



John M. Carthy

John M^cCarthy: Stories

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Poor Programming Style

—Richard P. Gabriel

“Show me.” John held up the chalk, holding it by the top, the bottom pointed at his feet. His smile was slight but visible, visible to everyone in the lecture hall; his smile was aimed at me. Who was more scared, the students, or me—the TA? That’s something no one can ever know, but there were 50 of them and one of me; if my answer is wrong, their answers would have been wrong.

Three months earlier, in my first quarter as graduate student at Stanford, in the Lab at the top of the hill, just before a volleyball game, I asked John M^cCarthy—the John M^cCarthy—whether I could have an office at the Lab and be supported by it. The Lab being SAIL, the Stanford AI Lab, and I having been assigned elsewhere, in that dusty summer of 1975, with the sharp fragrance of volleyball-courtside tarweed splattered on a background of eucalyptus; hot and dry. Hazy and dusty.

“Sure,” if I TAed 206, the Lisp course. OK, I knew Lisp, had learned it from the blue book—the Lisp 1.5 Programmer’s Manual. His book. His language.

Some call his classes “Uncle John’s Mystery Hour,” in which John M^cCarthy can and will lecture on the last thing he thought of before rushing late through the door and down the stairs to the front of the lecture hall.

But this class started out like anything but a mystery hour: John was reviewing the answers to the midterm. The first few problems were routine, but this one maybe not, and he said, “Ah, this problem was intended to show you that there are some problems that Lisp is not good for.”

I can hear the worried thoughts behind me: “Er, but multiplying two polynomials seems so easy. I musta got it wrong.” And I, maybe I had graded it wrong.

John: “It turns out you need to pass global information, and the control structure is not regular. Here are the six functions and two globals you need.”

So now you’re thinking that the problem was stated funny. Well, here it is: Let $a_0 + a_1x + a_2x^2 + \dots + a_nx^n$ be represented by the list (a0 a1 . . . an); write a function that multiplies two such polynomials. The solution is easy too: if `add-poly` adds two such polynomials, and `constant-multiply-poly` multiplies a polynomial by a constant, then this is just:

```
(defun multiply-poly (p1 p2)
  (cond ((null p1) nil)
        (t (add-poly
              (constant-multiply-poly (car p1) p2)
              (cons 0 (multiply-poly (cdr p1) p2))))))
```

And those two helper functions are an obvious one or two lines of code.

John finishes his complicated explanation to a wash of silence.

I, lowly first-year grad student TA, peep: “I think Lisp can do better than that.” And hope I haven’t blown it. “Show me,” the smile begins with his eyes and spreads downward.

John’s world is a world of ideas, a world in which ideas don’t belong to anyone, and when an idea is wrong, just the idea—not the person—is wrong. A world in which ideas are like young birds, and we catch them and proudly show them to our friends. The bird’s beauty and the hunter’s are distinct.

And when John catches a bird on the way to class, we see it, and just the way he does.

So I write the few lines of code on the board, and John wonders at it: “Well, it looks like you’re right, but you see, I was working on this other problem, talking to Gosper,¹ and it threw me off track on this one, . . .”

Sometimes a bird flying past in a blaze of pretty song will distract a bird-catcher and maybe confuse him, too.

“That’s OK John,” I say, my own smile flicking, “I would have given you partial credit.”

“I would expect that you’d be able to see my solution is correct and give me full credit.”

“Nah. I would have taken off 5 points for poor programming style.”

Some people won’t show you the birds they’ve caught until they are sure, certain, positive that they—the birds, or themselves—are gorgeous, or rare, or remarkable. When your mind can separate yourself from your bird, you will share it sooner, and the beauty of the bird will be sooner enjoyed. And what is a bird but for being enjoyed?

And if John’s mystery hour is because he found a new bird, well, heck, let’s just love him for it.

Ever since that day I’ve patterned myself after him, and we’ve had a long, strange road together—catching birds. Ha, that’s it!

¹R. W. Gosper

The Fog Starts Down

—Richard P. Gabriel

Awash in CRT green his white hair and beard and his hinged black glasses were all that was visible—almost dark an hour after sunset: 9:11pm Sunday August 6, 1978. I was doing my routine walkabout around the AI Lab, coming to the front part from the Annex out back where my office was. I had come back in to work on some program or other on a Sunday night when not many would be on the machine we all shared: a PDP-10. Dozens would use it during the day, so night was the work day for some of us.

The Lab is near Felt Lake off Arastradero Road in the foothills behind the bulk of Stanford Campus. At the top of a small rise, the Lab was a semicircle with an asphalt volleyball court at its center. John's office was off to the right from the main entrance; out its many floor-to-ceiling windows you could see a stand of eucalyptus and behind them the textured green foothills separating the Lab from the Pacific. I wanted to see who was in. John's office looