device driver engineering group in Los Angeles since I started at Sun in May 1992. Janpieter offered me the opportunity to take an "International Assignment" in Ireland "for two or maybe three years" and start a Solaris x86 driver engineering group there.

Patt and I took one-year-old Duncan and went to Dublin for a couple of weeks in mid-1993, as a trial visit to make sure the culture was going to be OK for us. I'm not sure why that's needed in Ireland, but that's what the boss said to do.

We packed and left Los Angeles near the end of December 1993, spent a few days vacationing in London, and arrived in Dublin near the beginning of January 1994.

We were in temporary housing for a few weeks until we found a suitable house the company leased for us. That was the house known as *"Trees",* owned by the Doyle family – they had earlier moved to a larger house three houses up the street called *"Benoni".* The Doyles owned a nursery extending behind both houses.
https://www.google.com/maps/@53.2590309,-6.1523848,3a,62.7y,123.85h,89.64t/ ("*Trees*")
https://www.google.com/maps/@53.2580103,-6.1527757,3a,62.7y,142.78h,80.51t/ (Doyle's Nursery)

Orlaith Doyle *(pronounced as "Orla")*, daughter of our landlord, was age 17 when we moved to Ireland and was the main babysitter for our boys there, as well as a good friend. After moving back to the US we visited Ireland in 2001 for Orlaith's wedding and in 2003 after the birth of her son.

Our son Cian Gregory Butterfield was born in our home in Dublin on August 4, 1994, as a dual Irish and US citizen. Our son Kevin James Butterfield was born in our home in Dublin on November 8, 1996; dual Irish and US citizen.

I managed to stretch the Sun Microsystems International Assignment out to five years before they made me either come back to the US or "go local", which would have entailed about a 50% pay cut. I sometimes wonder if I made the best decision to return to living in the United States.

Broomfield, Colorado (13921 Telluride Drive)   **1999 – 2021**

When we returned to the US in January 1999 we moved to Colorado. We bought a house in Broomfield where the boys grew to adulthood. I worked at the Sun office in Broomfield until I was laid off in 2007 in the fourth round of layoffs, before Sun was bought by Oracle.

Small World

Louvre   **Summer 1990**

One morning in a nearly empty Louvre (in Paris, France), I was recognized by a woman who had worked in Marketing at my company Locus in California a couple years prior.
https://en.wikipedia.org/wiki/Louvre

Eiffel Tower   **Summer 1998**

My cousin's daughter Renata stayed with us in Ireland the summer of 1998, right after graduating from high school. One of our excursions was over to Paris. Standing under the Eiffel Tower we heard her name being called by classmates from her French class the school-year just ended, who were there on a group tour. She was able to join them for some event the next day (a dinner boat tour on the Seine, I think).

MTA Rocket Range   **December 2004**

Greg Coleman used to report to me on the Merge project at Locus around 1990, got into rockets, and randomly met my father Richard at the MTA rocket range out in the middle of the Mojave Desert one day in December 2004. They somehow figured out that connection and Dad called me on his cell phone and I chatted with Greg for a couple of minutes.

Irish Co-Worker Cousins   **1994**

While I was leading the Solaris x86 device driver group in Dublin, Ireland, one day one of my Engineers, Michelle Devereux, was at lunch with a group from the office. The facility guy was telling some story about his grandfather, and Michelle recognized the story as one about _her_ grandfather.

It turned out they were cousins. My advice then was: *"Michelle, don't have this conversation with your husband!"*

David Smallberg **~1996**

David Smallberg, Teaching Assistant for my Engineering 20 Programming class at UCLA in 1976, came to the Sun Ireland office where I worked to give a class on software internationalization around 1995.

Kevin and Lisa Plaxco **1989+**

My friend Kevin Plaxco is a Chemistry professor at UCSB. One day in the Los Angeles Airport United Airlines propeller-plane departure lounge waiting for a flight to Inyokern, I randomly met one of his grad students waiting for a flight to Santa Barbara. And somehow managed to figure out that connection!
https://plaxco.chem.ucsb.edu/ (Plaxco Lab)

I met Kevin around the end of 1989, while he was still at Caltech, because he was dating Lisa Giaimo, whom I had known since meeting her in 1984 at a monthly Regency Dance. Lisa was my girlfriend for a short time in 1989. After that Kevin was her next boyfriend and Patt was my next girlfriend – both couples went on to marry.

After Caltech Kevin was doing post-doc research at Oxford (England) during the same time Patt and I were living in Dublin (Ireland). We met up a few times for visits and for rock climbing in Wales, taking our car on the ferry across the Irish Sea from Dún Laoghaire port in south Dublin to Holyhead in Wales.

While Kevin was finishing at Caltech Lisa had started working at Financial Analysis firm *First Quadrant* in Pasadena. The company had two offices; it just happened that the other office was in London. So Lisa was able to continue working for the same company when they moved to Oxford for Kevin's post-foc work. By the time they returned to the US Lisa was able to continue working for them remotely.

One time *First Quadrant* held a party in New York for clients of the company. For a venue they booked out a floor or something in one of Donald Trump's towers. This was somewhere around 2005, long before Trump ran for President. A personal appearance by Trump himself was part of the deal, and there were photo-ops.
Memoirs/200x_LisaPlaxco_DonaldTrump.jpg (Lisa Plaxco and Donald Trump)

Later Lisa became the Director of Testing at the CFA Institute for their Chartered Financial Analyst (CFA) certification. <TBD: check this>
https://en.wikipedia.org/wiki/Chartered_Financial_Analyst

Weasels, Ferrets, and Dragons **~2002**

I'd been working a few months with Bob Shimbo in a group at Sun in Colorado. Walking to lunch with him one day I reacted to something he said with *"Weasel Patrol, run away!"* Bob stops, looks at me, and says *"Where did you get that?"* I told him it was from a comic published by a friend in Los Angeles, Lex Nakashima. Bob says, *"Yes, I got him his first ferret!".* (Lex was known in LA fandom for his pet ferrets.)
https://en.wikipedia.org/wiki/Fusion_(Eclipse_Comics)
Memoirs/Fandom/1987_WeaselPatrol.jpg (Cover of first issue of *Weasel Patrol*)
Memoirs/Fandom/198x_Fusion_Eclipse.jpg (Marketing for Fusion from Eclipse comics)

Lex is also who called me to see if I could help get an interview at Locus for Todd Johnson, son of author Anne McCaffrey. Todd's degrees were from Ireland, and I think he was a Mechanical Engineer anyway, which isn't top of the list for jobs in computer software. But we did hire Todd; I don't remember what he worked on, but he was there quite a while.
https://en.wikipedia.org/wiki/Todd_McCaffrey

Todd's mother Anne McCaffrey lived in Ireland in the next county south of Dublin. Later after I had moved from Locus to Sun and Patt and I were living in Ireland, Todd was in Ireland for his wedding and we met Anne and visited her home.
https://en.wikipedia.org/wiki/Anne_McCaffrey

In Ireland the houses (at least in some places) have names rather than numbers. The name of the house we lived in was *Trees.* Our official postal address was *"Trees, Brennanstown Road, Cabinteely, Dublin 18, Ireland".* The official name of Anne McCaffrey's house was *Dragonhold*.

Watching the Watchmen **January 1987**

W. Glenn Campbell was chairman of President Reagan's Intelligence Oversight Committee, tasked with keeping an eye on the CIA and the NSA. He is also known for running the conservative think-tank Hoover Institution. His daughter Nancy Campbell worked at Locus in OEM/VAR Tech Support. No one knew of this connection until some of us attended a trade show in Washington DC.

Nancy arranged for us to get a private, evening tour of the White House. We waited a few minutes with her father in his office there; then one of his aids arrived and took us on the tour. Yes, I've seen the inside of the Oval Office in person. Also, this puts me at two Degrees of Separation from Ronald Reagan.
https://www.hoover.org/profiles/w-glenn-campbell

Ivan Sutherland's Son   **Sometime 1979 - 1982**

While I was a grad student and running the UCLA Math Department computer lab, two or three times I was asked to show some high-school students around the department, lab, undergrad lounges, etc., which I was happy to do.
Memoirs/Academics/1981-03_MathDeptTour.jpg

One student – I don't remember his first name now – was introduced to me as *D… Sutherland*. I start to ask, *"Oh, any relation to…"* and he's already shaking his head *"No"*. Then I finish *"Sutherland of Evans and Sutherland?"* (I couldn't remember the first name *"Ivan"*).
https://en.wikipedia.org/wiki/Evans_%26_Sutherland

"He's my father." I suppose it was the first time anyone had ever asked him that question referring to the computer scientist and not the actor.
https://en.wikipedia.org/wiki/Ivan_Sutherland

A few years later, in 1988, Ivan Sutherland received the Turing Award, generally considered the highest award in the field of Computer Science. (There is no Nobel Prize for Computer Science or Mathematics.) He received the award "for his pioneering and visionary contributions to computer graphics" – in particular, his invention of the Graphical User Interface (GUI) in 1963.
https://en.wikipedia.org/wiki/Turing_Award
https://en.wikipedia.org/wiki/Sketchpad (Ivan Sutherland's Sketchpad GUI)

But since I mentioned the actor:
Memoirs/1983_Patt_DonaldSutherland.jpg (1983 photo of Donald Sutherland and Patt)

Vadim Antonov   **1990 - 1991**

In October 1990 Vadim Antonov in Moscow made some comments on the Internet RISKS-FORUM, to which I replied in private e-mail with some positive response. He replied to me with this message:
Memoirs/Computing/1990_VadimAntonov.jpg

Less than a year later Vadim helped bring down the Soviet Union. That story is told by Larry Press, here:
Memoirs/Computing/1991-08-19_VadimAntonov_LarryPress.txt (Internet During 1991 Failed Soviet Coup)
https://en.wikipedia.org/wiki/Vadim_Antonov
https://www.cs.oswego.edu/~dab/coup/ (Soviet Coup Archive) *[That "dab" is <u>not</u> me!]*

On the Shoulders of Keiko Fukuda   **1974**

My mother and I attended some Judo Kata workshops given by Keiko Fukuda in Los Angeles. (Mom went on to get her black belt.) I remember Sensei Fukuda once picking me up onto her shoulders demonstrating a *"kata guruma"* lift. She didn't have very far to lift – she was pretty short!
https://en.wikipedia.org/wiki/Keiko_Fukuda
https://en.wikipedia.org/wiki/Kata_guruma
https://en.wikipedia.org/wiki/Judo#Kata_(forms)

Fukuda had been a member of the first group of women invited to study judo. She was the last surviving student of Jigoro Kano, the founder of judo, who developed it from jujitsu. Fukuda's grandfather had been Kano's first jujitsu teacher. This puts me at two degrees of separation from Jigoro Kano, the founder of judo.
https://en.wikipedia.org/wiki/Kano_Jigoro

Sherri LaRue "Adrian" Butterfield   **1955 – 2000**

I danced with famous costumers Adrian Butterfield and Victoria Ridenour at Regency Dancing events. The pair won many Master Class Best of Show awards at Science Fiction convention masquerades.
https://costume.org/costumers_quarterly/Costumers_Quarterly-Vol13No2.pdf

For example their *Midsummer Night's Dream* won "Best of Show" at the 1984 World Science Fiction Convention *LACon II* in Anaheim, California.

I was part of the Kathy Sanders *Draco Tavern* group also competing in the Master class in that same masquerade. Our group won "Most Humorous".

When asked about the correspondence of our surnames I would answer *"no known relation"*. I'd never tried to research it, but we had no internal family knowledge of a relation like I do with my first cousins. I have now discovered that we are second cousins. Adrian's grandfather James Irwin Butterfield, born 1887, was the brother of my grandfather Jesse Emerson Butterfield, born 1907. We share great-grandparents Ransom Albert Butterfield and Indiann Wright.

Memoirs/Fandom/1984_Relation_DAB_AdrianButterfield.jpg (depicts relation and 1984 Worldcon costumes)

I regret not having figured that out while Adrian was still living. I think it would have been so easy: if I had simply mentioned to her my father's full name, *"Richard Ransom Butterfield",* I think there's a very good chance she would have recognized the *"Ransom"* name that runs up and down our family line, which would have led to further exploration and discovery of our fairly close relation.

Josephine Marsh and Wernher von Braun   195x

My grandmother Josephine Marsh worked 1951 to 1969 for government contractor Arrowhead Rubber Company. She worked on a project developing high-altitude pressure suits known as GUS – *Garment Upper Stratosphere*. Jo worked on the shop floor. Part of her job was to make tools which would then be used in making parts for the suit.

For this sort of tool to work, it had to be in some sense the inverse or complement of the part to be made with it. Jo had only an eighth-grade education, but she could visualize these spatial inversions.

A foreman had given Jo blueprints from an engineer for a tool to be made with expedited priority, but the specified tool could not have made the intended part. Jo described the design as "inside out and backwards" and refused to waste time making a tool from it.

The pressure suit was one part of a much larger project. It just happened that the chief engineer of the overall project was visiting the Arrowhead facility that day for a meeting with site engineers. Because the job had been specified as urgent, the foreman interrupted the meeting to talk to the engineer.

Somehow this leads to the entire meeting relocating to the shop floor. They get down to Jo's station and the chief engineer recognizes her from previous visits: *"Oh, hi Jo!"* After Jo explains the problem, the chief engineer briefly studies the blueprint, then says, *"She's right, you know."*

The name of the chief engineer was Dr. Wernher von Braun. Dr. von Braun developed the rockets that launched the first US space satellite, Explorer 1, in 1958. He was chief architect of the Apollo Saturn V rocket that launched mankind to the moon in 1969. Before working for the United States government he worked in Nazi Germany developing the V-2 rocket used by Adolph Hitler to terrorize London during World War II. As part of that work von Braun met with Hitler on multiple occasions. This puts me at two degrees of separation from Wernher von Braun and three degrees of separation from Adolph Hitler.

https://en.wikipedia.org/wiki/Wernher_von_Braun

Six Degrees of Separation

"Six Degrees of Separation" refers to the idea that any two people are connected to each other by a chain of personal contacts with at most five other people between the two.

https://en.wikipedia.org/wiki/Six_degrees_of_separation

There are various ways to test this idea or to think about it, across a spectrum of frivolity. One is to consider the two most diametrically opposed humans you can possibly think of, and try to find a connection between them. For example Adolph Hitler and the Dalai Lama. If you can connect <u>those</u> two within six, you ought to be able to connect <u>anybody</u>!*

I may be able to help with this one. My friend Mark Kampe once traveled to Korea on business. My memory is vague on the details here, but this is close enough: While in Korea Mark wanted to visit a Buddhist monastery. He happened to visit one on a day when the head Buddhist in Korea (Lama of Korea?) was there and staying overnight. Mark was invited to stay for dinner, which he did, sharing a meal with the man. I think this was sometime in the 1990's.

<u>If</u> I could show a personal connection between that Buddhist leader in Korea and the Dalai Lama, then I would have this chain at six degrees of separation:

   Dalai Lama – Lama of Korea – Mark Kampe – David Butterfield – Jo Marsh – Wernher von Braun – Adolph Hitler

What I haven't found is evidence of a personal connection between the head Buddhist in Korea and the Dalai Lama. The latter is known for meeting with other religious leaders, and Korea is fairly important in Buddhism, so I think there's a very good chance the two of them have met. But I haven't found any record of a meeting – indeed I'm not even certain about the exact identity of the man Mark Kampe met. But this chain is quite plausible enough to make the point about the six degrees.

* Not really, they were both members of a very exclusive club: heads of state. But my chain does not rely on that.

Exceptions to Stuttering   November 1973

I remember when John Whitesell, his wife Vada, and their son Ron visited my grandmother Josephine Marsh at the Butterfield Ranch (her home after 1970). John was one of Josephine's cousins. John and Ron both had the most terrible stutter I've ever heard or imagined. This is not an exaggeration: literally *every* word in *every* sentence had *multiple* false starts... *except for the swear words, strings of which would emit flawlessly every time!*

Earthquake Prediction   April 7, 1989

One day back in the last millennium I drove maybe 60 miles from my office near Los Angeles Airport to a customer site up the coast, to debug some problem they were experiencing but we could not reproduce in house.*

At the end of a telephone consultation with Charles Matheny back at the office, he remarked that they had begun experiencing a moderately strong earthquake and he was going to join others leaving the building.

The hack was formed in my mind by the time I hung up the phone – I didn't know how much time I had, but I knew it was a matter of seconds. I strode out of the cubicle and up to the group of engineers I was working with.

Me: *I predict an earthquake!* [*There*, it was out! And no shaking yet.] Guy: *Uh, well, when? Like in the next 24 hours?* [Oh yeah, good question.] Me: *Like in the next minute!*

At this point there's kind of an awkward silence for maybe three seconds, and a couple of the guys look like they're starting to edge away from me.

And then a very satisfying shaking began, followed by a fantastic mix of facial expressions. The earthquake was strong enough that some of them wanted to leave the building immediately.

Looking at earthquake records I believe this was the Newport Beach Earthquake of April 7, 1989 at 1:07 PM. https://earthquake.usgs.gov/earthquakes/eventpage/ci657729/executive

> * I believe this is the only time I ever personally went out to an end-user customer site for a support call in my ten years at Locus. I don't remember how that very unusual situation came to be in this case.

Drink Illiteracy   199x?

Sitting at a table in a Boston airport bar one January waiting for my flight home, I was feeling a little cold and low-energy. The waitress (around my age and very cute) comes over for my order. Not being terribly familiar with the variety of alcoholic beverages, I say I'm looking for something warm and sweet.

I hear her say: *"How about sex on the beach?"*

Suddenly I'm wide awake with three threads of thought running concurrently in my mind: **(1)** *WTF is happening here??* **(2)** *Did she really say what I think I just heard?* **(3)** *This is Boston… in the winter! It's COLD at the beach!*

I have no idea what's going on or what to say, and I'm starting to hyperventilate. The waitress notices my distress and explains, *"It's a drink,"* which she went on to describe. Like sex on the Boston beach, possibly sweet, but not particularly warm. My breathing returned to normal and I ordered an Irish Coffee.

https://en.wikipedia.org/wiki/Sex_on_the_beach

Ambulance Ride with Roger   200x

My brother Roger had a debilitating stroke <TBD: date 200x> for which he had been inpatient at Cedars Sinai in Los Angeles. He was conscious, but his condition was very poor, with almost no ability to speak after a couple of weeks. He was discharged for transfer to a rehabilitation facility many miles south in Orange County. The transport ambulance was staffed by a driver and a medical technician. One family member was allowed to ride with Roger and the Tech in the back of the ambulance; that fell to me.

Along the way I tried to communicate with my brother, asking him *Yes/No* questions trying to get an idea of how much he was "there". He answered a few questions, but it wasn't 100% clear it was non-random. I look over at the Tech and he's nodding with a facial expression that says "Yeah, *maybe*", which wasn't terribly far from my own feeling.

So I think to myself, *Let's get definitive here,* and ask my brother, "What's the square root of 49?" Now the Tech shoots me an incredulous look like "Are you crazy? *No Way!*"

And then my brother says, "one… two… three… four… five… six… seven". And the Tech shifts to amazement accompanied by vigorous affirmative nodding, in apparent agreement with my own assessment that Roger's response was without doubt a correct and non-random answer.

Metasyntactic Variable 2019

In a Denver club I overheard a woman use *"mumble"* to denote something in a way similar to how one might use *"foo".* I asked if she was from MIT (no). I said that was only place I'd previously noticed people using *"mumble"* as a … *[pause while un̲successfully searching for a phrase to express it in English]* … *"metasyntactic variable".*

The guy next to her, involved in another conversation, swivels his head around: *"Wha̲t did he say??"* Her: *"Metasyntactic variable".* They knew what that meant!
https://en.wikipedia.org/wiki/Metasyntactic_variable

Beware the Divalent Cation 200x

While filling a prescription for an antibiotic, the pharmacist advised me to avoid multivitamins and some specific supplements like magnesium and some others which I was trying to remember and sort of rattle back at her; and she says *"yeah, or an̲y divalent cation".* I am unaware of having done anything nerdy enough to provoke this.

Suddenly trying to remember a little chemistry from decades past, I come back with *"So... nothing from the second column of the periodic table…"* which I think she confirms and adds in some more general description that went by too fast for me but probably included non-atomic ions.

We finish up our transaction, and as I'm getting ready to go I mention *"I wouldn't expect very many of your customers to know what a divalent cation is."*

She replies something like, *"Or even the periodic table for that matter".*
https://en.wikipedia.org/wiki/cation

Quantity Discount Fall 1982

One day at ICA our printer stopped working because of a broken drive belt. It was going to take a week for a replacement belt to arrive from the manufacturer.

The belt was just an O-ring spanning two pulleys. Opening the phone book revealed an "O-Rings, Inc" a few miles away.

I drive to the location. The main office looks like a mobile home on blocks, sitting on a lot next to a large Quonset Hut warehouse. I walk in and say I need O-rings; they send me over to the warehouse.

In the warehouse there are racks and racks of thousands of little bins containing O-rings of every size and thickness, and three old Black guys who looked like they'd been working there since before I was born. The oldest of the old Black guys ambles over to the counter.

I show him the broken O-ring and say I need some like it. He walks right over to one of the racks and brings back 3 little envelopes of O-rings similar to the broken one. Rings from one of the envelopes exactly match.

The guy asks how many I need. I figure if it broke once it could break again, so I say *"three",* so as to have a couple extra on hand.

The guy says *"Minimum order is five thousand."* I had not anticipated that, but without missing a beat I say *"I can pay cash, and I don't need a receipt."*

The guy gives me a wide grin and shakes two more O-rings out of the little envelope. I hand him a fiver which he performantly places into his shirt pocket, and I give him a *"thank you very much!"* and a smile on my way out.

We were thus able to return our printer to operation without waiting a week.

Cross-Language Communication ~1996

I was sitting in San Jose airport one evening on a business trip from my home base in Ireland, waiting for a flight. I noticed some of the ground crew unsuccessfully trying to communicate with an older woman in the waiting area.

Talking to the ground crew, I asked about the old woman. They told me her flight had been changed, but her family had dropped her off and gone away, and no one knew her language. I asked don't they have translators they can call on the phone to facilitate such communication? They said yes, but they have to know what language she speaks. O*h.*

I go back to my seat, and a couple minutes later I have the solution. I walk over to the woman, show her my passport, then point at her with a questioning look. She digs her passport out of her purse; it says something like *"People's Republic of Laos".*

Just to be sure I had the right place, I point into the air and say *"Cambodia",* then point into the air next to it and say *"Laos".* She nods affirmatively. I smile and take my leave, walking back over to the ground crew station.

Me: *"She's from Laos, it's near Cambodia."* Them: *"How do you <u>know</u>??"* Me: *"I asked to see her passport."* Them: *"Oh, <u>that's</u> a good idea!"*   [This trick ought to be in their training!]

I went back to my seat. A few minutes later I saw one of the ground crew motion the old woman over to the phone and then she was talking on it.

Athens Street Signs   August 1990

I was in Athens for a few days with a map of the city. I found that in Athens they mix writing street names sometimes using the Greek alphabet and sometimes using the Roman alphabet. My map used the Roman alphabet. But looking up at a street sign it would sometimes be in one alphabet and sometimes in the other.

Fortunately I was familiar enough with the Greek alphabet (from all those years as a physics major and then a math major), that I was able to sound out the Greek word and then deduce the Roman spelling from the sound of me saying the Greek word to myself, then look it up on the map.

Speaking Spanish – UCLA Computer Terminal Room   ~1982

Rich Wales answered a call to the phone in the UCLA computer terminal room one evening, then called out for anyone who could speak Spanish. No one else spoke up, so I went over to the phone with my high-school Spanish to see what I could do.

There was an excited woman on the line speaking rapidly in Spanish, faster than I could understand. I interrupted and asked her to speak more slowly, which she did. I understood that her young child had swallowed some detergent, and that she thought she was calling the number for the UCLA hospital.

I told her we were a computer lab, not the hospital, but that I would get her the number for the hospital. I had someone use another phone to call the on-campus emergency number and get connected to the hospital; then I got from them the hospital number that could be called from off-campus, and told them a woman would soon be calling in Spanish about a child who had swallowed detergent.

I read the hospital number in Spanish to the woman, said "adios", and that was the end of my part in that bit of excitement. I think we put a sign up over that phone with the hospital number in case it happened again.

Speaking Spanish – Europe   Summer 1990

After four years of high-school Spanish I have only actually used it three times that I remember. One was in the UCLA computer lab. The others were in Europe summer of 1990. Oh, plus I once took my driver's license renewal written test in Spanish for no good reason.

When I checked into a hotel for a week's stay in Paris, the manager didn't know English and I didn't know French. When I asked him if he spoke English I got a really pained look from him, like *"Oh, here's another one."* I tried Spanish and it turned out we both had high-school Spanish. He immediately turned happy, even enthusiastic: *"Oh, no problemo!"*.

In a Spanish restaurant in Berlin I spoke Spanish to the waiters, who spoke German but not English. I was sitting near a table of Japanese men who spoke a little English, and ended up translating for them.

Irish Accents, Plural   ~1997

For the Sun Microsystems office in Dublin I hired a few student interns over the years. Some managers and engineers would go out to a few universities around Ireland and interview interested students; other students came in to interview at the Sun office.

I had very good experiences with my interns, who were bright, enthusiastic, and took on some significant projects. One of them, David Donohoe, wrote a compatibility library to allow Microsoft Windows Ethernet device driver <u>binaries</u> to run <u>*inside the Solaris kernel*</u>! That was an amazing piece of work!

I usually conducted the student interviews along with one of my engineers also present and participating. One day Joe Hogan and I were interviewing a kid from County Cork. He had a *very* strong accent and I had a great deal of difficulty understanding his speech.

Afterwards I said to Joe, *"Man, I could hardly understand what he was saying."* I didn't feel so bad after Joe replied, *"Yeah, me too."*

An Irishman – at least some of them – can identify the home <u>*county*</u> of another Irishman by his accent. But it seems that Cork accents are particularly distinct in this way.

Japanese Tourist in the Louvre   **June 1990**

One morning in the Louvre there were very few people – often I would be the only person in a room. In one room I saw an older Japanese man with his camera out taking photographs, which a sign on the wall prohibited.

He was not using the flash. Normally when I see something like that I mind my own business – I don't generally agree with museum policy focused on revenue protection rather than artifact preservation, and I've sometimes taken my own photographs under such circumstances.

In this case the man's behavior was not at all furtive, and he didn't look to me like the sort of person who would be flouting the rules. I felt he was likely unaware of the sign; and more, that he would _want_ to know about it.

So I got his attention and motioned toward the sign, in an offhand way to try to express it as nothing more than an "FYI" before going back to my viewing.

When the man saw the sign he immediately put away his camera and expressed appreciation of me pointing out the sign (though he didn't speak English). He seemed embarrassed at his transgression.

A couple minutes later he came over to me and attached this object to the strap of a bag I was carrying, indicating it as a gift. It is a rattle: a hollow wooden shell with a ball inside, and an image of a monkey painted on one side. There is something that might be writing on the other side.
Memoirs/Recreation/1990-07_MonkeyRattle.jpg

German Is Closer Than Czech   **Summer 1990**

In 1990 Czechoslovakia I found that younger people tended to speak some English, while older people could speak German. In smaller towns I sometimes stayed at a hotel where there were no English speakers. I had a sheet of paper divided into sections with Czech words for interacting at a hotel, at a restaurant, or at a train station; and some general words for "yes", "no", etc.

Some restaurants had menus with entries in both Czech and German. Though the Czech names of the dishes didn't tell me anything, the German names sometimes did. After noticing that I would sometimes ask the waiter to give me the German names of menu items, when English wasn't possible.

Statue of Lenin   **June 1990**

Late 1989 Czechoslovakia had a non-violent revolution which resulted in the replacement of the long-reigning communist regime with government chosen by democratic elections. That process was ongoing when I arrived in Prague the summer of 1990 the day after their first free election in forty years. They were very excited about democracy, and to talk to an American about it.
https://en.wikipedia.org/wiki/Velvet_Revolution

A few days later I was in the Czech town of Tábor. Intending to see a familiar play performed in the Czech language, I was looking for the local theatre. My guidebook said it was "a little hard to find, but it's right across from the statue of Lenin." It took me a while to realize that a large _empty_ plinth was my landmark.

I have a photo I took of men working on the plinth, apparently cleaning up after removal of the statue. I believe the statue was probably removed just in the day or days prior to my visit.
Memoirs/Recreation/1990-06_TaborCZ_LeninPlinth.jpg (plinth missing statue of Lenin)

Postal Misdirection   **August 1995**

Received a car rental receipt originating in San Francisco and sent to me in Dublin, which arrived somewhat late bearing a Tehran postmark. The letter had been misaddressed with the two-letter country code IR for Iran, which should have been IE for Ireland. It didn't surprise me that the letter went to Tehran; what surprised me was that it _came back out_ and eventually made its way to the correct destination.
Memoirs/1995_PostalMisdirect_Iran.jpg (Letter San Francisco to Dublin with Tehran postmark)

Now it occurs to me they probably get dozens or hundreds of those every day in mail arriving internationally to the Tehran post office, so they've probably had plenty of practice dealing with this problem.

Virtual Whiplash   **1982**

One day walking in Westwood Village I heard a thud and turned around to see one car had just rear-ended another in an intersection, apparently at fairly slow speed. The guy in the front car was sitting with his window open and I yelled, _"Grab your neck!"_ just as he was reaching up to grab his neck. Then he looked a little sheepish.

Early Food Review   **196x**

I don't remember this, but I am told (by my father Richard) that as a small child in a diner one evening I loudly commented on the food: _"What did they feed these chickens, rubber bands?"_

Meeting Patt   **March 3, 1990**

Patt walked in to Sue Haseltine's monthly Regency dancing in Santa Monica while I was teaching a waltz. I understand she immediately demanded that her friend who had brought her find out who I was and get her introduced; but that didn't happen fast enough, so she just walked over and introduced herself.

That evening I danced a fairly quick turning waltz with her *(Congress of Vienna)* during which she "followed" so very well, in both step and in timing, I was sure she must have done turning waltzes before, but she claimed not. https://en.wikipedia.org/wiki/Regency_dance

Marrying Patt   **April 9, 1992**

I had mentioned to Patt that I was taking the day off of work for the second anniversary of our first date. When we woke up she asked *"So what do you want to do today?"*

I said *"I thought we'd go down to the courthouse and get married."*

She said *"OK!"*, and that's what we did.

Cian's Birth *vs.* Todd Johnson's Bachelor Party   **August 1994**

In August 1994 when Cian was soon to be born, Todd Johnson was visiting Ireland for his wedding and was at our house. There was an informal get-together of a few of Todd's friends planned at Fox's pub for his "stag party". I took a separate car up the hill to the pub in case Patt went into labor and I suddenly needed to return to the house.

We didn't have cell phones yet, so the plan was that when I arrived at the pub I was to check in with the management and let them know where I was sitting, in case they got a call from Patt for me to come home.

I arrived at the pub and found the table with Todd and the rest of the guys. After a couple of minutes I went over to the bar and told them who I was, and that possibly they could get a call from my wife if she were to go into labor.

As soon as I said that the bartender told me, *"She called: her water broke, you need to go home."*

Now these are Irishmen at a pub, and that answer was just too quick and perfectly aligned with what I had said – I had to wonder if they were putting me on. But I called home and it was true. So I went back to the table to say good-bye, then drove back home, where Cian was born in our bedroom a few hours later. Memoirs/Recreation/1994-08-03_DAB_FoxsPub.jpg

Cian's Early Experimentation   **Late 1995**

Living in Ireland we had a fireplace we used in winter to supplement the central heating system, which carried heat from a central furnace via water pipes to radiators in each room. The pipes from the furnace wound through the fireplace before distributing around the house, so the fireplace became a very effective part of the central heating system for the entire house, not only heating the room where the fireplace was located.

The fireplace was recessed into a wall of the living room, with some brick flooring extending into the room a short distance around the opening of the fireplace, its upper surface raised a couple of inches above the level of the carpet covering the rest of the room.

We had a fire going one evening during the winter our son Cian was walking but not yet talking. Cian was standing on the carpet in front of the bricks, fascinated and observing the fire. At one point he picks up a foot and starts to step up onto the bricks. Mom and Dad chorus *"No!"* and Cian pulls his foot back to standing on the carpet.

After a moment Cian picks up his foot again, turns his head to look directly at Mom, and lowers just his big toe down to touch the top of the bricks. Mom says *"No,"* and Cian again pulls his foot back to the carpet.

Cian then picks up his foot, again looks directly at Mom, and pushes his big toe into the vertical side of an outermost brick (where it drops from the level of the brick top-surface to the level of the carpet). Mom says *"OK",* and Cian seems satisfied with the results of his experiments.

Casting a S*pell of Calming* on a Witch   **September 2006**

Patt and I attended a pagan wedding officiated by three witches, two older ones and a younger new priestess performing her first wedding. Among the wedding party was a somewhat hostile Christian contingent associated with the groom. While the other two were preparing the stage for the ceremony, the novice priestess was pacing around acting very nervous, and she didn't seem to be getting any better.

I'm there in what is basically my Renaissance Faire clothing. Within hearing of the younger witch I asked the older two if they wanted me to try to calm her down.

"How long would that take?"
"Probably about two minutes."
"Go ahead."

So Patt stood in front of the young woman and I stood behind, creating a separate space undistracted by the space around us, and in that focused space I used my hands to virtually "wipe away" the tension from her body, almost touching her but not quite, starting at the top and wiping it down and away from her.
Memoirs/Recreation/2006-09-15_DAB_CastingSpell.jpg (stage for wedding)

"Oh…, he's <u>good</u>!"

It really worked. She looked and acted far more calm and relaxed after that.
(OK, it wasn't exactly casting a spell, but I like the title)

It makes perfect sense that this sort of magic works on people who believe in it.
Memoirs/Recreation/2006-09-15_DAB_PAB_WeddingTammyNathan.jpg (Patt and Dave at pagan wedding)

Street Fight   198x

Michele Coleman and I were front car at a red light in Westwood Village one afternoon when a remarkable scene played out in the intersection before us. There was no cross traffic so the intersection was empty of cars. One guy was beating up a smaller guy in the street in one corner of the intersection. These guys were in their late teens or early 20's.

From the far diagonal corner of the intersection we see a third man run off the sidewalk and across the intersection, leap into the air and execute a flying kick to the bully, land on his feet, and continue right on running, vanishing within a few seconds. This knocked the bully down and was effective at ending the beatdown. It was surreal. I don't know if my jaw was down but it should have been.

"Just open your mouth halfway"   ~1973

One day at the ranch we were sitting around a table for lunch. Someone had made fat hamburgers that were probably 2 ½ inches thick. My mother made a comment about it and asked, *"How am I supposed to eat this?"*

Without missing a beat I replied, *"Just open your mouth halfway…"*

My father cracked up over that, and it became one of his catchphrases I heard many times over the years.

Grandmother Josephine Marsh's Memory   ~1976

As a smart ass and a physics major I once asked Granny whether she had ever seen a star inside the crescent of the moon. She paused and appeared to be thinking back for a few seconds, and then said *"You know, I don't believe I ever have."* This demonstration of memory – and confidence in the absence of a memory – impressed me more than it would have if she had realized it was physically impossible. (It's possible she realized the impossibility and was putting me on with a feigned memory search, but I don't think so)

The Other David Butterfield at my High School   1973 – 1975

There was another David Butterfield at my high school one year ahead of me. He was frequently "in trouble". When someone like the vice principal wanted to have a chat with him, they'd have the office look up his schedule and send a "call slip" to whatever classroom he was supposed to be in at the moment.

My middle initial was "A", his was "P"; in the office index file my card appeared before his. A few times when looking up his schedule they would find my index card instead of his, so I would receive the call slip. I'd show up at the office and they'd say something like, *"Oh, you again,"* and send me back to class.

The Other 86 David Butterfields in my Country   September 2004

In 2004 I got a notice, addressed to me at my home in Broomfield, Colorado, from a Ms. [N.B.] of South Dakota Child Support Enforcement demanding that I pay child support to a Ms. [S.E.A.]. I had never heard of either of those people, nor have I ever been to South Dakota.

My assumption is that someone was told to find the address for *"David Butterfield",* and being lazy and feeling lucky they just googled the name and reported the first address that popped up, without any attempt at validation or critical thinking.

I ignored their first notice, ridiculous as it was – if it was just somebody's scam I wouldn't hear from them again. After I got another notice a month later, I sent a reply with this helpful paragraph: *A simple search using 411.com reveals 87 different hits for "David Butterfield" in United States telephone directories. Perhaps you intended your letter to reach one of the other 86.* I never heard from them again.
Memoirs/2004-09-15_WrongDB_SDCS.jpg (letters to and from South Dakota)

[I seem to remember sending a much snarkier letter than that one, so maybe I did hear from them again and just haven't found that letter.]

Near-Miss of Two Ships in Open Sea at Night   **August 1990**

I observed a near-miss of two ships in open sea at night, on one of which I was a passenger from Italy to Greece. Maybe 100 yards separation as the other ship passed behind us. Horns blew long after it was too late to matter. There were hundreds of passengers on my ship; I don't know what the other ship was carrying.

Leading Tailgaters at 70 MPH into a 40 MPH Curve   **1974 – 1978**

During my last two years of high school I drove to and from school each day, about 30 miles each way. So I gained a lot of early miles of driving experience. I also came to know quite well the roads between the Butterfield Ranch and Ridgecrest.

Part of that commute was on the *Garlock Road*, an eight-mile stretch passing through Garlock and connecting the Redrock-Randsburg Road with Highway 395. The Garlock Road has a curve called the *Goler* curve that drivers often take too fast and end up driving off into the dirt or rolling over. A few times members of my family were the first to arrive at rollover accidents on that curve. (Back in the time before cell phones!)

The Goler curve has a sign advising 40 MPH, but the approach looks like you could take it at 60. It is actually possible to take that curve at 70 MPH without crossing the centerline, **_if_** you know the curve very well and are familiar with the optimal trajectory through it. After a while I was driving pretty much the entire Garlock Road at 70 MPH on my way home each day. The 40 MPH advice is pretty conservative, but if you are not familiar with that curve and just go into it naively for the first time, you'll probably have trouble over 55 MPH.

Once in a while I'd get another car tailgating me on the Garlock Road, following too close behind me at 70 MPH. Typical BMW driver would want to go fast and tailgate on the straight parts of the road, but then fall behind on the curves, then zoom back up on my ass again at the next straight part, but too late to actually pass before reaching the next curve. I'd just ignore them and drive the road the way I always drove it.

More than once that meant one of these bozos followed me into the Goler Curve at 70 MPH. It seems like if they exactly followed my trajectory through the curve they should be OK, but the curve geometry would take them by surprise and they weren't ready for it. But after that curve they wouldn't be zooming up to tailgate me anymore!

I remember one time going into that curve with a tailgater behind me, and when I glanced in my rear-view mirror coming out of the curve, what I saw was a cloud of dust. (I did slow until I saw he had made it back onto the road before I continued on home.)

I didn't feel too bad about leading these guys into a dangerous situation, not only because it was ultimately their own arrogance that put them there, but also because I never did anything special to trick them – I just drove the road the same way I always drove it. But at the same time I knew very well that their arrogance, coupled with my driving modeling right there in front of them, would lead to them entering the curve faster than they could comfortably handle.

Rear-Ended Another Car and Won the Lawsuit   **~1996**

In Ireland one day another driver got herself into a tight position and swerved into my lane to avoid running into a third car, then came to a sudden stop directly in my path, close enough that there was physically not enough space for me to stop before hitting her (though I slowed down quite a lot). But this other driver contended that I was at fault for the collision, because she believed a myth that in a rear-end collision the fault is _always_ with the driver behind. It isn't _always_.

The other driver lost her case at trial, then appealed, then lost again at appeal. In Ireland you have a right to appeal the decisions of lower courts (where *"solicitors"* practice) to a higher court (where *"barristers"* practice), without needing any particular basis like you would in the US. But I can't blame the other driver for the appeal: the judge in the original trial totally misunderstood her and lambasted her for a perceived contradiction she hadn't really committed.

I think the other driver actually made the right decision to swerve in front of me rather than to hit the other car: that third car was a small car that had stopped suddenly in the curb turn lane leading up to an intersection to let someone out. They were trying to make it a quick maneuver, with a quick stop, passenger exit, and resume moving – but that plan backfired, because their *very* sudden stop took the driver behind them by surprise.

Their rear door was already open over the curb and the passenger was already in the process of exiting the car, while my other driver was going 15 MPH and two car lengths away. Even if she braked down to half that speed, if she hits that car there's a good chance somebody goes to hospital. I think she _had_ to swerve.

Her primary fault was earlier, when she trusted the car in front of her to conform with the custom that people in that lane at that location are expected to continue to the intersection and make the turn, not come to a sudden halt in lane. When the other car unexpectedly came to a sudden stop in front of her, my other driver found herself too fast and too close to stop before hitting it.

Her error was in failing to leave enough distance to react and stop in time if the idiot in front of her did something stupid – an error most drivers including myself probably make very frequently. She got unlucky that day with an idiot who did something stupid right in front of her (and who then, unscathed, drove outta there PDQ, of course).

Her second error was after she was in my lane, when she decided to stop in my path rather than continue moving forward and leave sufficient space for me to stop before running into her. She hadn't come to a full stop at first, because her plan was to turn, and once around that third car her plan was to return to the curb lane for the turn. But by then that third car had quickly let out its passenger and started to move forward, blocking my other driver from returning to the curb lane for the turn.

So she stopped directly in my lane, to wait for the other car to get out of the way. She was intent on making her turn, and didn't notice that her recent blind emergency maneuver still had follow-on consequences to consider. Had she been aware of placing herself into my path, she might have continued moving forward in my lane straight through the intersection and avoided the collision.

While I was on the witness stand during the appeal trial, her barrister asked me to estimate the speed of his client. I said *"maybe 15 miles per hour"*, to which he replied *"I think my client would agree with that."* (I think an American attorney would never do that)

Later, when his client was on the stand, she testified that she was about two car lengths away from the third car when <something related to recognizing she had a problem>.

I put the numbers together: I remembered that 60 miles per hour equals 88 feet per second, so 15 miles per hour equals 22 feet per second; so if her car is about 11 feet long, two car lengths would give her only <u>one second</u> to react and take evasive action. I wrote that in a note and handed it to my barrister.

Meanwhile the opposing barrister had brought in a civil engineer to testify, about what exactly I don't know because I was busy writing out my math.

When it was my barrister's turn to cross-examine, he led the engineer through my math. The engineer concluded with the one-second result as though he thought the shortness of one second was favorable to his client – I suppose because it showed she didn't have time to do anything else. (That's true, but again, her error was in getting herself into that bad position in the first place)

The opposing barrister is clearly rattled by the one-second answer. When my barrister sits down, the opposing barrister jumps up and asks the engineer leading questions concluding with *"It could have been a lot longer, right?"* without any actual basis for such a conclusion. Now the engineer is confused and just going along with him.

The other barrister finishes and mine looks like he's about to stand up, presumably to make the engineer get precise about how the timing could possibly have been longer.

Then the judge looks directly at my barrister and says *"You've made your point."* Apparently my barrister was still looking concerned, and the judge repeated, *"You've made your point."*

That was basically the end of the trial. The judge retired to chambers for about five minutes, then returned and gave his verdict, that the result from the lower court, assigning fault to the other driver, should be upheld.

Afterward I mentioned to my barrister being impressed by the way he had turned my math into questions for the engineer. He replied that he was impressed by me coming up with the math. I said, *"Oh, I just happened to remember that 60 miles per hour is 88 feet per second."* He laughed and said, *"We all know that one; it was the putting the numbers together on the fly like you did."*

Lousy Rhyming   ~1968

When I was in sixth grade I had a little playground chant (which I think I got from James Brunner):

> *Hi Hi Hee! Kick 'em in the knee!*
> *Hi Hi Hass! Kick 'em in the other knee!*

Several decades later I was surprised when my father quoted this back at me. It seems my sixth-grade teacher had mentioned this at a parent conference, but my parents had never said a word to me about it. *Heh.* Maybe they figured my rhyming would improve on its own.

I Know Nothing!   ~1979

I worked a few summers at the China Lake navy base airfield. The airfield is in a restricted area within the base where badges showing authorization for that area must be visibly worn. There's a little cafe there where some of us would sometimes get lunch. A hardware guy from our lab came back from lunch there one day with a story.

Another man sitting adjacent eating at the cafe strikes up a conversation, identifies himself as a security officer, and in the course of small talk casually asks, *"How many guys you got working out there?"* To this our guy simply replies *"I don't know"*.

After a bit more conversation the other man finishes his meal. As he's standing up to leave, he says, *"You pass."*

Recreation

Rocketry   Spring 1970

For a Science Fair project in seventh grade I built a rocket and analyzed its performance. This was not a model rocket such as manufactured by *Estes:* the motor was a two-inch diameter steel tube, four feet long, fueled by a mixture of zinc dust and sulfur dust. A rocket of this design reaches around a mile or so in altitude and a mile or so downrange.

Performance data was collected by filming the launch using a 16 mm motion picture camera recording 24 frames per second. Reference objects of known size were painted near the launch rack and visible in the motion picture frames. Projecting the frames one at a time on a wall, I was able to measure the distance traveled by the rocket during each 41.67 millisecond frame.

From time and measured distances I could compute velocities and acceleration. I vaguely seem to remember the acceleration being about 500g (500 times the acceleration of Earth's gravity) for around 1/7 of a second.

I was one of the winners of the Science Fair. I remember afterward giving a presentation about it one evening to some organization, I seem to remember *'Elks Club',* along with a couple of other students also showing their projects.

Around that time I also built a phone system for use during rocket launches to communicate between the blockhouse, bunker, and tracking station. I operated the phone system from the blockhouse most launch dates until about 1976.
Memoirs/Recreation/1970_RRS_phone_schematic.jpg (RRS phone system schematic)

A few years earlier in 1962, my parents and other members of the rocket club worked with Les Rendelstein to make a 17-minute film *"Whitey"*, about a boy, his (eponymous) mouse, and a rocket. This was Rendelstein's project for his Master's degree in Theater Arts from UCLA.
https://youtu.be/U_ssQ3Uyi1s (Les Rendelstein's *Whitey* film on youtube)
Memoirs/Recreation/1962_RLB_in_WhiteyRocket.jpg (Roger standing in top of the Whitey rocket)
https://en.wikipedia.org/wiki/Private_Parts_(1972_film) (a 1972 film from a Les Rendelstein screenplay)

Diving   Summer 1970

My brother Roger and I took a diving class at Belmont Shore Olympic Pool in Long Beach, California in the summer of 1970. The pool has the usual 1 and 3 meter diving boards, plus also 10 meter and 15 meter diving platforms. The last day of the class I dove (once) off the 10 meter platform. (Roger jumped off of it)
Memoirs/Recreation/1970_DAB_Diving10m.jpg (me diving off the 10 meter platform)
Memoirs/Recreation/1970_DAB_RLB_DivingCoach.jpg (Roger and me with our diving coach)
Memoirs/Recreation/1970_RLB_Jumping10m.jpg (Roger jumping off the 10 meter platform)

Judo and Karate   Fall 1972

Started both Judo (USJA) and Karate (Shotokan) in Fall of 1972, early in my sophomore year of high school, after being bullied by another student. Stopped practice after leaving for college Fall 1975, except maybe a summer or two back in Ridgecrest.

My mother and brother started at the same time. Mom went on to get her black belts in both Judo and Karate. I never used it – as soon as I started taking martial arts, even though no one at school knew, bullies quit bothering me.

Judo – promotion to Nikyu (second-degree brown belt) May 14, 1975.
Memoirs/Recreation/1975_DAB_JudoDemo.jpg (Judo demo)

Karate – passed green belt test given by Hidetaka Nishiyama (back when he was 'only' a 7th *Dan).*
https://en.wikipedia.org/wiki/Hidetaka_Nishiyama

Equestrian Gymkhana   1972 – 1974

We had some horses at the Ranch. Sometime during my high school years I competed in a few equestrian gymkhana events held in Ridgecrest by the *Valley Riders* group. Two events I remember competing in were the barrel race and the keyhole race. These were timed events with only one horse in action at a time, winners determined by stopwatch. My horse was very good at the keyhole race and we won at least a couple of times.

The barrel race has three barrels set up in an arena, with an entry/exit line. The competing horse and rider run in across the entry/exit line and ride a specific pattern around the three barrels, then run back out across the entry/exit line. The stopwatch is started and stopped when they cross the entry/exit line on the way in and out; fastest time wins.

The keyhole race has its course laid out with chalk lines on the dirt, drawn in the shape of a keyhole with the end opposite the "bulb" left open. The horse and rider cross the entry/exit line and into the open bottom of the keyhole, run up to the bulb, stop and turn around, and run back down the keyhole and out across the entry/exit line. The horse must enter and exit the keyhole through the open end and is not allowed to cross the chalk line.
https://en.wikipedia.org/wiki/Keyhole_race

Bars was a pure Quarter Horse mare, granddaughter of the breed progenitor *Three Bars.* I think she had an official name longer than that, but we just called her *Bars*. We got her as a green-broke 3-year-old and trained her up from there. She threw me off once during training – she only tried a couple of other times. This was a smart horse, and very responsive. She never had a bit in her mouth; we used a hackamore.
https://en.wikipedia.org/wiki/Three_Bars

After a few times practicing the keyhole run, Bars figured out what the game was. She learned how to do a sliding stop in the bulb of the keyhole and rapidly wheel around to point back down the chute toward the exit. I never specifically taught her this; the horse figured it out. Stopping and turning around rapidly in the bulb of the keyhole is the critical skill for that race, and Bars had it.

I have been unable to find any photographs of this activity. Possibly they did not survive the 1986 Ranch fire.
Memoirs/Recreation/1973c_Bars_Spock.jpg (Bars and Spock at the Butterfield Ranch)

We mated Bars with an Arab and got Spock, so named for his particularly pointed ears. Early one morning my dad and I took Spock to some location around Ridgecrest to be gelded. It was some sort of clinic: there were other horses there for the same reason. We got Spock out of the trailer and after a while the vet got to us and did the job. We got Spock loaded back up into the trailer.

This was happening on a school day, and the horse business had taken longer than expected, so I was going to arrive late for school. My dad wrote a note for me to take to the school office, to excuse my tardiness:

> *David was late for school today because he had to help me castrate a horse.*

Arriving at school I went up to the window and handed the note over to the lady, who took it, wrote me out one of their slips for arriving late, and sent me off to class. She never batted an eye. I'm sure she didn't actually read the note, at least not while I was still standing there. I don't know what happened after that.

Elizabeth Newcomb   1928 – 1992

I remember Elizabeth Newcomb's place in Bellflower, California as a rural-style farmhouse with its own well and pump and several horses in corrals and some ancient barns behind and beside the house. A side of one corral was a few yards from Bloomfield Avenue, while across the street was a new modern housing tract. My mother Maryann Butterfield kept her horse there. Elizabeth took her horses to shows as a hobby; IIRC her day job was Special Education teacher at an elementary school

The modern google map street view pinpoints the location of the house by showing the same house exteriors across the street as seen in the background of this 1970 photo of me on Bars in Elizabeth's front yard.
Memoirs/Recreation/1970-07_DAB_Horses_atNewcomb.jpg (me on Bars in Elizabeth's front yard)

Elizabeth's house faced Bloomfield Avenue with a mailbox at the street, and the house set back from the street somewhat farther than typical urban housing. Elizabeth's sisters Thelma and Carol also lived in the house, and I think one sister had a daughter there too *(maybe "Leslie"?).*

The address back then was 18715 Bloomfield Avenue, but now there is nothing facing Bloomfield on that half-block: there is a barrier and back sides of houses accessed from a residential street from the other side. I estimate Elizabeth's house was at the same location as today's 18706 Danielle, though facing the opposite direction toward Bloomfield. I wonder which house the old well is under…

The other three sides of Elizabeth's plot were surrounded by a giant strawberry field, by which I mean both giant field and giant strawberries. I think an entire quarter of a major block was a strawberry field except for Elizabeth's place carved out near the north end of the Bloomfield Avenue side.

This was a last stand of rural space to be squeezed out as the city took over. The city condemned the land to be put to what it deemed more suitable civic purposes. Now it is part of a housing tract *("follow the money")*.

My guess is that with the city plans developing, the strawberry field was a way to make use of the land in the meantime without any structural investment. The Newcombs (and their guests :-) were allowed to pick and take all the strawberries they (we) could eat, in exchange for keeping an eye out for strawberry poachers. And these strawberries were huge, like the size of an apple! And juicy and flavorful. These were great strawberries!

Gymnastics   1972 – 1975

My high-school sport was Gymnastics. We weren't very good, and we didn't have a coach. The girls' gymnastics coach sponsored us, but we taught ourselves all the moves.
Memoirs/Recreation/1974_DAB_ParallelBars.jpg (Me in handstand on parallel bars)
Memoirs/Recreation/1974_Gymnastics_Letter.jpg (Junior year school letter)
Memoirs/Recreation/1975_Gymnastics_Letter.jpg (Senior year school letter)

Despite this we were still better than Tehachapi. We went to a meet at the high school there one day. They had rings. We didn't have a set of rings yet. They had a chart up on the gymnasium wall showing the compulsory rings routine. During the warm-up time before the events, we learned the routine. Two of our guys took first and third.

We had a really terrible crash pad. People would land in the middle of it and the stuffing would push out to the perimeter, leaving the middle drooping and without much padding. We always kept a regular mat under it.

One day I attempted a double front flip off of a mini-trampoline. I made one and a half and came straight down on my head in the middle of the dilapidated crash pad. Crunch. I felt an inch shorter. My neck still hurts from that.

Demise of Dune Buggy Version 1   ~1972

At the ranch we had a dune buggy made from an old Volkswagon bug. The first iteration of the buggy didn't use a VW chassis; instead the front-end axle and wheels were connected to the back-end axle, wheels, and engine by four pieces of welded one-inch box tubing.

I was out in the dune buggy one day after we had a storm which had brought some flash-flooding. Running across one of the dirt roads was a shallow gully smoothed out for daily commute. It turned out the recent storm had cut the gully so that it now had vertical edges a couple of feet deep.

When I reached the revised gully the dune buggy fell in, and when the front wheels hit the vertical wall at the opposite side of the gully the shock broke the welds holding those four pieces of box tubing to the front axle.

Remember this is a Volkswagon, so the engine is *behind* the rear axle. With the weight of the front axle suddenly removed from the rest of the vehicle, there was no counterbalance to the engine, and the buggy reared up with the ends of the box tubing sticking up in the air at something like 45 degrees, engine dragging on the ground behind.

The back end of the buggy continued moving forward, climbing up and over the detached front axle and out of the gully, leaving the front axle and wheels behind.

In summary: ***The front end fell off and the back end ran over it.***
Memoirs/Recreation/1972c_DuneBuggy.v1.EOL.1.jpg (dune buggy in pieces)
Memoirs/Recreation/1972c_DuneBuggy.v1.EOL.2.jpg (I'm pretty sure that's ketchup)

A later version of that vehicle incorporated an actual VW bug chassis between the same engine and axles. The second time I rolled it was intentional.

Dune Buggy Stuck, Built Signal Fire   ~1975

Bushes in the desert accumulate mounds of sand under them, onto which I would sometimes get the dune buggy stranded with the chassis balanced on a bush and its collection of sand, all four wheels off the ground. I ran over bushes fairly often (not usually by specific intention), but getting stuck on top was rare – I had to be going fairly slowly for that to happen.

My usual means of escape from such a predicament was to put the transmission into first gear with engine idling, and with the rear wheels spinning in the air, walk around to the back and apply weight to bring them into contact with the ground, causing the buggy to lurch forward and off of the bush; then chase the buggy down and jump back in as it idles its way across the desert, so as to retake control before it mounts another bush.

One evening near sunset I took the buggy out for a ride. I had driven it to the edge of the local dry lake when I got it stuck on a bush, and my usual solution was not effective. By the time I gave up trying to get unstuck it had gotten dark. I would be expected home soon, but they would have no idea which direction I might have gone. It was a couple of miles and I didn't feel like just taking the half-hour hike in the dark. So what else could I do?

I decided to build a fire to signal my location for a rescue. At the edge of the dry lake the bushes were thinly scattered. I collected some dry wood from the bush I was stuck on and set it up, well separated from any bushes and from the buggy. How did I light it?

I removed the cap from the carburetor and inverted it to provide a cup into which I could drain some gasoline from the fuel line. Then I ignited the gasoline with a spark from wires leading from the battery. Then carried the cup of burning gasoline from the buggy to the pile of wood, and poured / tossed the burning gasoline from the cup onto the wood (with care to avoid having the flames climb up the stream and get me).

The scheme worked: my parents came out looking for me, saw the fire, came over and helped me get unstuck.

Society for Creative Anachronism (SCA) Barony of *Naevehjem* ~1976 +

My mother Maryann Butterfield was active for many years in the Society for Creative Anachronism (SCA) – an organization recreating mainly Medieval European cultures – where her name was Scannlach Faolscátha, also known as Shadowwolf. Below is how she came to be involved with the SCA.
https://caidwiki.org/index.php?title=Scannlach_Faolsc%C3%A1tha (Scannlach Faolscátha)
https://en.wikipedia.org/wiki/Society_for_Creative_Anachronism

I had moved to Los Angeles to attend UCLA. Someone I knew – I think it was Robert Coleman – told me about an SCA event scheduled for an upcoming weekend in the L.A. area. It sounded interesting, so I went down and had a look. Later I described what I saw to my mother, who thought it sounded fun, went to an event, and got hooked.

Ridgecrest didn't have an SCA group, so Maryann started one; after a few years they had a good-sized active group of players, held practices in the local park, and attended "wars" all over the country. Eventually in **1991** they qualified as an SCA Barony*,* which they named *Naevehjem*.

Besides leadership of the Barony, Maryann also participated in full-armor field battles, where she was known as Shadowwolf. In some "wars" she had a little band of mercenaries that would flank the enemy and launch sneak attacks from behind… for whichever side was paying them.

Due to her leadership role in establishing the Ridgecrest SCA group, Maryann was recognized as the founding Baroness of *Naevehjem*.
http://heralds.sca-caid.org/op/person.php?PersonID=14810 (Kingdom of Caid, Order of Precedence)
https://naevehjem.sca-caid.org/ (The Barony of Naevehjem)

My father Richard also attended many of the larger SCA events, as a spectator and as camping vacations with Maryann. His creative activities were more at home in the workshop, where he designed and made objects out of wood or metal for use at the events.

Maryann and Richard visited Ireland in July and August of 1994 for the birth of my son Cian. In advance of traveling from California she learned that during her visit there was going to be an SCA event at Dunmore East in the south-east of Ireland. So she brought her gear and attended as an emissary of her home kingdom of Caid.
Memoirs/Recreation/1994-07_MMB_SCA_DunmoreEast.jpg

Car Rally Epiphany ~1978

In a "skill-gimmick" car rally you are given sheets of paper with rally rules and instructions and you are to drive your car around following those instructions very exactly. The instructions are complicated and designed to trick you. Rules take priority over instructions, which must be executed within the rules. There are questions interleaved with the instructions, with spaces to write your answers which allow the rallymaster to determine whether you precisely followed the instructions.

The trickiness is unusual enough that there is a special *"First Timer"* class of entrant for people who have never attended this type of rally and have no clear idea of what they are getting into. In that way first-time entrants are only competing against other people similarly naive about the depth of depravity of a skill-gimmick rallymaster.

The first skill-gimmick rally I attended was designed and produced by Warren "Aardvark" Usui and took place in the San Fernando Valley of Los Angeles. My group of four were all rally first-timers: myself, Steve Kiser, Dave Dobrin, and one other guy.

We got our rally sheets and read them over. There were some rules we now know to be fairly standard, like ignoring capitalization and certain words such as avenue, boulevard, street, circle, lane; always obey traffic laws, *etc.,* and something like "finish by 11pm, not everyone can win, but do your best; those who are doing their best will go right on to victory whenever possible."

Now, if you have been on one of these rallies before, you already know what's coming.

We get in the car and start to drive the rally route. I'm in the back seat with a map book. At some point after a while we're headed south on Sepulveda and I'm trying to find our location on the map. I ask for the name of the next major cross-street. We get close enough to read the sign and someone calls out *"Victory Boulevard".* And I respond:

> *"Victory...* **_Victory?!!_** *GO RIGHT ONTO VICTORY WHENEVER POSSIBLE!"*

The car swerves over to the curb and literally screeches to a halt. There are a few seconds of stunned silence. Finally someone says, *"No way!".* But under a minute later we were all agreed that, yes, that was exactly the way. It was awesome.

Five or so years later Aardvark joined as a programmer at Locus Computing Corporation. On vacation in England he sent this postcard back to Locus lamenting the absence of properly uncooked fish.
Memoirs/Recreation/198x_WarrenUsui_Locus_Postcard.jpg

Equicon Star Trek Convention   April 1976

At age 18 I attended the 1976 Equicon, a Star Trek convention, where I beheld this vision of Kathy Bushman:
Memoirs/Fandom/1976-Equicon_KathyBushman.jpg (Kathy Bushman)
https://fancyclopedia.org/Equicon_%2776 (1976 Equicon)
https://fanlore.org/wiki/Equicon/1976 (1976 Equicon)

Despite this it was a few years before I got around to attending another Science Fiction convention. By then she was Kathy Sanders. A decade after that Equicon I was wearing her costumes in masquerade stage presentations.

Science Fiction (SF) Fandom and Regency Dancing   Mainly 1980 – 1993

After graduating from UCLA, Michele Coleman was working as a computer programmer at Xerox, where she met another programmer, Cheryl (Kaylor) Chapman. Cheryl was active in LASFS, the Los Angeles Science Fantasy Society, and introduced us to it. That's how I came to be associated with Los Angeles Fandom and the running of Science Fiction conventions.
https://en.wikipedia.org/wiki/Los_Angeles_Science_Fantasy_Society
https://www.lasfs.org/ (LASFS website)

The organization that ran the 1984 World Science Fiction Convention (a/k/a LACON II) is called SCIFI (Southern California Institute for Fan Interests) and composed mainly of LASFS members. I was a member of that group and the convention committee, helping to run the convention. The same group ran LACON III in 1996. I was on the committee for that convention also, when it won the bid, but resigned when I moved from Los Angeles to Ireland at the end of 1993. (However I did visit back to California to *attend* LACON III)
http://www.scifiinc.org/about-scifi/ (SCIFI website)
https://en.wikipedia.org/wiki/42nd_World_Science_Fiction_Convention (1984 Worldcon)

Regency Dancing recreates dancing in the style of 1790-1820 England. The group *Friends of the English Regency* held annually a Spring Assembly and an Autumn Ball. Along with some historical dances, choreographer John Hertz has constructed dances in the style of the period using dance figures from the period. He published a pamphlet, containing instructions for each of the dances, called *"The Tenor of Terpsichore".* Fans of English Regency Dancing have substantial overlap with Science Fiction fans, and most SF conventions have Regency Dance events. I became active in Regency Dancing and proficient at the dances, teaching at many events.
https://en.wikipedia.org/wiki/Regency_dance
Memoirs/Fandom/1981-03_RegencyDancing.pdf
https://web.archive.org/web/20111106055130/http://www.regencyfriends.org/
Memoirs/Fandom/RegencyDancing_14thAssembly.jpg

1980 Westercon   July 1980

The 1980 Westercon was my first "general science fiction" convention (as opposed to the Equicon *Star Trek* convention). It was held in Los Angeles and run by the LASFS crowd I was now engaged with.

There was an early computer e-mail list called SF-LOVERS digest. To receive it you needed to have an e-mail address on some machine on the ARPANET. The form of an e-mail address was "username@sitename" – for example two of mine were dave@ucla-security and DAB@MIT-MC.

We decided to have a room party (a party in one of the guest rooms at the convention hotel) for people on the SF-LOVERS mailing list in particular, or more generally anyone with *"an at sign in their name"* . To get into the party one had to identify oneself with an ARPANET address.

That was the first of many science fiction convention "@ parties" over the years.

Denvention II Worldcon, Denver, Colorado   **September 1981**

Drove with Michele and Cheryl Chapman from Los Angeles to Denver for my first Worldcon.
https://en.wikipedia.org/wiki/39th_World_Science_Fiction_Convention

LACON II Worldcon, Los Angeles, California – Masquerade   **September 1984**

I was part of the Kathy Sanders *"Draco Tavern"* Masquerade entry at the 1984 Worldcon, which won "Most Humorous" in the Master class. It featured a menagerie of Larry Niven characters assembled at the Draco Tavern. Larry himself was part of the skit, on stage being shown around by fellow author Steve Barnes, who played the tavern's proprietor Rick Schumann. I was cast as a *Motie Mediator* – that's the brown fur suit with three arms and one ear. I still have that suit, though the foam-rubber stuffing all disintegrated so it would have to be re-stuffed before anyone could wear it. I'll probably try to find some suitable museum-like home for it.

https://youtu.be/nLRsCdAbqRY (Video of the 1984 *Draco Tavern* stage skit, script by Larry Niven)
Memoirs/Fandom/1984-09_WorldconMasq.jpg (Award: Most Humorous)

I wore Kathy's costumes in a few masquerades – I don't know how many; yesterday I saw a video on youtube of me on stage with Kathy, in a costume I don't remember. Besides the Motie Mediator I do remember playing Rorschach of Watchmen and Puck of Midsummer Night's Dream.

https://file770.com/category/80s-fanhistory/page/3/ (Costumers' Life Achievement Award to Kathy Sanders)
https://youtu.be/2YAzlUZ-eXg (Spotlight on The Work of Kathy Sanders) (I'm at 6:53 in this video)
https://youtu.be/jiR3d75KgnE?t=43 (Kathy Sanders)

This was the same convention where Victoria Ridenour and my second-cousin Adrian Butterfield, *competing for their first time* in a Worldcon Masquerade, <u>entered directly to Master class</u> and then won the event's highest award: *Best of Show!* (To be fair, they had many years of prior experience making superb historical costumes)
https://youtu.be/jiR3d75KgnE?t=115 (Adrian and Victoria in costume)

After that convention LOCUS Magazine published photos of the masquerade, some of which included me in costume as part of the Draco Tavern group. Note that LOCUS Magazine has nothing at all to do with Locus Computing Corporation or the LOCUS operating system!
https://en.wikipedia.org/wiki/Locus_(magazine) (Locus: The Magazine of The Science Fiction & Fantasy Field)
Memoirs/Fandom/LocusMag_DawnAtkins_BusCard.jpg (Dawn Atkins, Managing Editor, business card)

Aussiecon II Worldcon, Melbourne, Australia   **August 1985**

Traveled to Melbourne, Australia for Worldcon and for touring with Michele, Evelyn, Jordan, Niven*2, Pelz*2, <TBD: Lex?> before the convention. This was my first travel out of the United States for which I needed a passport. At the convention I led the Regency Dancing event.
https://en.wikipedia.org/wiki/43rd_World_Science_Fiction_Convention
Memoirs/Fandom/1985-06_Worldcon_RegencyDancing.jpg (Aussiecon II Regency Dancing scheduling)

These are three postcards I sent from Australia back to Locus during the trip:
Memoirs/Fandom/1985-08_Worldcon_Postcards.jpg (postcards from Australia to Locus)

Guest of Baycon to Lead Regency Dancing   **1985 – 1986+**

https://en.wikipedia.org/wiki/BayCon
Memoirs/Fandom/1986-05_BayCon_RegencyDancing.jpg (Baycon 1986 invitation)
Memoirs/Fandom/1986-06_BayCon_RegencyDancing.jpg (Baycon 1986 thanks)

Confederation Worldcon, Atlanta, Georgia   **September 1986**

Traveled to Atlanta, Georgia for Worldcon
https://en.wikipedia.org/wiki/44th_World_Science_Fiction_Convention

San Diego Comic Con and Watchmen Rorschach T-shirt   **August 1987**

I played Rorschach in a Watchmen skit by Drew and Kathy Sanders at the 1987 San Diego Comic Con masquerade.
https://en.wikipedia.org/wiki/San_Diego_Comic-Con
Memoirs/Fandom/1987_DAB_Rorschach.jpg (Me as Rorschach at the 1987 San Diego Comic Con)
Memoirs/Fandom/1987_DAB_Watchmen.jpg (Watchmen group at 1987 Comic Con, Drew Sanders next to me)

A young art student, Sharon Lai, saw the skit and offered to paint a shirt for me. I gave her a plain white T-shirt and my address, and a short time later the shirt arrived along with a note.

I've recorded images of the shirt. The front depicts a black Rorschach inkblot-style pattern. The back shows the classic Watchmen motif of blood dripping down a wall toward a clock approaching midnight. "**WATCHMEN**" is printed in the classic font above the image. It was a perfect design for Watchmen/Rorschach shirt images.
Memoirs/Fandom/2022_DAB_SharonLaiShirt1987.front.jpg (Watchmen T-shirt front)
Memoirs/Fandom/2022_DAB_SharonLaiShirt1987.back.jpg (Watchmen T-shirt back)

I've enjoyed wearing the shirt on occasion since then, with a bit of a surge around the time the Watchmen movie was released.

Conspiracy '87 Worldcon, Brighton, England   August 1987

Traveled to England for touring and for Worldcon in Brighton. Spent a few days in London with Lex Nakashima before heading south to Brighton for the convention. Saw several plays in London including *Phantom of the Opera* and *Les Misérables*.
https://en.wikipedia.org/wiki/45th_World_Science_Fiction_Convention
https://en.wikipedia.org/wiki/The_Phantom_of_the_Opera_(1986_musical)
https://en.wikipedia.org/wiki/Les_Mis%C3%A9rables_(musical)

Arriving in Brighton in the afternoon I happened to see a poster for a Rick Wakeman concert that very evening, tickets for a pittance. I went to the concert. There were a good few people there, but the auditorium was large and probably only a quarter full. On the stage Wakeman had four keyboards set up in a square with him on the inside in some kind of swivel chair, and he would switch keyboards frequently during his frenetic play.
https://en.wikipedia.org/wiki/Rick_Wakeman

Drew and Kathy Sanders did a Beauty and the Beast costume presentation at the Masquerade. I played the part of an arm sticking out of a wall holding a candelabra to light their way. IIRC for that skit Drew used two chemicals that generate a smoke effect when mixed – he put one chemical on each glove, and he could trigger the smoke to appear by bringing his hands together. Marjii Ellers took this photo of the three of us on stage in Brighton:
Memoirs/Fandom/1987-08_Sanders_BeautyBeast.byMarjiiEllers.jpg (Beauty and the Beast, photo by Marjii Ellers)
Memoirs/Fandom/1987-08_Sanders_BeautyBeast.jpg (Beauty and the Beast, Kathy and Drew Sanders)
Memoirs/Fandom/1987-08_WorldconMasq.jpg (masquerade award)

Loscon Masquerade   November 1987

At the 1987 Loscon Masquerade I was part of two entries: *"A Midsummer Tempest"* and *"Watchmen"*, both by Kathy and Drew Sanders. For the Watchmen group I entered under the name "Walter Kovacs", which was Rorschach's "civilian" name in the Watchmen comic.

Notice the signatures of the masquerade judges in these two award certificates. Along with John Hertz and Rusty Dawe you can see master costumer Adrian Butterfield, who happens to be my second-cousin, though we did not know that at the time.
Memoirs/Fandom/1987-11_LosconMasq_AdrianButterfield.jpg (award certificate for *A Midsummer Tempest*)
Memoirs/Fandom/1987-11_LosconMasq_Kovacs_AdrianButterfield.jpg (award certificate for *Watchmen*)

Penguins Have No Mercy   198x and 199x

I bought a T-shirt at a science fiction convention from artist Jan Bender. She created a series of artwork with the tag line *"Penguins have no mercy."* My shirt featured a Samurai Penguin actively wielding two swords, along with Japanese Kanji characters translating to something like *"The penguin is cold-blooded".* I got a little coaching on the pronunciation.
<TBD: link to image>

One evening many years later on a business trip I was on my way up to my motel room in San Jose after a flight. In the elevator with me was a somewhat older Japanese couple, maybe in their 50's. The woman was very small. Suddenly she starts tittering (in the stereotypical small-Japanese-woman way) while staring straight ahead at my chest. I look down and realize I'm wearing the Samurai Penguin shirt.

She points and her husband looks closely at it; I had the impression he was studying it as an artist might examine a piece. I say *"Ah, pengin wa hijo da!"* The man continued to study the shirt. I ask, *"Did I say it right?"* and he says, *"Oh yeah!".*

Designed and Published Westercon 42 Program Book and Pocket Program   **Summer 1989**

I designed and published the program book and pocket program for the 1989 Westercon. This was Lex Nakashima's Westercon (i.e. he was Chairman of the convention committee), with the dinosaur motif.
https://en.wikipedia.org/wiki/Westercon
Memoirs/Fandom/1989_Conosaurus_Patch.jpg (convention patch given to committee members)

I did the Program Book typesetting using troff under Unix, printed on a laser printer, pasted along with artwork onto blue-line boards, and sent to a local printing company.
Memoirs/Fandom/1989_Westercon42_Book.pdf (covers and first few pages of Westercon 42 Program Book)

The "pocket program" consisted of one 8.5x11 sheet for each convention day with a grid showing event times on one axis and and event locations on the other. Each box in the grid at the intersection of a room coordinate and a time coordinate contained the title of the program item occurring in that room during the time spanned by the box.
Memoirs/Fandom/1989_Westercon42_Program.pdf (entire pocket program for Westercon 42)

Details of the convention program were contained in a dBase database managed by Jordan Brown. The database had all the program items and their dates and times. Jordan wrote a dBase program to output the information for each event in the form of troff macros I had written that would seek to a specified (X, Y) coordinate on the page and write the event title into a box based from that position. Jordan brought his machine to work where I had the troff setup, and we debugged it and got it working without any particular trouble that I remember.

Flying the Pattern at Santa Monica Airport (SMO) with the Goodyear Blimp   **1987**

The Locus building in Santa Monica was adjacent to Santa Monica Airport (SMO). We could walk a few yards from the back of our building across a strip of our parking lot to the airport perimeter fence.
https://en.wikipedia.org/wiki/Santa_Monica_Airport

A few of us decided to learn how to fly, and figured out it would be cheaper to buy our own airplane to fly, for the hours of the lessons, than it would be to rent one by the hour. Six of us formed the Locus Flying Club and collectively bought a used Piper Tomahawk 2-seater *(N2429K)* for $8500. We rented a parking space for it on the side of the airport right near our building. Conveniently, there was a hole in the perimeter fence right there that we could walk through, so it just took a minute to walk from the office to our airplane.
Memoirs/Recreation/1986c_N2429K_LocusFlyingClub.jpg (Locus Flying Club and Tomahawk N2429K)

Members: Mark Kampe, Jordan Brown, David Butterfield, …

I was practicing touch-and-go landings in the pattern at SMO one afternoon when I saw the Goodyear blimp approaching from the south. The thing can't be missed – like it takes up half the sky. OK, that exaggerates, but it is pretty huge. It's also slow, like maybe 30 knots, so you have plenty of time to see it coming: I probably went around the pattern a couple of times watching it make its way in.
https://en.wikipedia.org/wiki/Goodyear_Blimp

The blimp finally gets close to the SMO pattern. I'm climbing back up after a touch-and-go on runway 21 when I get a call from the SMO control tower: "*Tomahawk two-niner-kilo, traffic is a Goodyear blimp…*"

The expected response to an air traffic advisory is either *"I have him in sight"* or *"Looking…"* Getting the advisory about something taking up half the sky amused me to first respond *"Looking…"*

I follow the pattern and as I'm headed downwind the blimp is coming in for a low approach to runway 21. It moved down the runway, well above it, but low enough to drag a cable on the ground. I suppose that's as close as that thing gets to a touch-and-go. After the one pass over the runway the blimp started to ascend again and went away.

Many years later we sold the Tomahawk and cashed out. Jordan emailed me the amount that would be coming and I responded I thought there was an error because it was more than I had put in. Jordan: *"It appreciated."*

Private Pilot License   **December 31, 1987**

I have the most basic US pilot license: *Airplane, Single-Engine Land*, for single-engine airplanes that depart and arrive on land (not on water). I have very little flying experience subsequent to passing the FAA exam. I got the certification, and flying was fun, but it didn't turn into a long-term hobby.
Memoirs/Recreation/1987-12-31_DAB_PilotLicense.jpg (my pilot license)

Motorcycle Road-Racing   **1987-1988**

In 1987 my friend Dana Myers got me into racing motorcycles. He had first got me into riding with him up Topanga Canyon. That was a lot of fun, taking those curves, but it wasn't the optimal place to go fast, with mountain on one side, cliff on the other, and little-old-ladies driving the opposite direction.

So Dana took me out to the race track at Willow Springs. There the desert is flat on both sides of the track, everybody is driving around the track in the same direction, with at least a minimal level of competence and more-or-less equal level of risk-acceptance, and they keep an ambulance positioned at each end of the track just waiting to haul you off to the hospital in Lancaster if need be.

I raced a few weekends at Willow Springs in 1987 and 1988. I also raced one weekend at Riverside Raceway, the weekend before the last big race there before they closed it down. I chose "586" for my number plate in anticipation of the next CPU chip out of Intel, but then Intel decided to call it "Pentium" instead.
Memoirs/Recreation/1987_DAB586.1.jpg (me passing other bikes on the outside)
Memoirs/Recreation/1987_DAB586.2.jpg (me avoiding being passed)
https://en.wikipedia.org/wiki/Willow_Springs_International_Motorsports_Park

Motorcycle Crash – Turn 4 at Willow Springs, First Day on Track   1987

I crashed in turn four at Willow Springs while taking the class they give to new motorcycle road-racers before letting them race. It was a "Crash/Fail" class: I crashed, so I failed the class and would have to take it again before I could race.

I've never remembered anything from the part of that day before the crash. I was on Dana Myers's *Honda 500 Interceptor*. I understand I fell in Turn 4 and smacked the right side of my helmet on the pavement, leaving me unconscious. The road-racing club keeps an ambulance/crew at each end of the track on race days; one of those transported me to a hospital Emergency Room in Lancaster.

I opened my eyes just as a conveyor belt was moving me into a CAT scanner. Now, if you've never seen the inside of a CAT scanner, it looks remarkably like the inside of an alien spacecraft. That's what it looked like to me, anyway; though this vision didn't seem disturbing, only curious.

Someone noticed I was awake and asked me if I knew where I was. It was probably for the better that I simply answered "no" without mentioning anything about the alien spacecraft.

When the hospital was done with me, I was checked into a local motel room, where Tracy Wiseman came in to check on me every couple of hours according to directions given by the ER staff. She related this conversation:
>   Her: *You crashed in the new riders school at Willow Springs today.*
>   Me: *That's <u>crazy</u>! <u>Why</u> would I do something like that?*

I replaced the helmet, since it was damaged, and went back some later weekend, passing the class this time and running in a Novice class race. I raced a few weekends the following 1988 season at Willow Springs, and one weekend at Riverside Raceway shortly before its demise.

Motorcycle Crash – Turn 9 at Willow Springs   1988

I crashed my Yamaha FZ 600 one day in Turn 9 at Willow Springs. Turn 9 is a long curve to the right that leads into the straightaway and is the fastest curve on the track, around 90 MPH.

In one race I leaned the bike too far into the curve and scraped my right footpeg on the ground, causing the bike to stand up and throw me "high side" onto my ass on the pavement as the bike continued over onto its left side and slid down the center of the straightaway.

Meanwhile my ass (with the rest of me attached) was sliding diagonally toward and off the left side of the track and into the dirt. This was like in a cartoon, driving a car without the car: feet forward, sitting partway up, looking forward; but sliding on my ass instead of rolling on wheels.

Now, when you're sliding along the ground at 90 miles per hour, you can think incredibly fast. And what I was thinking was, *"There's nothing better I could possibly be doing at this moment than sliding along here on my ass <u>**without tumbling.**</u>"*

So I rode my ass off the track into the dirt, and kept on riding straight until I was nearly at a stop, when I ended up rotating to the left about 90 degrees in the last few feet. I didn't tumble or break any bones. From 90 MPH!

I stood up and saw my bike at rest on its left side in the center of the straightaway, knew the track crew would retrieve it, and started walking in toward the pit. At this point the race is getting the red flag and there's some loudspeaker announcement.

The medic shack happened to be right at the entry end of the pit, and as I'm walking in I see a head poking out of it looking around until the guy spots me and starts toward me. He meets me and wants to know if I'm all right; I tell him I think my elbow is scraped and maybe bleeding a little.

We walk to the med shack where there's a second med tech, who seemed to be the more senior. They cleaned up my elbow. Then the senior tech tells the first guy, *"Take his vitals."*

The first guy smacks his hand onto my forehead, holds it there for a couple of seconds, then says *"Temperature's normal."*

Then he puts a blood-pressure cuff on my arm and takes the reading, looks up at the senior tech with a slightly dubious expression, and says *"120 over 80".*

The senior guy says *"Take it again,"* and again *"120 over 80."* Now the two of them are looking at each other. So I say, "*Isn't that <u>normal</u>?"* And together they both say, *"Yes…"* It seems they weren't expecting to see a normal blood pressure under the circumstances.

Riverside Raceway   1988

I raced my Yamaha FZ-600 motorcycle one weekend at Riverside Raceway, the weekend before the last big race there before they closed it down. I raced a regular sprint race, and a one-hour endurance race. https://en.wikipedia.org/wiki/Riverside_International_Raceway

During the sprint race, two bikes separately crashed in front of me. A third bike in front of them had blown an engine and left oil on the track, which these bikes slipped on as they tried to make a turn. When I saw the second bike go down in exactly the same spot in the turn as the first, I decided not to try to make that turn, but to ride straight off the main track onto a part that was paved but closed off with cones. Race was going to be red-flagged anyway. IIRC it had progressed enough laps that they didn't restart that race.

Riverside Endurance Race   1988

Most of my races lasted a few minutes, typically eight laps around a 2.5 mile track. The day at Riverside I ran two races including a one-hour endurance race. The endurance race goes for a fixed amount of time, and the winner is whoever gets the farthest in that time.

Dana Myers was there as chief of pit crew (as he was at all my races). We weren't sure whether one tank of gasoline would last a whole hour at racing speeds – some bikes had to make a pit stop for fuel during the hour.

We devised a protocol where I would signal when I reached the tank's "reserve", and depending on how much time remained, Dana would signal me back whether to come in to the pit for fuel or just keep on the track until the end of the race.

When the engine told me it wasn't getting fuel, I switched on the reserve, then signaled Dana on my next pass by the pit. On the next pass after that Dana signaled me back to continue on the track to the end of the race. The bike made it the whole hour on the one tankful.

At the end of the race I rode into the pit. At that point I'd just spent an hour going as fast as I possibly could – coming into the pit you have to be *very* careful about your speed, because what seems really, really slow to you may be way too fast for the pit.

Anyway, I came to a stop next to where Dana was standing. He stepped in front of the bike with his legs straddling the front wheel and grabbed the handlebars, keeping the bike stable. At that moment I suddenly became aware of how weak I was from an hour of what was actually very hard work. I probably would have dropped the bike if Dana hadn't had the foresight to know the exhausted state I would be in.

That was my only endurance race, and that was my only day racing at Riverside. All my other motorcycle road races were at Willow Springs.

Motorcycle Crash – San Diego Freeway, Los Angeles   *(Written July 15, 1991)*   **July 12, 1991**

I was on my way to my new home in the San Fernando Valley last Friday (12-Jul-91), riding my '86 Yamaha FZ600. It was rush hour: somewhere about 5:40 pm. Lane splitting my way Northbound on the 405 up the hill through Sepulveda Pass, passing Mulholland, I finally reached the top, over, and started down into the Valley. Traffic was terrible going up, but once we reached the top it substantially thinned out and all the traffic started accelerating into the relatively empty freeway in front of us. I took up residence in the middle of the number 2 lane.

Well, not <u>everyone</u> was opening up the throttle: The number 1 and 2 lanes were speeding up, but the number 3, 4, and 5 lanes were still going about 20 MPH, because the traffic headed for the Ventura Freeway interchange was thicker.

So I'm coming down the hill; I'm up to somewhere around 40 or 50 MPH, when a huge ancient white Cadillac simultaneously turns on its blinker and swerves out of the number 3 lane and into the number 2 lane about two seconds in front of yours truly.

About 1/2 second later I became aware that I was in deep trouble. I was already on the front brake by that time, reflexes operating faster than conscious awareness in this case. I continued to brake hard to avoid running into the boat in front of me.

By this time I was committed to braking: I was using most of my available traction for braking, and had none available for turning, and I wasn't about to get off the brake so I could turn. Why didn't I just move over into the number 1 lane in the first place? In retrospect, that probably would have worked, because my acceleration down the hill was probably greater than the cars around me, including those in the number 1 lane, so there was probably a space there for me. However, I had been (justifiably) more intent on possible problems due to cars in the number 3 lane, so I hadn't been watching number 1 lane, and I was not sure whether I could move there. Once I had gotten on the brake, I no longer had reason to know that that cars in that lane had not moved up near me. So I was committed to braking.

I continued to brake hard while I was closing on the Cad. Now, I said he was two seconds ahead of me: that would have been if he were stationary and I was moving at my speed. Since he was moving and I was braking, it took a little longer to reach him, maybe three seconds. I finally stopped closing on him about ten feet off his bumper. Just at that moment, however, I heard my front wheel starting to skid, and then, in the space of about 1/4 second, I was down.

By the time I went down I was probably only going about 10 MPH. The bike smoothly but rapidly laid down on its left side, and as part of that action sent me moving forward and slightly left, rather gently, onto my left hand and arm, my chest, and the chin of my helmet. I only slid a few feet (maybe ten), but I had time to contemplate the notion that I was now a pedestrian in rush hour traffic in the number 2 lane of the San Diego Freeway. I came to rest on the line between the number 1 and 2 lanes. Elapsed time since the Cad changed lanes: about five seconds so far. I immediately looked up to see whether to jump some direction or to stay put between the two lanes.

The cars in the two lanes behind me had stopped. My bike had stopped on its left side in the number 2 lane. The Cad had also stopped in my lane up ahead. Another 15 seconds elapsed while I ran up to the Cad, asked the driver to pull over to the side so I could get his information, got his agreement, and ran back to my bike. I picked up my bike; it didn't start. Another 5 seconds. I aimed it down the hill and across the lanes, and looked back at the traffic in the number 3, 4, and 5 lanes, which I had to cross in order to get to the right shoulder.

All traffic had stopped. In my preparation for crossing in front of those cars I looked at each driver to get eye contact and some confidence that they weren't going to run me over when I crossed. I remember one woman who was in her car, mouth agape, with the most incredulous look on her face. I manually wheeled my bike across the lanes and into the shoulder. Another ten seconds. Traffic resumed moving. Total time: about 35 seconds.

The Cad was vintage, it even had the old yellow-on-black California plates. The driver said he'd bought it the day before, and that he was visiting from New York for a week. He was extremely anxious about my physical well-being. I supposed out loud that his car wasn't insured, and he confirmed that.

Another biker had observed the accident and came over to see if I was OK. I got his name and number for future reference, and he rode off. The Cad driver showed me his New York license and I got the number off it.

A couple of minutes later some police showed up. Since I was walking around, they asked if I wanted them to take a report. In light of everything, including that the guy was from far away and didn't have insurance, I decided I wanted them to take the report. We both gave our statements. During this time, a fire/paramedic truck stopped and offered assistance, but no one was in need, so they drove off.

All in all, it was an exciting experience. The feeling of power, realizing that 5 lanes of the 405 during rush hour were stopped, waiting for me, was also slightly amazing.

Body damage: The front of my jacket is scuffed; the chin of my helmet is scraped, the knee of my jeans is slightly torn, and I have a minor abrasion on the left side of my knee. Saturday I had moderate muscle soreness in my thighs, biceps, and pectoral muscles, especially on the left side. Sunday I also had some soreness, less than Saturday in some spots, more in others. Today I'm still sore, but less so. This is a standard pattern I've encountered before.

Bike damage: I rode it home from the crash. I had to replace the left engine case cover which was both scraped and broken. I also slightly bent the left handlebar, and my steering dampener was destroyed. I removed the steering dampener (which I don't really need). I had to bend the front wire frame that holds the headlights back into position. There was also some cosmetic damage to metal and plastic. I didn't break any turn-signals or mirrors. I may have damaged my left fork, since there is now some oil on the outside of it; however, testing it by holding the front brake and pressing and releasing the front end, it seems to work smoothly. I rode it to work today.

What did I learn? Mostly things I already knew:

It isn't safe to drive too much faster than an adjacent lane. Even if drivers in the adjacent lane look back for traffic, they're not likely to look as far as needed to safely merge into a lane that's going 25 MPH faster than they are.

I should have been more aware of my possible escape route into the number 1 lane. I usually am quite aware of those things, but this time I was too intent on something else.

I acquired a couple of bad habits back when I was learning to ride. I gained most of my early high-performance experience on a race track, where they taught us to use only the front brake, and emphatically to keep our feet away from the back brake pedal. Hence I used only the front brake in this emergency. The 10 or 20 percent advantage from using both brakes at once could have made the difference. I was very close to recovering the situation without a crash.

Then again, it occurs to me that it's probably almost always wrong to use high-deceleration braking when there's traffic behind you. Since my bike can outbrake any car on the road, if I apply maximum braking, a car behind me cannot stop that short, and is likely to squish me. Perhaps I should consider that evasion by moving to one side is usually better than braking. I'm unaware of why my reflexes chose braking rather than evasion.

Finally, my tires were a little low; perhaps the increased performance of having them properly inflated would have been enough to avoid the crash. I really ought to check them more regularly, and I probably will in the future.

The way I see it, it was a lot of factors at once that made this crash happen. Unsafe lane change, unsafe speed, unawareness of escape routes, good-but-not-optimal braking technique, marginal tire pressure maintenance: any one of these factors missing from the equation might have avoided the crash.

Traveling in Europe for three months; Confiction Worldcon, The Hague, Netherlands   **Summer 1990**

I took three months off work from Locus in the summer of 1990 to travel around Europe, just a few months after the Berlin Wall came down.

> Flew Los Angeles to Amsterdam.
>
> EURAIL pass train travel around Europe.
> Memoirs/Recreation/1990-06_EurailPass.jpg (my EURAIL pass)
> https://en.wikipedia.org/wiki/Eurail
>
> Met many interesting people.
>
> Arrived in Prague the day after their first free election in 40 years.
>
> Gave a Walkman CD player to a man in Prague who really wanted one (they couldn't get them there yet). He was willing to pay for it, but I just gave it to him – to me it was $100; to him it was a month's salary, and I liked him. Gave him a CD of *Dark Side of the Moon* to go with it.
>
> Took a day trip to East Berlin.
> Memoirs/Recreation/1990_DDR_TransitVisa.jpg (DDR
> Transit Visa)
>
> Walked naked through a public park in broad daylight (English Garden, Munich).
> https://en.wikipedia.org/wiki/Englischer_Garten#Sch%C3%B6nfeldwiese_and_surroundings
>
> Patt joined me for two weeks in Paris and Avignon, around three months after we met.
>
> Crossed sea from Italy to Greece.
>
> Visited some Greek Islands, walked in a steaming volcano.
> https://en.wikipedia.org/wiki/Santorini#Volcanism
>
> Saw friends Lisa and Kevin Plaxco briefly in Athens.
>
> Flew Athens to Amsterdam.
>
> Attended the 48th World Science Fiction Convention at The Hague.
> https://en.wikipedia.org/wiki/48th_World_Science_Fiction_Convention
>
> Flew Amsterdam to Los Angeles.

When I informed my boss I would be taking three months off the coming summer, he said he didn't know whether they could afford to have me gone three whole months. I said, *"Jerry, the question isn't whether I'm going, the question is whether I'm coming back."*

Wrote two journal books during the trip, now among my trinkets. That's where most stories from that trip are. Took thousands of photographs, mostly slides.

When I returned to Los Angeles the customs guy asked me where I was coming from. *"Amsterdam."* Then he asked how long I'd been gone. *"Three months."* **You were in Amsterdam for <u>three months</u>?** *"No, I was in <u>Europe</u> for three months; I was in Amsterdam for three <u>days</u>."* He passed me through without further inquisition.
https://en.wikipedia.org/wiki/Amsterdam#/media/File:Red-light_district_of_Amsterdam_by_day._2012.JPG

Among my trinkets is the map of Europe I carried with me during that travel, with my travel path penned over it.
Memoirs/Recreation/1990-06_Europe.map.camera.jpg (map of Europe)

Also a painting *"Wine Lady in Pink Surroundings"* given to me by a man in Prague (story in the trip journal).
Memoirs/Recreation/1990-07_WIneLadyInPinkSurroundings.jpg (painting)

When I returned home I found that my girlfriend had moved in with my ex-wife!

ConFrancisco Worldcon, San Francisco, California   September 1993

Attended Worldcon in San Francisco. This was just before we moved to Ireland. It was Duncan's first Worldcon.
https://en.wikipedia.org/wiki/51st_World_Science_Fiction_Convention

Intersection Worldcon, Glasgow Scotland   August 1995

Attended Worldcon in Glasgow, Scotland. This was just a short hop from our home in Dublin.
https://en.wikipedia.org/wiki/53rd_World_Science_Fiction_Convention

On that trip we also attended the Braemar Gathering for the Scottish Highland Games. While we were waiting a limo drove by with the Queen inside. I was within spitting distance of the Queen of England (though she had the window up and I suppose the glass was bulletproof).
https://en.wikipedia.org/wiki/Braemar#Braemar_Gathering

LACON III Worldcon, Los Angeles, California   September 1996

Traveled from home in Ireland to California to attend the LACON III Worldcon in 1996.
https://en.wikipedia.org/wiki/54th_World_Science_Fiction_Convention

Mathematics and Computing

My First Computer   December 1969

When I was twelve years old I received a "Digicomp" for Christmas. The Digicomp was a small mechanical digital computer that could be programmed to do simple operations like counting. This was a great little toy.
https://en.wikipedia.org/wiki/Digi-Comp_I

Essentially it implemented three flip-flops. It was programmed by fitting small PVC tubes over nubs on a plastic mainboard. There were wire hooks that would flip around and cause different behavior depending on how they were constrained by the placement of the tubes. A tab stuck out from the right side of the unit, which could be grasped between thumb and forefinger and moved back and forth to cycle the processor.

First student at my high school to take Geometry as a freshman   Fall 1971

In 1971 I had passed Algebra I with an A in eighth grade in Long Beach, California before moving to the desert near Ridgecrest over the summer. My mother and I visited the high school there to enroll me as a freshman for the fall semester.

The counselor had a rigid idea of which classes were suitable for each grade level, asserting that Geometry was for tenth graders, and that ninth graders take Algebra I. This was asinine, of course. It would have been ridiculous for me to retake Algebra I (which was easy the first time) or skip a year of math. My mother refused to leave the counselor's office until he enrolled me in Geometry.

Monday the first week of class I showed up as the only freshman in a room full of sophomores. Wednesday of that week, a few minutes into the class, the door opened and a handful of freshmen walked in to join the class.

Three years later they had to create a new math class for us, because we had taken the "senior" math class as juniors. By then there were a few others who had transferred in. I think there were around a dozen of us in that class.

High School Chemistry, from Slide Rule to Calculator   December 1973

When I started taking Chemistry as a junior in high school, I used a slide rule for multiplication and did addition by hand. Halfway through my junior year I got a 4-function Bowmar Model 905 calculator for Christmas (1973). That's when I mostly stopped using the slide rule. The calculator could add, subtract, multiply, and divide; it cost $100.
https://en.wikipedia.org/wiki/Slide_rule
PRE-1983/1973-12_Bowmar_Calculator.jpg (Bowmar calculator)

Chemistry was taught in a combined lab and classroom; the lab area was toward the back, with a lockable storeroom behind it. Some days the class would do lab work; other days students would be seated at the desks listening to the teacher or whatever. I don't remember how this came about, but I spent most of the second semester working independently in the lab area during times the rest of the class was seated at the desks. I did experiments and mixed up reagent solutions for the teacher at specified concentrations as needed.

One experiment I remember was creating "blueprint" images of a few objects using photosensitive chemicals. The copy paper would start with a water-soluble chemical that exposure to light would change to an insoluble. Placing opaque objects on the paper and exposing it to light would leave the covered parts of the paper with soluble chemical and the exposed parts with insoluble. After exposure the water-soluble chemical could be washed away, leaving only the blue insoluble remaining on the parts of the paper that had been exposed to the light.
https://en.wikipedia.org/wiki/Blueprint#The_blueprint_process

My mother taught Biology and Earth Science at that same high school. One day, decades after I graduated, the science teachers were cleaning out the storeroom behind the chemistry lab, and found a little flask of silver nitrate solution labeled with molarity, date, and my initials. Mom snagged that and I think I still have it somewhere.

Learning how to use a Hollerith Card sorter   **January 1974**

Second half of my junior year in high school I enrolled in a "Work Experience" program placing college-bound students into intern positions in technical fields for two hours per day. I chose "computers" as my field; they placed me with the Supply Department at the China Lake navy base, which had an interactive inventory system written in COBOL that ran on the base UNIVAC 1108 mainframe. That machine had rotating drum storage!
https://en.wikipedia.org/wiki/UNIVAC_1100/2200_series#1108
https://en.wikipedia.org/wiki/Drum_memory

Another student, a senior, Diana, was also placed into an internship where she would use COBOL. Our first week of the semester we spent learning the language in a class given for the two of us by a base engineer.

The class was at a building with a user-operated Remote Job Entry (RJE) station to the UNIVAC mainframe, equipped with a high-speed card reader and printer. We would use a keypunch machine to type COBOL statements onto Hollerith cards; then when ready to test we would load the card deck into the card reader and start it reading the job. The card deck consisted of the UNIVAC job card, the COBOL program, another "control card", and a set of cards with test data for the program to operate on.
https://en.wikipedia.org/wiki/Punched_card

Certain columns of a COBOL program on Hollerith cards are reserved for optional sequence numbers. We were advised to include the sequence numbers on our program cards, *"in case you drop your deck of cards you'll be able to sort them back into order."*

We were given a programming assignment (each of us writing the program independently). At some point in testing, Diana loaded her cards into the high-speed card reader and started it reading. This machine would grab cards from its input bin and slam them into an output bin, which received the cards against a strong spring that kept the cards in place as they accumulated.

The card reader was partway through reading Diana's deck when I casually asked, *"Did you remember to put in your control card?"*

Diana wasn't sure, so she went to pull the first part of her card deck from the output bin to have a look. She pulled back the spring-loaded backstop while the machine was still slamming cards into it. Cards went flying out of the reader and up into the air at several cards per second, then wafting back down to the floor with a kind of see-saw motion. What a spectacle! There were cards everywhere. (As it turned out, Diana had remembered to put in her control card)

A few minutes later we learned how to use the card sorter.

The card sorter can only sort one column at a time: it reads the selected column and throws the card into one of ten output bins labeled 0 to 9. So you have to first sort based on the least-significant digit of your sequence number, retrieve the cards from the output bins placing zero on top and nine at the bottom, then repeat the process with the next significant digit of the sequence number, etc.

When I signed up for the Work Experience program again my senior year, I made sure to specify I was interested in "scientific" computing as opposed to "business" computing. That's how I got assigned to the A-7 flight simulator project.

My high school was in a 15-school league of "Mathletes" who would meet a few times each school year for mathematics problem-solving competitions. Each competition had five "individual problems" worth one point each, and one "team problem". Total correct answers on individual problems for each competition of a school year were summed for each individual to determine overall league individual champions for the year.

The final problem of each competition was a team problem, which five students from each school would collaborate on solving. Two problems were offered: a five-point problem and a (nominally easier) three-point problem; each team would turn in an attempted solution to the problem of their choice. Problems were scored all-or-nothing: only the answer matters (not the method); answers that are not exactly correct get zero; correct answers get full 3 or 5 points.

(I think the team scores were the team problem score plus individual problem scores of a school's team of five pre-designated individuals)

At the final problem of the final competition my junior year, our school already had enough points to win first place in the league for that year, even if we got nothing for the final problem and all the other schools aced it. So the seniors decided to let the juniors represent the school for the team problem.

The three-point problem was some straightforward-but-lengthy algebraic expansion. All four of my teammates wanted to do that one because they didn't see how to do the five-point problem.

The five-point problem: **A small bug crawls along the thread of a bolt of [given] diameter, [given] length and [given] number of thread turns per unit length. How far does the bug crawl?**

I immediately saw how to solve the problem, and also that it would be a lot easier (less error-prone) than that nasty expansion for the three-point problem. I told them, *"It's easy!"*

Three of my teammates chorused back *"No it isn't!"* John Calderwood knew me better and instead said *"How?"* I said *"Unwind it!"* and John instantly replied *"Yes!"*

We then proceeded to calculate the bug's travel distance using the Pythagorean Theorem.

I took third place for individual competitors in the league that year, as a junior competing against seniors.

I took first place for individual competitors in the league my senior year.

For the team competition my school took first place both years.

Martha Rogers was the Mathletes coach and also my math teacher my final three years. I think her surname was Barrall my sophomore year; then she married Mr. Rogers in the Social Studies department. She drove us around to the various schools where the Mathletes competitions were held. I liked her.

I wrote a program for my high-school Registrar to calculate student GPAs   **May 1974**

In my junior year of high school in 1974 I had been learning how to program computers. One was a Compucorp 025E "programmable calculator" at my school, which inside was actually a full computer. I had written to the company and acquired a complete list of machine instructions, and played around with it quite a bit. PRE-1983/Compucorp_025E.jpg (Compucorp 025E)

What my high school did not have was a computer system for handling academic records. At the end of each school year the Registrar would spend the summer computing 400 senior GPA's manually using a desk calculator!

I don't remember how this came to my attention, but I wrote a program for the Compucorp to try to make this task easier. The Registrar still had to key in all the grade data, but the program streamlined the process. I got a nice letter from her thanking me for the time saved. Memoirs/Computing/1974-07_BHS_Registrar_Thanks.jpg (Letter from Burroughs High School Registrar)

The Registrar used the same program to calculate senior GPAs the following summer of 1975, the year I graduated. To be clear:
>   *I wrote the program that calculated the GPA that appears on my high school transcript.*

Here are images of the program and the instructions I gave to the Registrar. It's pretty raw, but I was 16 years old and this was the first program I ever wrote for someone else to use. PRE-1983/1974-05_GPAcalc_Compucorp.pdf (GPA calculation program and instructions)

College calculus class while in high school   **Spring 1975**

The high school wasn't prepared to teach calculus when I was a senior, but the local community college taught an evening calculus class on the high-school campus. Nonetheless I was the only high-school student in a class of mostly older professionals.

The calculus teacher, Mrs. Compton, gave a pre-test the first day of class so that she would know how well her students understood preliminary concepts like trigonometry. Out of 26 questions, I scored highest at 23 correct; the next highest was 13.

But, I did not get an "A" in that calculus class! Tests were worth 90% of the grade, homework 10%. Also, 90% was required for an "A". I had 89.6% so I got a "B". I had done none of the homework because I was spending that time playing around learning how to program computers.

I used to be embarrassed about that B. But my time was better spent the way I spent it: exploring the world of computers, which eventually turned into my professional career. And with 89.6 out of 90 on the exams, the homework wouldn't have helped me much with learning the calculus.

Programming a Plugboard   **Spring 1975**

In high school I did an independent study project to try to run a survey of my fellow students and process the results using a computer. Students got questions on a sheet of paper along with pre-perforated Hollerith cards onto which they could record their answers by punching out selected holes in the card with a pencil and picking off the chad [a word I didn't learn until November 2000].
https://en.wikipedia.org/wiki/Chad_(paper)#2000_United_States_presidential_election_controversy

Of course, some students took this as an invitation to punch out patterns on the cards instead of answers. Although I had designed my answer coding to produce standard, legal Hollerith punches, some of the cards returned by students contained illegal punches; that is: holes punched out of a column in a combination having no valid interpretation.

I wrote a program to process the survey results on the base Univac 1108, where I had to submit the card deck with the program and the survey answer cards to operators. If there was a card with an illegal punch, their card reader would issue a check condition and the operators would get annoyed with me. I tried to go through the answer cards and remove bogus ones, but only some of them were obvious.

After that failed and I had annoyed the UNIVAC operators again I was looking for a way out of this problem. There was a card duplicator machine in a nearby room. Without any special programming you could put a card deck in one input hopper, and blank cards into a second hopper, and it would punch out a duplicate of the first deck onto the blank cards.

But this card duplicator could also be programmed using a wire plugboard. I figured out how to get it to duplicate my data cards, but substituting a known legal punch on the copy whenever it found an invalid punch in the input.
https://en.wikipedia.org/wiki/Plugboard

So I could run my data cards through the duplicator with this plugboard, and then safely submit the resulting deck to the mainframe operators.

TEMP does not necessarily mean disposable   **Spring 1975**

Jerry Zaharias was one of the engineers at China Lake attached to the base Univac 1108 mainframe computer. He had an office close to the machine room in the Michelson Laboratory building. Other engineers I knew along the same hallway were Robert Coleman and Hans Lindbloom, both of whom had kids in the same grade with me at high school.

Being part of the computer support group, these guys had unlimited accounts on the mainframe. Jerry's account number was 0000000007 – he liked being *"007".*

I had been using Jerry's account for some project – maybe it was the student survey – and had written and run a program that wrote data to a temporary file I called "TEMP".

When Jerry saw me the next day he was pissed off. It turns out he had entered a bunch of data he wanted to keep into a file he called "TEMP", which now contained the output from my program.

"You wanted to <u>keep</u> it and you named it <u>TEMP</u>??!"
"It's <u>my</u> account!"
"You got a printout of it?"

It took me two or three hours to type his data back in from the printout. This fully satisfied him and then he was, as he put it, *"unpissed".*

Graduated from High School   **June 1975**

Memoirs/Academics/1975-06_HighSchool_Diploma.jpg (High School Diploma)

Started my first paid programming job at A-7 Flight Simulator Lab   **Summer 1975**

The A-7 flight simulator lab *("Simlab")* was located in Hangar 3 at the Naval Air Facility (NAF) airfield at the China Lake Naval Weapons Center. In the middle of the lab was a real A-7 cockpit surrounded by computers. The simulation ran on a Xerox Sigma 5, which was connected to a DEC PDP-11/45 to generate the graphics. Also connected to the Sigma 5 was a "TC-2" Tactical Computer out of an A-7.

The purpose of this simulator was *not* to train pilots – the purpose was to test TC-2 software, written elsewhere, before trying it in a real aircraft. The TC-2 was responsible for computations such as the optimal timing for a bomb release. The simulation was set up to trick the TC-2 into thinking it was flying in a real A-7, so that its software could be tested in the simulator at at a cost of ~$100 per hour before trying it in a real airplane at a cost of ~$700 per hour.

These are rare photographs of the A-7 simulation lab, rare because cameras were generally prohibited in that area – these were specially-approved publicity photos.
PRE-1983/1975_A-7_SIMLAB_ChinaLake.jpg (photo of A-7 simulation lab)
PRE-1983/1975_A-7_SIMLAB_ChinaLake.labeled.jpg (photo of A-7 simulation lab, with labels)

After working two hours per day at the Simlab my senior year for high-school credit, they offered me a summer job as an "Engineering Aide" for $2.30 per hour, which I accepted. This was done through one of their contractors, Systems Consultants, Inc (SCI). I worked in that lab a few summers while I was attending UCLA.
Memoirs/Computing/1975-05_SCI_OfferTaken.jpg (offer letter from SCI}

Found a bug in my program after dreaming about it   **Summer 1975**

This was the summer after I graduated from high school, before I started at UCLA in fall of 1975.

I had been chasing a bug for about three days in some PDP-11 assembly code I'd written to translate numbers from Sigma 5 floating-point format to PDP-11 floating-point format for the A-7 flight simulator.

Somewhere in this code I had needed to exchange the contents of two floating point registers, had no spare registers, and didn't want to use a temporary in memory because that would be very slow.

So I thought up a clever trick* to exchange the contents of two registers using arithmetic instructions between only those registers, something like: A -= B; B += A; A -= B; A = -A.

The bug turned out to be in this "register exchange" code. I don't remember what the bug was exactly – it was something like missing the final instruction to negate A, or maybe I had the middle add operation written as a subtract.

Anyway, I had been studying the floating-point translation code looking for the bug at home one morning after work (I was working nights, when I could have the PDP-11/45 to myself). At some point I laid down for a nap. While asleep I dreamed that I was looking in my program listing, at those three add/subtract instructions to exchange the registers, when I realized what the bug was.

I woke up, and remembering the dream, opened my listing to where those three lines of code were, studied them, and soon realized what the bug was.

I didn't wake from the dream with any more understanding of the bug than before; the dream foresaw where in the code I would be looking when I <u>did</u> realize the bug, which triggered me to go look there. But some part of me knew I needed to go look at those three lines of code!

(*Although I did it in this case, I would <u>not</u> generally recommend using this trick with floating-point numbers – if the numbers are not of similar magnitude then the smaller number will wash out to zero during the "exchange")

First week at UCLA; meeting Charley Kline and Evelyn Walton, the first time   **September 1975**

This is the story of the <u>*first*</u> time I met Charley Kline (the first user of the Internet) and Evelyn Walton.

It was September 1975, a couple of weeks after my eighteenth birthday. I had arrived at UCLA for "Freshman Orientation" the week before I was to start as a Physics major.

During some of my free time I walked around parts of campus; in particular I walked up and down many of the hallways in the Physics, Mathematics, and Engineering buildings, just to see what I could see.

As I walked down a hallway on the third floor of Boelter Hall, I approached a door that had been propped open, with plenty of heat and noise coming out from a computer lab. As I was passing by I looked in and saw what appeared to be the back side of a Digital Equipment Corporation PDP-11/45. This caught my attention; I backed up and moved into the room a few steps to see the front of the machine, and it was indeed a PDP-11/45.

I had worked the summer just ending in a flight simulator laboratory, writing PDP-11 assembly code to drive a Vector General graphics display from a PDP-11/45. Having read the Processor Handbook, I had been intrigued by a TRAP bit in the Processor Status Word (PSW) which could be set to cause the processor to take a trap after each instruction.

To play around with it I had written a little "single stepper" monitor that set this bit before running arbitrary code -- I don't remember what all it did; maybe printed the PC and other registers so I could watch branches or something -- it was terribly noisy and terribly slow on that Teletype at ten characters per second, but it worked!

But I had been puzzled by one aspect of the machine's behavior: I had found that nothing happened if I set the TRAP bit by writing directly to the PSW. To get the machine to trap I instead had to push onto the stack a synthetic trap frame with the TRAP bit set in its PSW field, and then issue a "Return from Trap" (RTT) instruction. I was able to figure out to do that because that's essentially the setup at the end of the trap handler to resume the next instruction. But I hadn't found anything in the Processor Handbook mentioning this. There was surely no one at work who could tell me.

Big Woman: *"Can I **HELP** you?"*

I think anyone who knew Evelyn must be able to hear her voice saying that. Now think of the poor freshman not even yet to his first day of school. Evelyn could be a bit intimidating!

Grasping for some excuse for my intrusion… *"Uh, I was wondering if there's someone here who knows about this machine,"* waving toward the PDP-11/45.

Short Guy: *"Yeah, what do you want to know?"*

I explain my observations.

Short Guy: *"No, you have to push it on the stack, you can't just write to it."*

"Oh, OK; thanks." I beat a hasty retreat, thinking: *Wow, the people around here are really smart. I mean, this guy just gave a definite answer to a subtle question about something fairly arcane, right off the top of his head!*

It turns out Evelyn's then-recently-completed Master's Thesis described the Data Secure Unix Virtual Machine Monitor (VMM) which their group had recently implemented for the PDP-11. Of course to do the VMM required a thorough understanding of exactly this sort of arcane detail. By luck I had stumbled onto two experts on the very subject of my hastily-devised question.

That was the same room where the Internet was born, and where the UCLA IMP – the Interface Message Processor to the ARPANET – connected up to four UCLA computers through leased telephone lines to other IMPS in the network and ultimately their connected host machines. The IMP was still running in the back of that room several years later when I spent many hours working in that lab. I found out later that Charley was the first user of the ARPANET (now Internet), on October 29, 1969.
https://en.wikipedia.org/wiki/ARPANET#Initial_four_hosts *(Charley's initials "CSK" in the log entry)*

A few years later, Evelyn and Charley were two of my co-founders of Locus Computing Corporation.

Adult Attention Deficit Disorder   197x

Jerry Popek told me a story about Charley Kline from back when they were still at UCLA, which I later realized epitomized adult Attention Deficit Disorder (ADD). Jerry had worn a full beard and mustache for a long time, and one weekend he shaved off the beard, leaving the fully-grown mustache. The next time Charley saw him, *"He looked... and looked... and looked…"* at Jerry's face, and then finally said *"How did you grow that mustache in one weekend?"* (I later recounted this story to Charley and he confirmed it)

That sounds just like something I would do! I got an ADD diagnosis a couple decades ago, picking up my first prescription one Friday. The following Monday morning I was driving down Main street in Broomfield and noticed a line of fairly mature trees along the edge of the park. And I was thinking, *"Have those trees always been there, or did they just put them in over the weekend?"*
https://en.wikipedia.org/wiki/Attention_deficit_hyperactivity_disorder

Another example of undiagnosed adult ADD I recognized in the Wikipedia article on Paul Erdos, a prolific and fascinating 20th century mathematician.
https://en.wikipedia.org/wiki/Paul_Erdos

First person ever to test out of Engineering 30 at UCLA June 1976

With my programming experience I wanted to "test out" of the lower-division Computer Science (CS) classes Engineering 10, 20, and 30 (E10, E20, and E30). These were prerequisites for more advanced CS classes.

(To *"test out"* of a prerequisite class means to satisfy the prerequisite requirement of the more advanced class by taking and passing the final exam for the prerequisite class, without actually taking the prerequisite class.)

I had to use PL/1 for the E20 test, but I didn't know PL/1, only FORTRAN, COBOL, and some assembly languages. So I bought a book on PL/1 and read it the night before I took the tests.

E10 was elementary. Arlene Weber unsuccessfully tried to talk me out of attempting the E30 test, saying *"No one has ever tested out of E30."* Apparently I was the first. The comment that came back on my E20 test was *"Programming OK but not great, suggest he take E20"* (which I did). Memoirs/Academics/1976-06_TestOut_E10_E30.jpg (Letter from Arlene Weber exempting me from E10 and E30)

vgeml – Vector General Emulator (a vector-graphic screenshot program) Summer 1976

The Simlab had a real A-7 cockpit with controls and some instruments, a HUD, and even one of those wacky mechanical map displays.

At the front of the cockpit where the front window of the airplane should be there was a Vector General (VG) display scope. This was a vector-graphic scope, not a video raster-scan display, so it drew lines directly from one point on the screen to another. The display had phosphor that would fade in 40 ms, and every 40 ms the VG would re-draw an updated display of a simulated HUD (Heads-Up Display) and a simulated horizon.

The Vector General display was interfaced to a DEC PDP-11/45 computer. The PDP-11 would receive position, orientation, and other flight data from the air-frame model running on a Sigma 5 computer, and use that to generate instructions (a *"display list"*) for the Vector General to execute to draw lines for the visual representation. Code running on the PDP-11 would update the display list in memory, and every 40 ms the Vector General would go through it using DMA, following the instructions in the list to draw the simulated HUD and artificial horizon.

The previous summer I had added onto the VG display screen, below the simulated HUD, displays for some simulated instruments: a G-meter, an Angle-of-Attack meter, and a Forward Looking Radar. The only objects the simulation showed external to the aircraft were the simulated horizon and three intersecting rectangles representing the runways at the base air facility. I had been given a project to try to enhance the flight simulation display with a visual representation of the local background terrain.

I spent a week hovering over a digitizer and a topographical map, representing local mountains by base quadrilaterals and their peaks – essentially each mountain was represented as the edges of a distorted pyramid. Then wrote the software to take the data and display the lines on the Vector General scope based on the simulated aircraft position and orientation.

The result was really *very* ugly – so ugly I consider the project a failure. It was all vector graphic, no surfaces or shading. There wasn't even hidden-line elimination. It was messy to the point it could be confusing to fly with it enabled.

But, this project resulted in what I am sure was the most useful program I ever wrote for that lab:

While developing the display code I had a "wraparound" bug, where sometimes a short line near the right edge of the screen would cross the maximum value and "wrap around" to the minimum value, appearing as a spurious long line crossing nearly the entire screen.

I wanted to study one of these wraparound images, but the simulation would continue and perspective would shift and the wraparound would disappear after a few seconds with things looking normal again. I *really* wanted to get a hardcopy snapshot of the image on the screen while the wraparound was happening.

Since the previous summer I had been there, the lab had acquired a Tektronix 4014 storage scope that could draw line graphics, and a connected Versatec printer that could make a copy of whatever was on the Tektronix screen; and those were connected to the same PDP-11 that managed the flight-simulation display on the Vector General (replacing the previous Teletype console, a big improvement just by itself).

I realized I could write a program that would read through a Vector General display list, interpreting its instructions and simulating them by issuing equivalent commands to draw lines on the Tektronix. And from there I could print the image!

So I sat down the next day for ten straight hours and wrote out 600 lines of PDP-11 assembly code to do just that. The day after that I spent another ten hours typing it in, getting it to work, and writing a half-page about how to use it. That was it: project average 300 lines of code per day including design, coding, debugging, and documenting. I called it *vgeml* for *Vector General Emulator.* It was a vector-graphic screenshot program.

I did not integrate this code into the simulation. I think I was running it and the simulation as RT-11 foreground and background programs, and gave the hardcopy code some way to find the start of the display list in the other process. Or something like that, I don't remember exactly.

I went back to school in the fall, and when I came back out to the lab for a couple of weeks during winter break, I found someone had taken my *vgeml* code and integrated it into the simulation.

There was a little array of buttons in the cockpit that were interfaced to one of the computers and could be sensed by the simulation. Someone had assigned one of those buttons to invoke my *vgeml* code when pressed. So whoever was flying the simulator could easily snapshot the display screen at any time, with the ability to print the snapshot. That was slick!

They had never before had the capability to make hardcopy of the screen display, and being able to do that was far more useful than merely debugging my wraparound problem. It could capture any sort of simulation anomaly that appeared on the screen. Or just capture good example images for reports. But it was just a two-day hack I wrote to help me debug some other problem, and minimal effort to make it more generally usable by others.

Easiest Language is Assembly Language   **Fall 1976**

The first assignment for Engineering 20 was to write a program to do exact division of two integers, each up to 80 digits long, in three languages: PL/1, Algol 68, and Knuth MIX (an assembly language).

The programming assignments for this class were carried out by punching the program onto Hollerith cards and submitting them through a card reader to an IBM 360/91. Each submission of cards to the machine counted as a *"run".* Each student was given a limited number of runs to complete all the programming assignments for the quarter, I think it was 60 runs. If your program didn't compile, that used up one of your runs.

The assignment didn't specify any order for writing the program in the three languages. Since most of my programming experience up to that time was in PDP-11 assembly language, I first wrote the program in MIX. I was probably the only student in the class who didn't do the MIX version *last*.

I got the MIX program working on the fourth run. Having accomplished that, it is reasonable to assume I understood the algorithm, and that any subsequent troubles would therefore be related to the programming language being used, not to the math.

I went next to Algol 68. This time it took me seven runs to get it working.

Finally I went to PL/1. That took me ten runs. I never did like PL/1.

Eventually (sometime after this class was over) I discovered the "C" programming language, and that became my favorite language, bringing ease of expression while retaining the power and simplicity of assembly language.

Floating Point Simulator   **Fall 1976**

For Engineering 20 it was required to write a few programs. At the start of the quarter the professor handed out materials with several suggested programs, along with the maximum possible point values for each. The easiest problems might be worth 50 points, the hardest 300 or maybe it was 500. Most students would select and write programs from the list. Another option was to propose your own program and negotiate its point value with the professor.

I had done some summer work with floating-point numbers and understood how they were represented and manipulated. MIX did not have any instructions for handling non-integers. I proposed to write a floating-point simulator in MIX. The professor, Dan Berry, approved this as a maximum-point problem, provided that I also included precision tracking, so you could specify the precision of your input numbers and it would carry the precision through the calculations to the result.

I still have a box of Hollerith cards with a few programs in it; the MIX floating-point simulator is one of them. Its deck of cards weighs a little over five pounds and is about 6.5 inches thick, corresponding to ~930 lines of code.
PRE-1983/1976_DAB_MIX_FP_simulator.deck.jpg (image of deck of cards in box)
PRE-1983/1976_DAB_MIX_FP_simulator.cards1-3.jpg (image of first three cards of program)

I don't have a listing of the program anymore, only the deck of cards, and no card reader. I was thinking maybe I could scan them and try to do OCR (Optical Character Recognition) on the punches using a really tall, skinny "font" to decode each column of the card.

Engineering 20 (Programming) Final Exam   **December 1976**

When I took Engineering 20 – a lower-division programming class designed to weed out students who shouldn't be Computer Science majors – the grading system was very structured, with known point values for each assignment and exam, and total points required for an "A" in the class, all known from the start of the quarter.

As students were taking the final exam, the professor (Dan Berry) was going around the room handing back graded programming assignments. After he handed a couple to me, I noticed that I had already accumulated enough points for an "A" in the class, even if I were to get zero on the final exam.

So I point this out to the prof and feign like I'm getting up to leave without handing in the exam, and he's nearly pleading with me to stay and finish *"just to see how you do".* I felt the same way but it was fun to troll him a little.

Many years ago, closer to the time, I judged E20 the most fun class I ever took at UCLA. Also, I'm glad they made me take it, because that's where I learned the concepts of structured programming. Before that my programming experience was with FORTRAN 66, COBOL, and assembly languages.

Small World: The TA for my E20 class at UCLA was David Smallberg. Two decades later he came to the office where I was working at Sun Microsystems in Dublin, Ireland to teach a class in software internationalization.

"Make That a Double"   **Summer 1977**

One day one of the guys I didn't really know at the Simlab approached me with a problem with a FORTRAN program he was working on. He had asked others about it, and someone had suggested he ask me.

He showed me some output from the program (I never actually looked at the code). The program would read a 9-track magnetic tape containing data recorded every 40 milliseconds during the flight of an A-7 aircraft, and print a line of output for each record. The first column of output was the time of that record.

That first column of output should have shown time advancing exactly 40 ms each line. It did show time advancing exactly 120 ms every three lines, but the time advance in those three lines would be uneven, like 32 ms, 32 ms, 56 ms, repeating.

The program had been working for a while, but was having this trouble on one particular tape. This tape had been recorded during an unusually long flight, something like seven hours.

I was asking him a few questions to try to get a better understanding, when I suddenly had a strong but somewhat vague intuition or realization of what the problem was. I probably could have slowed down and articulated it better; instead I just jabbed my finger at the first column of output and said:

> *"Make that a double!"*
> *"What?"*
> *"That's a float, right?"*
> *"Yeah…"*
> *"Change it to be a double."*

A couple hours later he comes back to me and says *"How did you know?"*

A previous summer I had written code to convert Sigma 5 floating point format into PDP-11 floating point format. One of the things I learned and remembered from that work was that a 32-bit floating-point number is only precise to about seven decimal digits (a double is good to about 15). In his output I could see that time had advanced far enough during the long flight that 40 ms had been pushed way down into the bottom bits of a 32-bit floating-point number.

I think the reason time stayed accurate over the long run was because it was being tracked exactly, as an integer record number, which would then be multiplied by 40 ms into a float for the printing of each line of output.

Meeting Gene Schneider, and Evelyn Walton the Second Time   **Summer 1977**

My third summer working at the A-7 simulation lab I met a software engineer named Gene Schneider. I was working mostly at night, when I could have the PDP-11 to myself. My own programming work was on the PDP-11, but while doing that I would also feed two or three long batch jobs into a Xerox Sigma 5 computer in the same lab. Gene was one of the programmers submitting decks of cards for those batch jobs.

Gene's jobs were FORTRAN programs that would run on the Sigma 5, read one or two 9-track magnetic tapes containing flight data, do some sort of data reduction on them, and print some output on the line printer. I would receive the job as a deck of Hollerith cards with the FORTRAN code and the Sigma 5 job-control cards, plus an (unpunched) job cover card containing a preprinted form and handwritten instructions filled in to the form.

Part of the instructions for a job specified which magnetic tapes would be needed for that job. Tapes were numbered and kept in racks in the lab with the computers. I would remove the cover card, find the tapes it specified, and mount them onto the Sigma 5 tape drives before starting the card reader on the program deck.

Two tape numbering systems were in use at that time, "old" and "new". Some tapes had an old-style number, some tapes had a new-style number, and some tapes had both an old-style and a new-style number.

I had been running Gene's jobs at night for a while, but hadn't actually met her. One night I got one of her two-tape jobs. I went to the racks and found the first tape, took it over and mounted it on the first drive. Then I went back to the racks to get the second tape, but couldn't find it. Tapes were never sorted very well in the racks and were frequently out of place, so I diligently searched the entire collection.

I didn't find the second tape needed for the job, so I finally gave up and went back to dismount the first tape… and there it was, mounted on the first drive with the second tape number I had been searching for the last 20 minutes! The tape numbers specified on the job card for the two tape drives were the "old" and "new" numbers for the <u>same tape</u>!

So I dismounted the tape, wrote back in the comments section of the cover card **"I find it difficult to mount the same tape on two different drives!"**, and placed the job in the output bin.

I was working 3am to 11am that summer, so I had some overlap with day people in the mornings. At some point I noticed a little flurry – Hermie Harris (a sort of departmental administrative assistant) was in a tizzy, making out a duplicate copy of Gene's job card to replace the one I had scrawled my comment onto. Apparently Hermie feared there would be something akin to nuclear holocaust if Gene were to see my comment.

I don't know how that scene played out – I went back into the lab. Gene got her original card back including my comment. I remember her telling me in some later conversation that she thought it was funny.

Somehow this incident led to me meeting Gene in person.

Gene learned I was attending UCLA, and was sufficiently impressed with me that she wanted to introduce me to her friend (and former roommate at UCLA, I think) who was a graduate student there – Evelyn Walton. I finally got around to going over to Evelyn's office and introducing myself to her I think right at the end of 1977.

For a long time this was my understanding of "how I met Evelyn". It wasn't until decades later, after Evelyn died, that I chanced to think of that day as a freshman long ago in Boelter Hall, and then realized that it was the same lab I later worked in, and that the two people I talked to that day were Charley and Evelyn. I had never put that together before.

After realizing this I wrote a message to Charley. He didn't remember the encounter but I wasn't expecting him to – clearly it would make a much larger impression on me than on them. Of course, that first meeting was incidental; the later introduction from Gene is what led to the long-term friendship. Evelyn died in 2013; Gene died in 2022.

https://www.familysearch.org/tree/person/memories/GNCX-4FX (Evelyn Walton)
https://www.findagrave.com/memorial/232283269/evelyn-jane-walton (Evelyn Walton fantastic Obituary)
https://www.familysearch.org/tree/person/memories/GJB6-WNP (Gene Schneider)
https://www.findagrave.com/memorial/241263677/eugenia-robin-schneider (Gene Schneider Obituary)

Brought Gene Schneider to the A-7 Picnic   **Summer 1977?**

One summer the A-7 Simulation group was going to have a picnic, I happened to ask Gene Schneider if she was going. I hadn't realized she wasn't actually part of that group, so wasn't on the invitation list. But she knew all the people there. I did have an invitation, with the option to bring a date; I told Gene that and asked if she would like to attend as my date. She did. (I would have been about 20 years old, Gene about 28, but that was of no relevance at all to us.)

One of my favorite memories of Gene is her cool aplomb when we arrived at the picnic to hear H.H. sneer *"What's <u>she</u> doing here?"* to no one in particular, with tone even more catty than usual. I returned with a somewhat offended *"She's my <u>date</u>!".* The look on H's face was priceless. She was dumbfounded and looked about to blow a gasket over not being able to think of something to say for once.

"Not <u>legally</u>"   **Summer 1977**

End of summer 1977 working at the Simlab the guys took me out to lunch at some pizza place in Ridgecrest. I turned 20 at the end of that summer; I'm not sure whether I was 20 or still 19 on the day of this outing. One of the guys asked me what I wanted to drink. I was trying to decide between iced tea and Coke when the guy asks, **"Do you drink beer?"** (A lot of guys in the A-7 group were Mormon and did not.)

Given that the legal drinking age was 21, I couldn't very well answer with an unqualified affirmative. But the previous school year in LA I had actually ordered and been served beer (Tsingtao) with my meal at a Mongolian BBQ with my girlfriend; so *"no"* didn't seem like quite the right answer either. The answer I finally came up with was **"Not <u>legally</u>".**

The guy was shocked. He said it never occurred to him that I might be underage. (I vaguely think this might have been the same guy I helped with the floating-point precision problem – *"Make that a double!")*

Linear Algebra Final Exam   **Fall 1977**

This refers to an upper-division mathematics class at UCLA: Math 115 - Linear Algebra, one of the first classes taken by a Math major during junior year (after having completed the lower-division sequence of calculus, introductory linear algebra, and differential equations taken by all math and hard-science majors during their first two years).

My professor for this class was Masamichi Takesaki, a Japanese man with a fairly thick accent and somewhat simplified syntax when speaking English. I did not find this to interfere at all with his teaching of mathematics, but some of that is reflected in his speech quoted below, which I did not want to edit.

At the final exam for this class, Dr. Takesaki announced two options: **"Program A: ten question, ten points each question; or Program B: one question, one hundred points. You choose."**

As might be expected, the hundred point question was a general problem to be solved by selecting and applying methods learned in the class; and the ten point problems were each relatively narrow, examining a single method.

Anyway, I thought I could see how to make it through the hundred point problem, and wasn't feeling 100% confident about my mastery of the methods for a couple of the ten point problems. I've also always liked the more general or realistic style of problem better. So I went after the hundred pointer.

I got through the problem with quite a bit of time left, so I went carefully through it all again, maybe clarifying a few steps here and there. Then there was still another half hour of time remaining, and no one else had finished yet; but after the careful, unhurried review, another pass over it was feeling as likely to introduce an error as to fix one.

So I walked the exam up to the desk at the front of the room and turned it in, whereupon I heard a collective gasp – I was the first one to leave, and apparently many others weren't even close.

The following week I went to the prof's office to check my grade. (Often they would post on their doors lists of student-ID numbers with grades for students to check.) The prof is there and spots me trying to find the list for my class among those on his door; he asks which class. I tell him, and he says *"Oh, that one over here,"* and starts around his desk.

In my mind I can still hear the good professor's voice: *"What you name?"* I tell him, and he stops without looking at his list and says *"Ah, <u>Butterfield</u> – you choose Program B. You the <u>only</u> <u>one</u>. You get 'A'. You ever need letter of recommendation, you come to me, I write."*
https://en.wikipedia.org/wiki/Masamichi_Takesaki

Evelyn Walton at UCLA   **1978-1982**

Evelyn became a *de facto* mentor to me on Unix kernel matters. In 1979 when I ported Unix v6 and (later v7) to the Math Department LSI-11/23, it was her PDP-11/45 I used to generate the bootable 2.5 MB RK05 disk with a root filesystem holding my 11/23 kernels. I don't remember bugging her too much, as I tended to figure out problems pretty quickly on my own; but I would run past her my various plans for the 11/23 software to make sure they were sound. When I consulted her about kernel matters she *always* understood what I was talking about.

The first instance I remember of working closely with Evelyn on a problem was one evening after one of the VAX servers had crashed, and wouldn't boot because the root filesystem was corrupted. This was also the first time I was involved in making a ballsy online fix to a machine others depended on. I happened to be working on something in the machine room when Evelyn came in to investigate the VAX crash.

Hovering over the hardcopy console, we saw error messages resulting from a whole block of bad inodes. We dumped out the bad block in hex using "od" and all the inode fields looked like garbage.

But there were recognizable inode patterns! I noticed that if the bytes were all shifted up one byte in the block, the resulting values in the fields would look reasonable. We were able to determine that shifting them like that would produce plausibly correct values for the inodes in question. We theorized that there had been some sort of DMA addressing error during the most recent write to that block of inodes on the disk, which had written all the bytes one position too late, or something similar.

I said something like, *"Oh! We should be able to read that block, trim off the first byte, and write it back out to the disk."* (We knew the last byte was supposed to be a zero)

Evelyn said, *"Yeah…",* and that's what she did, recovering the filesystem without losing any files.

The filesystem checker would never have done that; if left to its own devices *[pun]* it would have zeroed out the "garbage" inodes and the files would have been lost.

Bootlegged Connection to the ARPANET (Rand TIP)   ~1978

One of my friends had started working with a group in the Computer Science Department and had access to the telephone number for the Rand TIP modem. This was a phone number you could dial to connect to the ARPANET (predecessor of the Internet). You could call this number, and after the TIP answered you could tell it to connect you as a terminal to whatever machine on the network you specified. (Of course, you then would have to login to that machine)

I acquired this phone number and mainly used it to connect to MIT-DM to play Zork.
https://en.wikipedia.org/wiki/Zork

Writing a mini Operating System   Summer – Fall 1978

I wrote my own OS for the DEC PDP-11/45 under UCLA contract with Teledyne Controls. I developed a diagnostic program to test a flight recorder they were designing. They had no RT-11 license, so I wrote my own little "kernel" (common services) and "shell" (CLI) to host the diagnostic application (it *all* ran in kernel mode, though).
Memoirs/Computing/1978-12_TomMacLaren_LOR.jpg

UCLA Computer Club Classes   January 1979

In January 1979 I taught a UCLA Computer Club class on the programming language PPL (Polymorphic Programming Language). Besides my own listing, the flyer for that quarter's classes lists several familiar instructor names.
PRE-1983/1979-01_UCLA_CC_Classes.jpg (flyer for UCLA Computer Club classes)

Steve Kiser went on to join Locus shortly after it was founded in 1983. David Smallberg had been my TA in Engineering 20. I was acquainted with Allen Stoughton; IIRC he went to Edinburgh, Scotland to study Artificial Intelligence (AI). I remember Dan Faigin. I recognize the names Stephen Woods and David Kay.

Completed Degree Bachelor of Science in Mathematics and Computer Science   June 1979

Memoirs/Academics/1979-06_BS.jpg (BS diploma)
Memoirs/Academics/1979-06_BS_Honors.jpg (Certificate of Honors)
Memoirs/Academics/1979-07_HighestHonors.jpg (Departmental Highest Honors)

Job Offer from Interactive Systems Corporation   Summer 1979

In 1979 I applied for a summer job at Interactive Systems Corporation; they made me an offer, but I got a contract with China Lake to write a standards-based graphics package, so I didn't take the Interactive job.
https://en.wikipedia.org/wiki/Interactive_Systems_Corporation
Memoirs/Computing/1979-04_ISC_OfferNotTaken.jpg (Interactive offer signed by Heinz Lycklama)
PRE-1983/1979-06_NWC.pdf (CORE graphics NWC contract)

Interactive was *the* Unix house back then, and they were right nearby in Santa Monica. I'm sure I would have found it very interesting working there, as much so as the path I did take.

But things would have been *so* different! Interactive's VP/IX product was *the* competitor to my Merge product at Locus. If I had started down my path with Interactive I might never have joined with group that formed Locus. It's hard to imagine. It would be a completely different universe, from my point of view.

MDB Systems Bust Grant Card   1970s

On a Digital Equipment Corporation (DEC) Q-Bus, the printed circuit card plugged into each slot is responsible for propagating the BUS GRANT signal through its slot to other slots further from the CPU (except when the card is claiming the bus for itself). To handle the case of an empty slot on the bus, DEC sold a minimal, passive "bus grant card" that could be inserted into a slot to do nothing but propagate the incoming BUS GRANT signal to the next slot down on the bus.

MDB Systems sold DEC-compatible hardware. As part of their marketing they gave away a free bus grant card for the DEC Q-Bus; but they called it a "Bust Grant Card" and included in its logo a granny with sagging and/or swinging bust components. I have one of these cards – here's an image:
PRE-1983/MDB_BusGrantCard.jpg (MDB Q-Bus Bust Grant Card)

Demise of the UCLA IBM 360/91   **September 1979**

UCLA replaced its ten-year-old IBM 360/91 with an IBM 370/3033 in September 1979. Their monthly newsletter commemorated this event on the front cover with some vital information:

IBM 360/91KK
4 MB memory
Installed 6/1969 – 8/25/1979
Price $4,289,289.40

PRE-1983/UCLA_CCN_Perspective_1979-09.pdf (UCLA central computing newsletter *"Perspective"*)

Weise Twins Daniel and David   **1979**

At UCLA Daniel Weise and I both majored in *Mathematics and Computer Science* and worked on some projects together, completing our Bachelor of Science degrees in June 1979. After that I remained at UCLA while Daniel went to grad school at MIT for his PhD.

David Weise graduated from UCLA at the same time as Daniel and myself. IIRC David's major (and later PhD from Princeton, I think) were in physics. Daniel and David are identical twins, the youngest siblings of at least four boys. They were Beatles fanatics, and they had a bit of a mind-meld going *all* the time.

The twins had some running jokes. Daniel was born 15 minutes before David. One amusing joke asserted that Daniel was *"planned",* while David was *"an accident".*

I had trouble telling David and Daniel apart at first. I'm not very good at visual comparisons, but identical twins do tend to look pretty much alike. At first I learned to tell them apart based on which side they parted their hair on. Also, only David wore glasses. Eventually I could recognize them without effort, but it took me a while to learn it.

Another amusing joke of theirs: sometimes one of the twins would refer to the other as *"my brother"* – but with four brothers in the family that would be ambiguous, so then they would clarify – *"the ugly one".*

Also (IIRC) while in grad school either Daniel or David (maybe both) were part of a blackjack card-counting gang that would show up at a casino with 70 grand and leave when they had doubled their money. Or something along those lines… it's pretty vague in my memory now.

Daniel sent me two letters with his impressions during his first month or so of grad school at MIT:
Memoirs/Computing/1979-09-10_DanielWeise_MIT_Letter.pdf (first impressions, handwritten)
Memoirs/Computing/1979-09-20_DanielWeise_MIT_Letter.pdf (written using Knuth TEX typesetting)

The twins went on to start a company *Dynamical Systems* with some others I think were also from MIT. They had a product called *"Mondrian".* The company was acquired by Microsoft, bringing Daniel a senior position there.
DOS/Mondrian1.0.jpg (Mondrian 1.0 distribution floppy)
Memoirs/Computing/DavidWeise_Dynamical_BusCard.jpg (David N. Weise, Ph.D. at Dynamical Systems)

Hacking e-mail Headers   **~1980**

In 1979 or 1980 after Daniel Weise went off to MIT, I did some hacking around with the MIT e-mail system (connecting to it across the ARPANET from UCLA).

This was before SMTP, back when e-mail was transmitted across the ARPANET using anonymous FTP connections. A sender would enter the e-mail destination (e.g. daniel@mit-mc) and text into an e-mail client program running on the local machine. The client program would add headers like "From" and "Date" at the top and then connect anonymously to the FTP server (at TCP port 21) on the destination machine. FTP servers implemented a "mail <username>" command, which would take subsequent lines of input as text to be sent to that local username. The sender's e-mail client would issue the "mail" command to the remote FTP server, feed it the headers and text of the message, and close the FTP connection.

Well, I could connect anonymously to the MIT FTP server just as well as my e-mail client could. So I could use my FTP client to connect to the MIT-MC FTP server, give it a command like "mail daniel", then transmit text that would appear in the destination mailbox with whatever "From" and "Date" headers I wanted. If I didn't explicitly identify myself in my (manually-created) headers or elsewhere in the message, there would be no way for the recipient to know it came from me. I could even make it look like it came from someone else.

I wasn't the only one to notice this "feature" and soon SMTP was being designed.

Bring Your Own Computer (BYOC) Parties   **1980**

Back no later than 1980 Sue Haseltine started a series of fannish *"Bring Your Own Computer"* (BYOC) parties, to which people would bring their computers and computer games. There weren't any laptop computers back then: people were hauling full PCs like APPLE II and other machines of the era to these parties. I vaguely remember someone bringing a pair of computers that could run a high-quality vector-graphic spacecraft simulation.

One BYOC party I remember attending had a dual theme, as it happened to coincide (approximately) with Sue reaching the age of one gigasecond. I thought that was a fine reason for a party and stole the idea a few years later with my own gigasecond party.
PRE-1983/1980-05-17_BYOC_SueHaseltine.crop.jpg (BYOC invitation)

Jordan Brown hosted at least one of the BYOC parties after he acquired what he described as *"the least-portable computer in fandom"* – an old PDP-12 he got from the UCLA Linguistics Department. Just its floating-point processor was larger and heavier than Jordan and me put together.
PRE-1983/1980-02-21_BYOC_JordanBrown.jpg (BYOC invitation)

Built my own Heathkit H19 ASCII terminal   **~1980**

I built my own ASCII terminal (25 lines by 80 columns) from a kit somewhere around 1980. My soldering is crap, but it worked. It was packed in a box and put into storage in 1993 when I moved to Ireland. Opened the box April 2022 and the terminal still works.
PRE-1983/1980c_Heathkit_H19_Terminal/05_H19_Front.jpg (my H19 terminal)

The First One is Free…   **~1980**

I had set up 300 BAUD modems over the telephone between my house and the LSI-11/23 at the UCLA Math department, and been using them for a while, and also I would connect to the RAND TIP to get to MIT-DM to play Zork.

A PhD student in the Math Department, Phil Gartenberg, went to Israel for a summer and offered to lend me his 1200 BAUD modem while he was gone. This was four times faster than I was used to, and it was great!

I got used to Zork at 1200 BAUD, and when Phil came back I could no longer tolerate 300 BAUD. I had to buy myself a pair of 1200 BAUD modems (one for home and one for the LSI-11 so I could start using that at 1200 BAUD also). Together those cost me $1600, my first large-cost purchase of anything.
PRE-1983/RacalVadic3450_1982-08.jpg (front cover of manual for Racal-Vadic 3450 modem)

To state that in modern terms, I went from 0.0003 megabits per second to 0.0012 megabits per second.

Electronic Wedding Invitation   **June 1980**

When Michele Coleman and I were preparing to get married in 1980 we had wedding invitations printed in the usual way by some company. Michele had been working at Xerox with one of their Alto workstations as her desktop machine. The Alto was a very early graphics workstation with a mouse.
PRE-1983/XeroxALTO_1978-11.jpg (front cover of my ALTO manual)

One of my undergraduate buddies, Daniel Weise, had gone to MIT for grad school. We wanted to send him a wedding invitation. I had an e-mail address for him there at MIT. We decided to try to send him the invitation by e-mail.

I knew that Daniel had access to an Alto workstation there at MIT. We didn't have any way to scan the invitation, so Michele used a program on her Alto to create a reproduction of it (customized to specify an e-mail RSVP); then we used e-mail to send the file to Daniel, who was able to display it on the screen of an Alto in his lab. (I don't remember how I encoded the file for the email)
PRE-1983/1980_DWW_WeddingInvitation.jpg (online wedding invitation)

It all seems very mundane now, but those were early days; we didn't even have e-mail attachments yet. Daniel replied:

> *VERY NICE. Now I know why you went through all that effort. Within a minute of it getting on the screen half the lab was at the alto gawking. They thought it was very impressive. They were half wowed by the invitation itself and half wowed by the thought that it was (in a real sense) MAILED to me. It really made people think of what the future holds for all of us.*

While a grad student I was employed to manage the UCLA Math department computer lab starting Fall quarter 1979 and continuing until June 1982 when I finished my MS and left UCLA to begin working at (Locus predecessor company) ICA. My work for the Math Department included everything from porting Unix kernels and writing device drivers to wirewrapping backplanes and pulling cables for a new student terminal room.

The Math Department computer was a DEC LSI-11/23 with 256 kilobytes of RAM. We added a 70 megabyte hard disk at a cost of $6500 for the controller and drive package. I ported Unix v6 to this machine from the system running on Evelyn Walton's PDP-11/45 "B" machine in the Computer Science Department (in the same room where the Internet was born).
PRE-1983/DILOG_DQ202.pdf (disk controller manual cover and TOC)

Access was using ASCII terminals (screens 24 lines by 80 characters per line) through 9600 BAUD serial lines to a DEC serial interface that produced an interrupt for every character input and every character output. The system could support a maximum of three concurrent users doing typical student work, before becoming unacceptably slow. With some upgrades we were able to increase that to seven users.

We doubled the memory to 512 KB. Later versions of the LSI-11/23 CPU had 22-bit addressing, breaking through the 18-bit 256 KB limit. But adding the memory was tricky because our disk controller only had 18-bit addressing, so it could only issue DMA to read and write the lower 256 KB of RAM. I had to write bounce buffer code. I also had to wirewrap the older Q-Bus backplane to propagate the additional four bits of addressing down the bus.

I changed booting so that it would load the kernel, which is permanently resident, into high memory, so as to maximize the DMA-addressable low memory available for normal processes that swap.

Later I ported that Unix v7, again starting from Evelyn's PDP-11/45 base. That was not easy. The PDP-11/45 and the LSI-11/23 both have 16-bit memory addressing, but the 11/45 has separate Instruction and Data address spaces ("split I/D space"), so it can support programs with a maximum of 64 KB of instructions plus a maximum of 64 KB of data; whereas the 11/23 is limited to programs consuming a total maximum of 64 KB of instructions and data combined. The v7 kernel exceeded these smaller limits.

It's worse than that for the kernel, because it has to use 8 KB of its address space to access the I/O registers. The Unix kernel also wants another 8 KB memory segment for the current kernel stack and user structure.

To expand data space I just moved the I/O buffers out of kernel address space. To expand instruction space I implemented kernel overlays. Functions of the kernel that were selected to be overlaid got compiled into 8 KB chunks that would be loaded into memory permanently, but outside of the static kernel address space. All the 8KB chunks were compiled to run in the same 8K chunk of virtual space, which they all shared.

Calls to a function in an overlay (from outside that overlay) were compiled so that instead of calling the target function, they called a "thunk", a short function in the permanently mapped part of the kernel. The thunk would select the correct overlay and jump to code that mapped that overlay into kernel space and then jumped to the start of the target function.

In this way all those 8 KB overlay chunks of code shared a single 8 KB segment of kernel virtual address space.
PRE-1983/1986-1028_LSI11-23_v7Kernel.txt (message I wrote in 1986 describing the v7 port to the 11/23)

My first try at booting a Unix v7 kernel on the LSI-11/23 was April 20, 1981 (TTY got stuck in uppercase mode).
PRE-1983/1981-04-20_Unix_v7_LSI.pdf (console log of first attempt to boot v7 on the LSI-11/23)

After I had Unix v7 running on the LSI-11/23, some other departments with that model CPU were interested in running it. I got it running on machines at the Linguistics Department and the Chemistry Department.

While at the Linguistics Department I noticed an old PDP-12. They wanted to get rid of it. I happened to mention this to Jordan Brown, who ended up buying it, for something like $1800, using a loan from his bank, which he told he was going to use the money "to buy a computer". They had no idea. We hauled it away in the back of Ox Pelz (a large van) one night.

Another installation I did was for Professor John Whitney on a computer at his home. He had a room filled with racks of computer equipment of various sorts. He is widely considered to be one of the fathers of computer animation. I have a credit in the Introduction of his book *"Digital Harmony"*.
https://en.wikipedia.org/wiki/John_Whitney_(animator)
https://www.amazon.com/Digital-Harmony-Complementarity-Music-Visual/dp/007070015X/

Professor Whitney's son John Witney Jr. was also an animator. He founded the company Digital Productions in 1982, where they animated 27 minutes of the film *The Last Starfighter* using a Cray X-MP computer, the "cleaned up" version of the Cray 1.
https://en.wikipedia.org/wiki/Digital_Productions
https://en.wikipedia.org/wiki/The_Last_Starfighter
https://en.wikipedia.org/wiki/Cray_X-MP

Just as I was leaving UCLA in 1982 the Math Department upgraded to a VAX. I got to "borrow" the LSI-11/23 and had it at home for a few years before eventually returning it to get the paperwork closed. The Math Department hired another Computer Science grad student, Peter Reiher, as its new lab administrator.
https://samueli.ucla.edu/people/peter-reiher/

Debugging a Hardware Race Condition   **~1980**

We had a problem where the disk controller on the Math department LSI-11 would randomly hang the bus. It would only happen when the room was pretty warm (like over 85 degrees, which it unfortunately sometimes was). I borrowed a logic analyzer from the lab tech down in the Computer Science department and started looking at signals on the bus and on the controller card. (Back then you actually got a manual with schematics when you bought a piece of hardware)

I was able to catch a trace of it acquiring the bus and never releasing it. There was a 10 nanosecond window that would open up when things got too warm, and some DMA event happening in that window would cause the hang.

I'm pretty vague on the details now, but this was a rare instance where I got way down into analyzing the hardware level. It was outside my area of expertise and confidence, but I debugged it and got a fix from the vendor.

Unix Electronic Door Lock   **~1980**

The UCLA Computer Science Department had a terminal room with a door onto which someone decided to install a student-made electronic lock. This lock had a little keyboard and was connected to one of the VAX servers: you could walk up to it and key in your Unix name and password, and it would unlatch the door for you.

Steve Kiser told me that when the new lock was demonstrated to Jerry Popek, Jerry tried it himself. He keyed in his name and part of his password, then stopped, looking at the keyboard, finally saying *"Where's the CONTROL key??"*

Got my own "Unix License"   **January 1981**

I got my own "Unix License" from Armando Stettner at the 1981 USENIX conference in Santa Monica, California.
PRE-1983/UNIX_License.jpg ("Live Free or Die" UNIX license)

Official "Tourist" Account on the MIT Machines   **May 1981**

I had been using the machines at MIT for a few years to play around with MACSYMA and play zork. I had simply created an account DAB and I was thereafter DAB@MIT-MC. I could login to my account without even specifying a password: "DAB<ESC>0U" (the "0" told it not to ask for a password!).

In 1991 the lab at MIT decided they needed to tighten things up, so they made everyone submit applications for accounts, and implemented mandatory passwords. I applied for and got an official "tourist" account.
PRE-1983/1981_MIT-ITS_Rules.pdf (MIT ITS tourist rules and application)

Bucky Box Serial (RS-232) I/O Processor   **Spring 1981**

Aside from doubling the memory, the other major performance improvement to the Math Department computer resulted from the addition of external hardware to interface to the serial lines, removing the character-by-character interrupt load from the LSI-11/23.
PRE-1983/1981_BuckyBox/02_BuckyBox_Overview.jpg (Bucky Box overview photo – chassis, boards, etc)

This external hardware was a dedicated computer designed and built for an Engineering Independent Study project by James W. Lindelien, a EE major at UCLA I'd known for several years. He called it the "Bucky Box". (Jim built his Altair 8080 in 1974. IIRC he made his first million dollars selling video Time Delay Units to national television networks.)

The Bucky Box had a Z-80 CPU on an S-100 bus, and 8-port serial cards. Jim got bus foundation modules to plug into the S-100 bus and the LSI-11 Q-Bus, which he wirewrapped and populated with necessary circuitry. A ribbon cable between the two boards allowed the two machines to communicate.
PRE-1983/1981_BuckyBox/12_S100Bus_to_QBus.jpg (photo of bus foundation modules and ribbon cable)

The interface did not use DMA: although the LSI-11 now took an interrupt for each block of characters, rather than an interrupt for every character, it still had to stuff the characters into an I/O address one by one. But that wasn't too bad; the heavy performance hit was in taking the interrupts.

Jim wrote all the code for the Z-80 side, downloadable from the LSI-11 with boot code burned into the Bucky Box EEPROM, and I wrote a Unix driver for the LSI-11 side. IIRC we transferred characters out in 128-byte blocks with interrupts disabled. On the LSI-11 side this was done with a tight loop at spl7() that grabbed bytes from a buffer and wrote them to the I/O address. On the Z-80 side it executed a single instruction that would read from the I/O port, put the result into memory addressed by a register pair, increment the address, decrement a counter, and repeat the instruction until the counter reached zero. What an instruction!

Synchronization worked by guaranteeing that the Z-80 loop of that instruction was faster than the loop in the LSI-11, so that the Z-80 was always ready to read when the LSI-11 wrote. I had to add one NOP to the optimal LSI-11 loop to do that. The Z-80 would insert wait-states until the data was latched.

Meeting the Rubick's Cube World Champion   1982

I met Met Minh Thai at UCLA in the office of my advisor Dr. David G. Cantor in the Math Department, after he won the Rubick's Cube solving championship in 23 seconds.
https://en.wikipedia.org/wiki/Minh_Thai

I watched him take a scrambled cube, turn and examine it for a few seconds, then manipulate it to solution without looking at it further.

I had a few cubes in my office down the hall. Around then I was at my peak speed of about two minutes to solve it. (But I don't remember any of the third-layer macros anymore)

Completed Degree Master of Science in Computer Science   June 1982

After finishing my Bachelor's degree in Math and Computer Science I started working effectively full time for the Math department running their computer lab, while taking some graduate Computer Science classes.
Memoirs/Academics/1979-06_BS.jpg (BS diploma)
Memoirs/Academics/1979-06_BS_Honors.jpg (Departmental Highest Honors)

The requirements for a Master's degree were either 7 grad classes plus a thesis, or 9 grad classes plus passing a comprehensive exam. I started some research toward a thesis on data compression, beginning with some analysis of English text digraph (and more general multigraph) frequencies. For example the frequency of the "qu" digraph is almost as high as the frequency of "q" by itself – that sort of knowledge can be exploited to optimize compression algorithms.

When the ICA / Locus activity started to heat up I switched from *"explore it"* mode to *"finish it"* mode. By then I'd taken nine grad classes and could use the comprehensive exam option instead of writing a thesis. And this "exam" could actually be a project. So I put something together in a hurry to finish up my MS and started on work at ICA.
Memoirs/Academics/1982-06_MS.jpg (MS diploma)

Integrated Computer Architectures (ICA)   1982 – 1983

The corporation that became Locus Computing Corporation was incorporated in 1982 by Jerry Popek and Charley Kline as **Integrated Computer Architectures (ICA).** They had secured a contract to port Unix System III to an oddball machine made by General Automation. (Oddball as in, *e.g.,* the stack grew *upward!)*

> Evelyn Walton was responsible for the C compiler (code generator for the oddball machine).

> I had all the user-space programs except the C compiler (including *init, ps, f77, etc*).

> Joe Hopfield and Greg Thiel were both involved; my memory is hazy but I guess they shared the kernel.

We delivered the port, and I never heard of the machine again. But this work established an ongoing operating system software business which made us more credible for the negotiations of the LOCUS contract with IBM.

Discovering f77 compiler bug   Fall 1982

During the ICA work I found a bug in the Unix System III f77 FORTRAN compiler front-end. The "front-end" is the part of the compiler that parses the source language and generates an abstract representation of the flow and operations of the program, which then gets fed to the back-end code generator to turn it into instructions for the target CPU.

The f77 front-end generated the same abstract intermediate code as the C compiler, so once Evelyn had written a code generator for the C compiler we could also compile FORTRAN without doing any particular work to support it.

I was responsible for everything in userspace except the C compiler. The f77 front-end compiled without any problems. I tested it by feeding it a few FORTRAN programs I had lying around. One was a graphics package I had written a few years earlier for China Lake. Running it, I was seeing some garbage results.

Somewhere in this code I had an array of integers I was indexing with a floating-point number. FORTRAN allows floating-point numbers as subscripts: they are truncated and converted to integers before being used to select the array element.

When indexing into an array, to compute the address of a desired array element you have to multiply the specified array index by the size of the elements within the array. In this case the array was made up of 4-byte integers.

So there were two things the compiler had to do in this case: truncate the index to an integer, and multiply it by 4, the size of an array element. This compiler was doing those two things in the wrong order. So for example if the array index was 1.6 then it would compute an address halfway through the first element – the program would access two bytes from the first array element and two bytes from the second.

I was able to reproduce the problem with this program on the VAX, thus demonstrating that the problem was located in the compiler front end rather than in the code generator. I also developed a fix for the f77 front end. When compiled and run on the VAX using f77, without the fix this program would print "1024":

```
      program funny
      dimension ia(10)
      data ia/1,2,3,4,5,6,7,8,9,10/
      x = 3.75
      j = ia(x)
      write(*,800) j
800   format(1x,i10)
      stop
      end
```

Founding Locus Computing Corporation   April 1, 1983

LOCUS = The name of our clustered operating system (LOcal Cooperating Unix Systems), based on Unix 4.1BSD
https://en.wikipedia.org/wiki/LOCUS

Locus = The name of our company (Locus Computing Corporation)
https://en.wikipedia.org/wiki/Locus_Computing_Corporation

Locus had seven founders, all Computer Scientists:

Gerald J. Popek, PhD	https://en.wikipedia.org/wiki/Gerald_J._Popek
Charles S. Kline, PhD	https://en.wikipedia.org/wiki/ARPANET#Initial_four_hosts
Bruce J. Walker, PhD	
Gregory I. Thiel, PhD	
Evelyn J. Walton, MS	
David A. Butterfield, MS	
Joseph C. Hopfield, BS	

Charley, Bruce, Greg, and Evelyn had been Jerry's grad students at UCLA. Charley, Bruce, and Greg finished up their PhD work just before moving from UCLA to Locus.

The official Locus birthday is April 1, 1983. We had a contract with IBM. I held in my hand a check from IBM for one million dollars, before it was (successfully!) deposited into our bank account. The founders had some discussions about a company name for a few months and finally settled on Locus Computing Corporation.

Products of Locus included

LOCUS: clustered Unix operating system sold by IBM as AIX/370 and AIX/PS2
https://en.wikipedia.org/wiki/IBM_AIX#IBM_PS/2_series

PC-Interface (PCI): Unix file service for DOS applications in a Local Area Network (LAN)
https://en.wikipedia.org/wiki/Locus_Computing_Corporation#PC-Interface

Merge: DOS virtual machines running on a Unix host machine
https://en.wikipedia.org/wiki/Merge_(software)

PC-Xsight: an X-Windows server for DOS
PC-XSight/XforIBMDOS.pdf
PC-XSight/PC-XSight_1.0_1988-01.1.jpg
PC-XSight/PC-XSight_1.0_1988-01.2.jpg

This talks about a few Locus products, as of July 1986:
LOCUS/LocusNews.pdf (Merge 386, Microport, Sun, AT&T, new offices Nancy Campbell joins Locus)

Both LOCUS and Merge have derivative products that have spun off and made their way into other companies.

Locus was bought by Platinum Technology (PLAT) in 1995 for $33 Million.
https://en.wikipedia.org/wiki/Platinum_Technology

Highlights of my own work at Locus:

> 1983 Implemented process migration and remote fork/exec of processes in a LOCUS cluster
>
> 1984 – 1985 Architect of Merge 286 and manager of the project
>
> 1985 – 1987 Architect of Merge 386 and manager of the project
>
> 1988 – 1989 IIRC I managed support for both Merge and PCI at this time
>
> 1990 – 1992 Co-chief (with Evelyn) of Level 4 (developer) support for IBM AIX/370 and AIX/PS2
> LOCUS/Locus_AIX_support.jpg (Photograph of AIX support team)

Inventing Process Migration   **Summer 1983**

Locus the company started out with a running prototype of LOCUS the operating system which had been developed by a research project in the UCLA Computer Science department. Five of the seven Locus founders had been part of that research project for several years. Joe Hopfield and I had not; we had been working at the Math department until we started working at ICA.

The version of the LOCUS operating system that came out of the UCLA research project had implemented filesystem transparency – the ability for a process in the cluster to name and access files in the cluster independent of the locations of the process or the files within the cluster.

However the process model was the same as standard Unix – the fork() system call always created the child process on the same node in the cluster as the parent process, and a process could not move from the node where it was created.

One thing I added was the ability for the fork() system call to create the child process on a different node in the cluster from the parent. This supports cases where the parent and child processes run on machines of the same CPU architecture.

Another case to be supported was a heterogeneous cluster comprised of machines of different CPU architectures, for example VAX and PS/2. The machine instructions for the two types of machines are different, so binary programs that run on one type will not work on the other type.

In such an environment you cannot fork() across machine types, because the instruction set is wrong for the child. Another part of my design was to enhance the exec() system call to cause an automatic migration of the process to an appropriate cluster node if the specified program image cannot be run on the current node.

I implemented a run() system call which had the effect of a combined fork() and exec() but could work across heterogeneous machines.

Finally, I implemented a migrate() system call which could relocate a running process from one node in a cluster to another node of the same CPU type.

This prototype work opened up a nasty can of worms related to tracking the locations of processes, as they move around in the cluster, so they can be found to deliver a signal. I think Richard Mathews and/or Bob English were the lucky ones who had to figure out how to solidify that.

I wrote this paper describing the work:
LOCUS/1984-06_Network_Tasking.pdf (Network Tasking paper)

The work is also described here: *The LOCUS Distributed System Architecture*, Gerald J. Popek and Bruce J. Walker, editors, The MIT Press, 1985; *Chapter 4: Remote Tasking,* David A. Butterfield and Richard M. Matthews.
https://www.amazon.com/Distributed-System-Architecture-Computer-Systems/dp/0262517191
LOCUS/LOCUSbook.pdf (book cover, table of contents, a few other pages)

The work is the first implementation described in this survey of process migration mechanisms.
https://dl.acm.org/doi/10.1145/47671.47673 (A Survey of Process Migration Mechanisms)

Ported kernel to a new machine in a month with Evelyn Walton   **1983**

Evelyn Walton and I ported the VAX LOCUS kernel (based on 4.1 BSD Unix) to a Sritek 68000 plug-in card for the IBM PC, in a very short amount of time, for a demo to IBM executives.
LOCUS/LOCUS_Sritek68k_port.txt (public description of the work written shortly after it was done)

A bunch of IBM executives were coming out in a month for a project review. Someone decided it would be a nice demo to show LOCUS running out of an IBM PC box. There was no way LOCUS was ever going to run on an 8086 processor, but Sritek had a plug-in board for the IBM PC with a Motorola 68000 processor. The 68000 could run Unix and use the PC for its I/O interface. We decided to get some copies of that board and port LOCUS to it. *In a month! (We knew it was a long shot)*

Evelyn and I took over the conference room for this project. This was the company's only conference room; it had a table to seat eight or ten people. I set up two terminals side-by-side on one side of the table, with space for our target hardware and spreading out program listings, and the two of us moved in for the month.

What Evelyn and I did for this project could be described as a *"mind meld".* Either of us could do any of it, but there are a lot of details in porting a kernel. We divided the work – I did the memory management and the interface to the I/O system running on the PC – but we both knew and understood everything both of us were doing. I don't exaggerate much to call it a mind meld. It combined the high focus of a solo project with the energy of two people driving it instead of one. It was like one powerful mind thinking. It was intense.

(I loved working with Evelyn. Very smart and very competent. One of the few programmers I consider to be as good as myself at this stuff. Though Locus did have a few of those.)

A major sticking point for this project was the C compiler – we didn't have one until two weeks before IBM was due to visit. So for the first couple of weeks we were updating code but had no way to run it.

I remember a couple of the issues we ran into. When running in kernel mode the hardware had no memory mapping, i.e. kernel addresses were physical addresses. But our kernel had the old "u.u_*" user structure which lived at a fixed virtual address for all processes, mapped to their respective physical addresses by the MMU.

My quick solution was to copy the user structure and kernel stack to the "u" address on each process switch. *Ugh!*

The compiler showed up and we started debugging, two weeks before the IBM visit.

Another problem I remember was conflation of symbolic constants; e.g. the MMU page size and the filesystem block size both happened to be 1024 bytes on the VAX, and some places in the code used the wrong symbol, but it still resulted in the right value so the code worked and no one ever noticed.

Our port needed to change the MMU page size to 4096 or something, causing those places in the code using the wrong symbol to now also use the wrong value. We had to debug a few of those.

We were making quick progress, but there was very little time. Late the evening before the IBM visit we were able to boot far enough to see *"mem=",* a major milestone. We kept working on it all night, and at something like six in the morning we had user process 1 created and running.

There was no way we were going to get the complicated *"init"* program working in a few hours, so I wrote a trivial program that simply printed the superuser shell prompt "#" and implemented the "echo" command, and replaced *"init"* with that. It wasn't much of a demo, but I think it was well received.

Another interesting problem we ran into later was that the compiler disagreed with other compilers about how to convert an signed short into an unsigned long: do you lengthen it first and then change it to unsigned, or do you change it to unsigned first and then lengthen it? The former sign-extends; the latter does not. This affected the UUCP checksum algorithm, which produced different results with our 68000 compiler, causing UUCP to fail when run with different machine types on the two ends of the connection.

I had to figure that out! All you get is an aborted connection with some kind of message about corrupted data or something. It took a while to zero in on it. And even when zeroed in, the C code looks perfectly fine.

Psychotic trade-rag article ranting rumors of plans for "Locust" on IBM mainframes   **December 1983**

LOCUS/Locust_Rumor.jpg – Just enough knowledge to be… kinda crazy!

PC-Interface (PCI)   **1984**

PC-Interface was the Locus product to give DOS programs running on PCs access to files on Unix servers in a local area network, using the standard DOS system calls. IBM Marketing called it AADU – AIX Access for DOS Users. Microsoft later came out with "SMB" and their "redirector" which do the same thing in the same way.

PC-Interface/PCI.pdf (PC-Interface marketing sheet)
PC-Interface/AADU.pdf (PC-Interface for IBM AIX)

The PCI Bridge code was written in 8086 assembly language for the DOS side, and the PCI Server in C for the Unix side. On the DOS side the Bridge loaded under DOS as a TSR (Terminate and Stay Resident) program. Locus was assigned registered Ethertype 7677 for PCI, which we used before TCP/IP networks became ubiquitous and we switched to using that protocol.

I also wrote a couple of network drivers for the PCI DOS side, for the 3COM 3C501 and for AT&T StarLAN, the latter of which we now know as twisted-pair Ethernet. To write the StarLAN driver I went for a couple of weeks to Bell Labs in Holmdel, New Jersey, where AT&T had the prototype hardware running.
PC-Interface/3c501.asm (3COM 3C501 Ethernet driver)

AT&T showed off their StarLAN product at the 1984 COMDEX, and a few of us helped man their booth giving demos of PC-Interface running over a StarLAN network. Afterwards we received a fairly enthusiastic letter of thanks for our help with the show. The letter was addressed to D. Butterfield, C. S. Kline, D. Laxer, J. Popek, and J. Rothschild. (Jeff Rothschild and David Laxer had written the PCI Bridge and Server, and I had written the StarLAN driver.)
PC-Interface/ATT_STARLAN_COMDEX_1984.pdf (News release, letter of thanks from Greg Gianforte)

That letter of thanks was signed by AT&T executive Greg Gianforte, who went on to become Governor of Montana, infamously convicted of assault for body-slamming a reporter whose question he didn't like.
https://en.wikipedia.org/wiki/Greg_Gianforte

Jeff Rothschild (*before* he became a billionaire)   1984 - 1985

Before Jeff Rothschild became a Facebook billionaire, he was a long-term consultant or contractor working at my company Locus Computing Corporation. He wrote essentially all the assembly code implementing the DOS side *(the "Bridge")* of the PC-Interface (PCI) product. David Laxer wrote the Unix side *(the "Server")* before leaving to join a cult.
https://en.wikipedia.org/wiki/Jeffrey_J._Rothschild
PC-Interface/1984_JJR_BeforeHeWasABillionaire.jpg (Jeff Rothschild business card at Cache Technology Corp)

I worked with Jeff on and off for a couple of years, sometimes closely, implementing complex software and solving difficult problems. I have a photo of Jeff in the AT&T booth at the 1984 COMDEX trade show, and a photo of myself in the same booth. (Jeff also appears in the background of the photo of me, but it's not very clear)
PC-Interface/1984_JeffRothschild_ATT_COMDEX.jpg (photo of Jeff Rothschild in AT&T booth at 1984 COMDEX)
PC-Interface/1984_DavidButterfield_ATT_COMDEX.jpg (photo of me in AT&T booth at 1984 COMDEX)

Using LOADALL Undocumented Intel 286 Instruction   1984

I wrote a bootstrap for the AT&T 6300 PLUS using the undocumented LOADALL instruction of the Intel 80286 CPU. The machine's early Unix kernel from AT&T would load into memory starting at address zero and reside in the lower 640KB of memory. But for Merge to run DOS under Unix we needed to reserve the lower 1MB of physical address space for DOS processes. So before I could get very far with the Merge work I needed the bootstrap to load the kernel somewhere above the 1MB boundary.

DOS runs in the CPU's *Realmode.* The 286 CPU powers up in Realmode, which nominally can only access memory below 1 MB. To access memory above 1MB, you enter the CPU's *Protected Mode,* which supports memory mapping. So a bootstrap to load the kernel into memory above 1MB would have to run in Protected Mode, at least part of the time. But the BIOS functions that the bootstrap uses to access the disk are implemented to run in Realmode. So the bootstrap would have to switch back and forth between Realmode and Protected Mode. The hardware was capable of that, but it looked complicated to figure all that out and get it working.

The memory addressing logic on the 286 has segment registers (e.g. CS, DS, ES) with different semantics when running in Realmode versus Protected Mode. But below those visible segment registers there are hidden registers that hold the translated memory addresses: the CPU uses semantics appropriate for the current CPU mode to translate a write to a visible segment register into a write of a common-semantics hidden register below.

LOADALL is an undocumented 286 instruction that enables a program to load arbitrary values directly into those hidden registers. I could copy data into any desired memory page by loading its address directly into the hidden register under ES, without having to set up memory mapping or enter protected mode.

So that's how the first "high memory" bootstrap for the 286 worked. By the time the product shipped, someone at AT&T had rewritten the bootstrap to eschew LOADALL and do the switching back and forth between Realmode and Protected Mode.

Merge286/LOADALL286.pdf (Information from Intel about the 286 LOADALL instruction)

Wrote a Virtual Machine Monitor (VMM) to run DOS under Unix on an Intel <u>286</u> *("Merge 286")*   **1984 – 1985**

My *"Merge"* product was a virtual machine implementation that allowed running an instance of DOS and its applications in a virtual machine hosted by a Unix OS. Merge integrated and used the PCI product to allow the DOS programs running in the virtual machine access to the files residing in the Unix filesystem. In the case of Merge this was done using a memory-based simulated network, rather than an Ethernet LAN.

Merge286/Merge_summary.txt (brief technical summary of Merge 286 from October 1985)
Merge286/ATT_Simultask.pdf
Merge286/Intel_80286_Milestones.pdf
Merge286/SimulTask_Infoworld.pdf
https://en.wikipedia.org/wiki/MS-DOS
https://en.wikipedia.org/wiki/Unix

Worked a couple of months at Bell Labs in Holmdel, New Jersey   **Summer 1985**

The original Merge 286 target was the *AT&T 6300 PLUS*, an IBM AT clone with special hardware to support running DOS and Unix together while keeping Unix protected against harm from errant or malicious DOS programs.
https://patents.google.com/patent/US4747040 (US Patent 4747040 Dual Operating System Computer)
https://patents.google.com/patent/US4744048 (US Patent 4744048 Display Context Switching Arrangement)

Ken Keverian was leading a small development team of hardware and software engineers based in a lab at Bell Laboratories in Holmdel, New Jersey; and I was leading the Merge software team at Locus in Santa Monica, California. Dave Blanset was one of the Bell Labs guys, but his focus was on Merge and he was effectively part of the Merge team.

AT&T was having trouble getting the Unix kernel solid on the machine, the kernel that Merge depended on. Someone decided that Locus would help AT&T with their Unix port by sending me out to New Jersey for a couple of months to help them debug it. That's how I ended up working at Bell Labs one summer.

AT&T 6300 PLUS technical marketing information:
Merge286/1985_ATT6300PLUS.pdf
Merge286/ATT_6300PLUS_Launch.pdf

Discovering a Bug in Intel 286 Interrupt Processing   **Summer 1985**

One of the problems I figured out on Merge 286 when I was visiting Bell Labs in Holmdel, New Jersey, turned out to be a bug in the Intel 80286 CPU. It took three days to figure this one out, and I'd have never done it without the ICE *(In-Circuit Emulator).*

The ICE was a computer with its own CPU, additionally equipped with a special "bondout" version of the 286 CPU that could be monitored and manipulated by the ICE software. This mutant 286 chip had extra wires coming out of internal points in the CPU to provide external visibility to the ICE unit. The bondout chip was at the end of a cable coming out of the ICE, and could be inserted directly into the CPU socket on your motherboard in place of a regular 286 chip *(Hence "In-Circuit").* Basically it let you use the ICE console to be "inside" the 286 CPU and see internal state.

Besides tracing instruction execution, one of the event types the ICE could record was bus cycles. That is what allowed me to see the flaw in the sequence of events as the CPU processed instructions and interrupts.

The symptom to be debugged occurred when running UUCP over a serial line at 9600 BAUD. At 9600 BAUD a serial interrupt must be serviced within one millisecond to ensure the character is read before the next character comes in and replaces it in the one-byte input buffer. Once in a while the serial interface would lose a character and corrupt the UUCP connection, which would then abort.

Investigation indicated that occasionally the disk interrupt routine was delaying execution of the serial interrupt routine. But the system was configured to give higher priority to the serial interrupt, so that should not happen.

The way interrupts were implemented on early 286 Unix was to have the splx() (Set CPU Priority Level) functions adjust the mask on the 8259 interrupt controller. Each priority level was assigned a mask, nested so that a higher "CPU priority level" always masked off all the interrupts masked by every lower level priority.

The disk was assigned to priority level 5, the serial interface to priority level 6. So the disk should never be able to interrupt the serial interrupt routine, and the serial line should always be able to interrupt the disk interrupt routine.

What I captured in the ICE trace was an interrupt acknowledge bus cycle for the serial interrupt, the push of CS, IP, and FLAGS; immediately followed by another interrupt acknowledge cycle for the disk, without any instructions executed between the two.

That should never happen! Part of the hardware interrupt processing is to disable interrupts (automatic CLI) in addition to pushing CS/IP/flags and loading the new CS:IP from the interrupt vector. The second interrupt "cannot occur" under that rule, until some instruction executes that re-enables interrupts.

The bug in the 286 CPU was that it did not properly disable interrupts until too late, after a second interrupt could arrive. Intel fixed this in later revisions ("steppings") of the 80286 CPU.

The workaround: I modified the low-level assembly code that processed interrupts to check the interrupt return address on the stack. If it was the address of the interrupt routine itself, it means the 286 CPU bug occurred, allowing a second interrupt directly on top of the first.

If the bug occurred, then there are two consecutive interrupt frames on the stack, which may or may not be in the desired order. I added code to check the priority levels assigned to the two interrupts, and if the second interrupt was lower priority than the first, I simply swapped the two stack frames, and then allowed the code to continue on as if nothing had happened. That caused the existing code to process the interrupts in the correct order.

Intel supposedly had a $100 bounty for reports of bugs in the 286, but they didn't pay, claiming that they already knew about this one. Well, if they knew about it, why wasn't it in their errata sheet so we didn't have to debug it?

I just looked again (in 2023) and found information from an errata sheet dated 21-Nov-1984 referencing this bug. That was a few months before we debugged the problem. I don't remember ever seeing that errata sheet; I think we had an earlier one that didn't mention this problem.
https://www.pcjs.org/documents/manuals/intel/80286/b2_b3_info/#nested-interrupts

"There, now it works"   **1985**

One day at Locus on the Merge 286 project I was working with Dave Blanset to understand a problem we were having with some application or device, I don't remember exactly what. I had been studying this problem for a while and we had made a few iterations of changes to the emulation assembly code on the realmode side as we worked to understand it.

We'd reached a breakthrough in understanding a key piece of the problem, and it completed the picture so perfectly in my mind that I was sure I understood it this time.

I had a printout of the assembly code, which I marked up with a few small changes here and there, plus maybe two or three dozen new instructions in a couple of places.

I looked back over my handwritten changes with my new, confident understanding and declared (without any ironic intent), *"There, now it works."* For this Dave Blanset immediately mocked me soundly. But I typed it in and it worked, and we were done with that problem.

Merge286/switch.asm (realmode code for switching between DOS and Unix on the AT&T 6300 PLUS)

Authored Sidebar in Computer Design Magazine, with Wonky Photo   **April 1, 1986**

In their issue dated April 1, 1986, Computer Design magazine published an article about Merge 286 running on the AT&T 6300 PLUS. I wrote them some technical information about how it all works, which they published as a sidebar to the article.
Merge286/1986-04_Computer_Design.jpg (Computer Design sidebar with wonky photo of me)

The magazine wanted a photograph of me for the article. I was slow about getting something to them, so Dana Myers helpfully supplied this photograph for them to use:
Memoirs/Recreation/1984_DAB_juggling.jpg (Dana's photo of me juggling 5-gallon water bottles)

That image would have been fine, but all they really wanted was a head-shot, which they cut out of Dana's photo to use for the article. Unfortunately that image looks a bit strange in the absence of its wider context.

In Dana's photo I was "demonstrating some of the skills necessary to manage the Merge project." I also happened to be wearing a parody T-shirt for the 1984 Olympics being held in Los Angeles: *"L.A. Central Jail: Official Jail of the 1984 Summer Games"*

Wrote a Virtual Machine Monitor (VMM) to run DOS under Unix on an Intel 386 *("Merge 386")*   1985 – 1987

This was my big project at Locus. The 386 had support for DOS virtual machines, so Unix could be protected from errant DOS programs without needing any special external hardware like was implemented for the AT&T 6300 PLUS.
Merge386/Merge386_ProdOverview.pdf (Merge 386 Marketing Technical Overview)
Merge386/AIX-DOS.jpg (PC-Interface and Merge for AIX Servers)
Merge386/DOS_Merge.pdf (Merge for AIX Servers Product Description)
Merge386/Merge386v1.00.jpg (Floppy Disk Distribution of Merge 386 for SVR3)

I wrote and presented a paper about Merge 386 at a UNIX technical conference.
Merge386/Merge386.pdf (Merge 386 Technical Paper)
Merge386/1986-08_Merge_Paper.jpg (/usr/group confirmation)
Merge386/1987-02_Merge_Paper.jpg (/usr/group thanks)

Flying at Mach 2   **January 1987**

I was sent to London on four hours' notice to try to save a Merge software distribution deal that had been 'stolen' from us by Interactive with their VP/IX product. I arrived in London on its coldest day in recorded history. The snow on the ground was one to two feet thick, and no one had any idea how to drive in the conditions. (I met with the right people, and they were very nice, but my trip was unsuccessful)

I was supposed to be manning the Locus booth at a trade show in New York starting at the end of that week. Whoever set up my travel booked me to fly directly from London to New York on the **Concorde**, flown by British Airways. I think that leg of the journey cost $4000.

The Concorde cruised at Mach 2: 1,340 MPH at 55,000 to 60,000 feet altitude. It was the only supersonic aircraft among commercial airlines. All 100 passenger seats were in *Supersonic Class*, a class above *First Class.* The departure lounge was equipped with telephones you could just pick up and use to make international calls, and a bottle rack 40 feet wide filled counter-to-ceiling with a large variety of liquor and an unimaginable selection of wines – just walk up and pour whatever you want (if it's already open anyway, and a lot was open).

The plane was narrow, with 2 seats on each side of a central aisle too narrow to pass a normal-sized airline meal cart – they had special carts narrower than standard. The food was gourmet. Of course, all alcohol was free.

There was a display at the front of the cabin showing the altitude and Mach airspeed. I noticed that as the speed approached Mach 1, the pilot backed off the throttle and crept up on it slowly (like to Mach .97), then quickly crossed through with a surge of acceleration (to like Mach 1.03), spending minimal time right around Mach 1.00.

The seats were upholstered in leather. That was the most comfortable seat I have ever sat in. Not just the most comfortable *airline* seat, the most comfortable seat *at all*. But I slept through most of the flying time because I was so dead tired from the jet lag and the London cold. That probably colored my perception of the seat comfort a lot.

Among my trinkets is a little Concorde souvenir packet they handed out to each passenger (contents scanned).
Memoirs/1987_Concorde_InfoSheet.jpg (Concorde info sheet from the souvenir packet)
https://en.wikipedia.org/wiki/Concorde

Dropped everything for three days to write a program for the Documentation Department   **~1987**

I wrote a suite of scripts in *sh, sed,* and *awk* to process *troff* index entry output into usable form. I had been mystified by Documentation manager Holly Gallup choking every time I wanted to add a few paragraphs to some chapter in the Merge manual. I mean, no revisions to existing text, no new chapters, just adding some more text, which I would even supply, at the end of an existing chapter. How hard could it be, right?

Well, it turned out to be the index – the page numbers would change for everything after the added text, and the index had to be re-created manually each time.

In the documentation troff source a writer could add, at some desired point in the text, a directive to create an index entry with specified text to be associated with the current page. troff would output a linear list of index entries, each on its own line with its text and page number, in the order encountered in the source. What my scripts had to do was collect them all up, combine all entries with the same text into a single entry with multiple page numbers separated by commas and/or dashes, and reorder them alphabetically.

Before I wrote the scripts, the tech writer, Steve Haas, was doing all that manually using a text editor – almost a full week of work for the index for the Merge manual. When I learned our best technical writer was spending a week doing tedious manual labor to re-create the index each time we generated a new revision, I was horrified. It was simply intolerable. This is exactly the kind of work computers are for! I immediately dropped what I was doing for three days and wrote a little suite of scripts to do the work automatically in a few minutes. (This earned me an effectively infinite supply of goodwill from the Documentation department!)
Merge386/1988-01_MergeManualAward.jpg (Tech writing award for Merge manual)

Suggested to Intel a CPU performance improvement which they implemented in the Pentium   **April 1987**

While implementing the Merge vm86 Virtual Machine Monitor (VMM) on the 80386 I had come to an understanding of the behavior of DOS programs and their virtual machines in a Unix-hosted environment.

One issue affecting performance was the high frequency with which some DOS programs would issue instructions like CLI, STI and POPF. These instructions cause traps into the VMM because they manipulate the Interrupt Flag, which must be emulated. Traps are expensive, so a high frequency of these instructions slows the virtual machine significantly.

I wrote a paper to Intel explaining this, and proposing that a vm86 machine's interrupt behavior be controlled by a Virtual Interrupt Flag and a Virtual Interrupt Pending Flag. Those instructions would then manipulate the virtual flag rather than trapping into the VMM.

A few years later I received an Intel Restricted document from one of their engineers, in the context of the Pentium, communicating the Virtual Interrupt design to other engineers and seeking feedback. The design was almost exactly as I had proposed it.

These were the Virtual Interrupt Enable and Virtual Interrupt Pending flags documented in the infamous Pentium Appendix H. Among my trinkets are the paper I wrote to Intel explaining the problem and proposed solution, and a copy of the Intel Restricted document.

Merge386/vm86_perf_1987-04.pdf (my paper proposing VIF and VIP)
Merge386/P5VM86_Proposal_1990May_cover.jpg (cover of the Intel restricted document)
https://en.wikipedia.org/wiki/Virtual_8086_mode#VME
https://en.wikipedia.org/wiki/Appendix_H

Locus got a license from Microsoft to distribute DOS with Merge   May 1987

Merge386/LocusMicrosoft_manual.covers.jpg (Locus MS-DOS distribution)
Merge386/MultiuserDOS.jpg (multiuser DOS announcement)

Chartering a Plane to Las Vegas   1987

At Locus we were working to get Merge (DOS under Unix) to run on a standard 286 IBM AT, without the special support hardware implemented in the AT&T 6300 PLUS. Intel was going to have a booth at an upcoming trade show in Las Vegas. They reserved some space for us in their booth for a Merge demo, if we could get it running on a standard AT in time for the show. All equipment was supposed to arrive to the booth by 6:00 PM the evening before the show.

We thought there was a good chance we could get the software running in time, so we had airline flights booked on an early afternoon flight from Los Angeles Airport to Las Vegas that would allow us to reach the convention hall well before 6:00. If we got it working, we would go to Las Vegas; otherwise not. When it was time to leave for the flight, the software wasn't working; so we didn't go.

But we kept working on the software, and a while later we made a significant breakthrough and the system started working, and appeared to be working well. But there were no more airline flights that could get us to Las Vegas in time.

Someone (maybe Jordan) figured out that we could charter a dual-propeller plane based at Santa Monica airport to take us and our computer to Las Vegas. Pilots were available, the drive from the office to the plane would be around five minutes, there was no security to go through, and we didn't really have to pack the computer equipment very well. We could plausibly get to Las Vegas around 5 PM. So we chartered the plane and went.

The combination of our air-travel time and the taxi ride from the airport to the convention center in Las Vegas brought us panting to the entrance of the show's booth area at 6:02 PM. The booth area was separated from the rest of the huge room by a tall temporary wall made of fabric (like tent fabric) held up by sturdy standalone temporary posts. There were guards at the entrance who had been instructed to let no one in after 6:00 PM. So at 6:02 we were standing there with our computer equipment obviously for the show, and the guards wouldn't let us carry it in to the booth.

I was standing there arguing with the guards about getting the machine where it needed to go, when I heard a couple of my group behind me calling my name. I looked around to see our computer disappearing under the bottom of the fabric wall and into the booth area. One of the Intel guys on the inside of the fence took it over to the booth. The guards should have been able to see this as well as I did, but made no indication they had noticed. I suppose they were only instructed to guard the entrance, not the perimeter.

Reagan and Gorbachev Wearing Ladies' Coats   November 1987

Our Marketing department ran an ad for Merge showing Reagan and Gorbachev, drawing a parallel between their work and the idea of Merge reconciling DOS and Unix. They used a reversed image of the two men wearing coats, so that the buttons were on the wrong side for male attire. We received a letter from Ted G. Nanz of Coherent Communications Systems Corp pointing this out.
Merge386/UnixDos_Reconciled.pdf (images of the ad and the letter from Nanz)

Millennium Bugs T-shirt   **198x**

I got this "Millennium Bugs" T-shirt one birthday, IIRC from the Nivens.
Memoirs/Computing/MillenniumBugs_tshirt.jpg (Millennium Bugs T-shirt)

Gigasecond Party   **May 20, 1989**

Hosted a party to celebrate my reaching one billion seconds of age. The poetry on this invitation
was written by Sasa Neuman.
Memoirs/Fandom/1989-05_DAB_gigasecond.jpg (invitation to my gigasecond party)

Crossing Armand A. arriving for an interview at Sun as I was leaving after mine   **April 1992**

While working at Locus I went to interview at Sun, which had just bought what was left of Interactive from Kodak.
When done talking to people I went to get an elevator back to the ground floor. After a short time the elevator doors
opened and there was Armand A. arriving in coat and tie, obviously for an interview. I was in a tee-shirt. Armand
looked mortified. I just laughed as we exchanged places, and neither of us said a word.
Memoirs/Computing/1992-05_Leaving_Locus.jpg (Locus going-away card)

My new boss at Sun had been my competitor at Interactive Systems Corporation (ISC)   **May 1992**

Ken Sarno was manager of Interactive's VP/IX project, the competitor to my Merge product. He and I were the
respective technical leaders of our projects.
ISC/VPix.pdf
ISC/VPixTech.pdf

Later Interactive went through some sales, and Sun Microsystems ended up buying their development organization.
Sun's purpose was to port the Solaris Operating System (a Unix variant) they had running on their SPARC CPU to
also support Intel's x86 CPU. Shortly after Sun's acquisition I went over for an interview.
Merge386/InfoWorld_1994-0411.jpg (announcing Solaris on Intel, Locus Merge on Solaris)

Ken Sarno was head of the newly-acquired group as a Director, reporting to VP Janpieter Scheerder. Ken is who I
interviewed with at Sun and reported to my first years there.

I remember once teasing him a little about me having "won", under the theory that I was still doing highly technical
work, while he had been relegated to executive-level management.

Writing Technical Poetry   **1993**

After both Dana Myers and I had moved from Locus to Sun, one day we were reminiscing on a Sun internal
newsgroup about an old problem we had encountered on the Merge project with spurious interrupts coming from
the Intel 8259 interrupt controller. Though the subject was arcane and the details technical, the conversation was
happening on a wide-distribution newsgroup read by most everyone in Sun's Los Angeles office, rather than a more
narrowly-subscribed forum for developers.

At some point one of the Tech Writers, Judy, admonished us for being too nerdy on the wide distribution list:

> Oh Developers wise, I am curious
> As you type back and forth fast and furious
>   You have carefully figured
>   The interrupts, edge-triggered
> Now can we dispense with the interrupts, spurious?

This inspired me; it only took a few minutes to reply:

> Many old hackers are prone
> To rattle and prattle and drone
>   About subjects arcane
>   We're a journeyman's bane
> But it's useless to whimper and moan
>
> The subject's a real confuser
> It wasn't put there to amuse 'er
>   But maybe it ought to
>   It isn't her lot to
> Explain it at all to the user

Sunsoft South T-shirt   **1994**

The Sun Microsystems "Sunsoft" division opened an office in Los Angeles for employees acquired in the purchase of Interactive Systems Corporation. With the main offices in the Bay Area, the LA office came to be knows as *"Sunsoft South".* Penny Cotten worked in our office; I think it was her husband who drew this image for an office logo, depicting all the Los Angeles stereotypes. I've got a couple of T-shirts with that image.
Sun/SunsoftSouthLogo.jpg (Sunsoft South T-shirt image)

Discovering a fascinating property of Fibonacci numbers   **200x**

Playing around one day, I discovered a fascinating property of Fibonacci numbers, which I was able to prove. Some Belgian mathematician beat me to it, though – see Zeckendorf's Theorem, published 1971. Still pretty good – a lot of stuff I might discover was known to Euclid.

The theorem states that every natural number can be expressed as a sum of Fibonacci numbers, and that for each natural number there is <u>exactly one</u> such sum meeting the additional criterion that <u>consecutive</u> Fibonacci numbers may <u>not</u> be used in forming the sum.

Think about that! That *"exactly one"* part and its associated condition are really amazing! The natural numbers are <u>*one-to-one*</u> with the set of all sums of <u>*non-consecutive*</u> Fibonacci numbers. How can this be? There is something deep going on here that I haven't grasped.

This really makes me want to rethink the idea of the primes being the fundamental basis from which all numbers are derived through multiplication. It now seems just as reasonable to think of the Fibonacci numbers doing that through addition.

After I discovered and proved this property, I had enough understanding of it to issue the right keywords and find Zeckendorf's proof already existing online.
https://en.wikipedia.org/wiki/Zeckendorf%27s_theorem

Credit on bithacks for an optimization case   **September 2008**

https://graphics.stanford.edu/~seander/bithacks.html

Dark Side of the SAN   *(apologies to PF)*   **~2012**

> You get a call from The Man, "*Hey buddy, speed up that SAN!*", but it's syncing
> Racing around the subnet for most of a day
> The SAN is the same in some *Eventual** way but you're older
> Wishing for death and muttering under your breath

* https://en.wikipedia.org/wiki/Eventual_consistency

Patents *(5) (the automotive ones are not mine)*

https://patents.google.com/?inventor=David+A+Butterfield

Github projects

MTE Multi-Threaded Engine – general-purpose multi-threaded event-driven engine written in C	2017
UMC User Mode Compatibility – implementation to run Linux kernel code in user mode	2017
SCST Usermode Adaptation – the Linux SCST iSCSI storage server running in user mode	2017
DRBD Usermode Adaptation – the LINBIT DRBD distributed remote block device in user mode	2019
DRBD/SPDK – the LINBIT DRBD running in user mode under the Intel SPDK	2019
DBD – simple prototype distributed block device written in the Go programming language	2021
Random – historical documents	2022

Languages and Computers

Mainly C; also Go, FORTRAN, COBOL, PL/1, Algol 68, Pascal, APL, PPL, lex, yacc, awk, sed, perl
ASM mainly PDP-11 and x86; also Z80, 68000, Knuth MIX, Compucorp 025E and 425, Vector General
Other Machines: Digicomp, PET, Univac 1108, IBM 360/91, IBM 5100 (APL), DEC 10, DEC VAX, GA oddball

See Also

resume2021.pdf	*C.V.*
resume2017.long.pdf	*C.V.* older but more detailed
https://www.linkedin.com/in/davidbutterfield/	LinkedIn node
https://github.com/DavidButterfield	Github software projects, memoirs
https://www.youtube.com/@user-py1uk9wd9s	Youtube: Whitey, politics humor
https://twitter.com/weaselx86/with_replies	Twitter: politics, humor, pinned thread

Library Opening Time   **1974 - 1975**

I had a key to the library at my high school, bequeathed to me at the end of my junior year by a departing senior whose name I don't recall. The new school librarian was Barry Shimsky (sp?). He did not impress me. My main complaint was that he would typically show up to work and open the library 10 to 15 minutes before the start of first period, when the library was supposed to be open for students 25 minutes ahead of first period.

I would usually arrive at school about a half hour ahead of first period and go play with the Compucorp machine in the A/V Room, which was in the same building as the library. I started using my key to open the library each morning 25 minutes ahead of first period.

Shimsky would show up and walk in to find students already sitting quietly at tables studying and doing other normal library things. The first couple of days he looked a bit bewildered, but then he seemed to get used to it. Apparently it never occurred to him to show up early sometime and observe.

UCLA Math Building Master Key   **~1980**

The UCLA Math building key system was configured with master keys cut lower than individual room keys in every pin position. This was convenient if you wanted to make a master key because blanks were restricted: it was hard to get blanks, but any individual room key could be cut down to a master key.

I "somehow" got a master key into my temporary possession for a weekend, and had someone with access to a key duplication machine grind my office key down into a master key.

I still had to have two keys, though, because my computer room was off-master.

Radioactivity   **200x**

Cian was telling me he wanted some plutonium for Christmas. (I did get him some uranium) I mentioned this to Kevin Plaxco, and the next time we visited him in Santa Barbara he surprised us by taking us into a storeroom near his lab where radioactive samples were kept. Cian got to wave a Geiger Counter wand over them.

One interesting thing I noticed in the radioactive storeroom was that there were several trash bins for waste material, labeled by half-life. Of course this makes perfect sense!

Keep Out of Reach of Children   **~1964**

My brother Roger, at around four years old, somehow climbed up onto a high shelf above the workbench in the top of our garage in Long Beach. I saw him up there and alerted our parents. While he was up there he found a bottle of a chemical catalyst for curing polyester resin, which he had apparently sampled. My parents took him to get his stomach pumped.

Brain Surgery   **200x**

Charley Kline had epilepsy from childhood, stemming from a damaged hippocampus. In later years the episodes had been getting more frequent. The hippocampus is critical for forming long-term memories, but you have two of them. At some point Charley decided to have the troublesome one removed.

Charley sent a message explaining that this surgery had removed a "golf-ball sized" chunk of his brain. The image that materialized in my mind was of an ice-cream scoop carving out a perfect sphere in one fell swoop.

After reading Charley's message my number one question was, *"Do you keep it in a jar on your desk?"*.

I mean, *I sure* would want to! Or maybe on a bookcase shelf behind my desk. Then whenever someone would come into my office with a particularly tough problem, I could reach back and bring the jar down… :-)

(I suppose in reality the damaged area was probably removed closer to one cell at a time)

Artistic License   **200x**

Evelyn Walton and I went to visit Charley Kline at his house one evening. On the floor leaning against one wall was a painting in a "still life" style, looking sort of like a bowl of fruit, except the "fruit" was odd-shaped and a disgusting quasi-avocadoish color of green, as though rotted or something.

Charley explained that the scene had been painted by his grandfather.
Charley also explained that, to him, the painting looks like a normal bowl of potatoes.
Charley is color blind. Apparently, so was his grandfather!

Antenna Tower Charging Up, Richard Charging Down   *(story from Richard)*   **~1980**

At the Butterfield Ranch my father Richard got a little antenna tower, maybe 30 feet tall or so, to hold an antenna for Howard's C.B. radio. One day when the weather was overcast Richard was up at the top of the tower preparing to mount a new antenna or something. Suddenly he noticed his hair standing up away from him. He immediately descended the tower at urgent speed. About fifteen minutes later lightning struck the tower.

Set an old rubber tire on fire while arc welding, got a lungful of nasty smoke   **~1975**

I was messing around on the Ranch one day trying to put together an improved 'drag' for our three-mile dirt road leading out to the Redrock-Randsburg Road. This was a device that would be dragged down the dirt road behind a tractor for the purpose of smoothing out the surface to maintain it reasonable to drive on.

This drag was made up of six or ten large old rubber truck tires bound together into a triangle, to be dragged down the road behind the tractor by a cable attached to one of the corners.

I was using the arc welder in securing some kind of metal binding between two of the tires, I don't remember exactly – it was probably stupid in the first place. Anyway, this kind of welding is done using an electrical spark referred to as an "arc".

The arc is extremely bright. When arc welding you wear a mask with a filter to dim the incoming light so that you are able to look at what you're trying to weld. With the mask down you can see whatever is lit up in the immediate vicinity of the bright arc, but everything else is too dark to see.

At some point the heat from the arc welding set one of the tires on fire; but I did not notice this because I had the mask down and couldn't see anything except what was lit up by the arc. What caused me to realize the tire was on fire was breathing in a lungful of nasty, *nasty* rubber smoke. I felt that crap in my lungs for a couple of weeks!

Bladder tumor removed   **~2000**

One day I noticed a trace of blood in my urine. A urologist had a look at the inside of my bladder using a cystoscope, a flexible tube with a light and camera at the end of it, which he inserted through the end of my penis and pushed up through the urethra and into my bladder to view it from the inside. He kindly had a numbing agent squirted up in there a few minutes beforehand.

> *(Despite how that sounds, I'll take it any day over that gallon of antifreeze they make you drink before a colonoscopy)*

The urologist saw a bladder tumor and scheduled me to come back to have it removed. This operation is called a *Trans-Urethral Resection – Bladder Tumor (TURBT).* It used another flexible tube similar to the cystoscope, but larger in diameter and having cutting tools. That one they sedated me for.

A few years later I randomly happened across a journal article mentioning an observed correlation between bladder cancer and a history of having worked in rubber factories. I immediately thought of that day a quarter century earlier with the arc welder and the lungful of rubber smoke.

James Irwin Butterfield, Chief of Police of Long Beach, California   **1920**

My father (Richard Butterfield) told me a story about his father Jesse, and Jesse's brother James, who was twenty years older. Richard's *"Uncle Jim"* was appointed Chief of Police of Long Beach, California in 1920. Jesse, 13 years old at the time, stole his brother's police car and took it for a joyride around town with the red lights on.

I tried to authenticate this story. I haven't found anything online mentioning this incident, but did find that by the end of the year James had been removed as Chief of Police "for incompetence".

I also found that a couple of years later James was arrested – along with *another* former Long Beach Chief of Police – for disrupting an *anti*-KKK meeting.

I have not nailed this down <TBD>, but it appears his conviction was overturned on appeal and he was acquitted because his actions fell within the protections of the First Amendment.

Everyone is your cousin

The familysearch.org website has a feature where you can navigate to someone's node in their tree and click a button to have it show your relation to that person, if it can find one. It's pretty cool, though I do have a few issues with it, mostly surrounding how it selects, among multiple existing relation paths, which one it shows you.

I started checking random "unrelated" people for connections through their family tree. Most random people I've checked are connected to me as eighth cousins, tenth cousins, etc. The neighbor across the street. The neighbor next door. The wife in the couple we bought the ranch from. Seven out of eight former girlfriends that I could find. Famous writers, artists, screenwriters, actors. My wife is my tenth cousin.

(It's a little tricky finding your relation to a living person, because they don't show in the tree, so you can't navigate to their node. What I do is find their birth record, identify their parents, more likely deceased, and check my relation to the parents. Or grandparents if necessary.)

With the ability to go back up to 15 generations, this does make some sense. Before reasonably reliable contraception was invented, family sizes were typically huge – a dozen children or more was not uncommon. Assuming an average of eight children per generation, starting with one couple after ten generations you could have up to a billion 9th cousins tracing back to that couple. There are only about 1/3 that many people in the country, making odds pretty good of finding *some* common ancestor *somewhere*.

Schrödinger's Grave

This is a link to my node on familysearch.org, but because it shows me as "living" I'm the only one who can see it. After it is marked as "deceased" then everyone will be able to see it. But I am the only one that can mark it "deceased" because no one else can see it. It is not clear how I am expected to do that after I am deceased…
https://www.familysearch.org/tree/person/details/GN7S-CSW

As far as I can tell, after I am deceased the only way to correct the record is to cheat: one of my survivors will have to login to the familysearch.org website once, *using my name and password,* to change the record to *deceased* state. I suppose for that instant the system must perceive me as both alive and dead, since I am only <u>able to</u> press the button while I'm alive but am only <u>allowed to</u> press it while I'm dead.

Then comes the merge nightmare, when multiple "hidden" records for the same individual are all made visible by their respective creators marking them *deceased*. I have seen no indication that the site gurus have thought that one through.

This Memoir   January 2023

This version of my memoir is fairly comprehensive up through May 1992 when I moved from Locus to Sun. Some entries are from later than that, but they become more sparse: other stories from Sun and later remain to be told.

It is presently about 42,700 words.

If you found this entertaining or enlightening, consider writing down some of your own stories for others to enjoy. Let me anticipate two points of resistance: (1) *"I don't have any good stories";* (2) *"I don't have the time".*

(1) Here's how I started my list of events to write about; I asked: **What unusual experiences have I had that most people today have not had?** That formed the core of the list, with background events then added for context. And as soon as you start writing one down, it will remind you of others – so keep a notepad handy to jot them down as they occur to you.

(2) It took surprisingly little time to write all this down. A few of these stories I had written some time ago, or last year; but most of this I wrote down in January 2023. The format I've used keeps the stories largely independent and self-contained, minimizing the effort expended on continuity. Indeed the two largest sections here are simply presented in (mostly) chronological order.

What's most important to start on is the list of topics, each entry just one or two lines of a title or short description of the memory, sufficient to bring it back to mind later. Later you can pick out some easy ones from the list to expand intro stories. Then it gets easier and you can move on to the more complicated ones. And one memory can be brought to mind, explored, and written into a story in a single sitting, so getting them down can be more easily done fragmented over a longer period as time permits.

Visitors to our house in Ireland

Kevin and Lisa Plaxco	Multiple 1994 – 199x
George Karas	1994
Richard and Maryann Butterfield, for Cian's birth	
Todd Johnson and Anne McCaffrey	1994
Evelyn Walton	<TBD>
Reid Kneeland, Ellen Fleischmann, and kids	December 1995
Jordan and Kim on their honeymoon	<TBD>
Europe tour with Richard and Maryann Butterfield	Summer 1997
Renata Rogers stayed with us over summer, excursions to Paris, London, …	Summer 1998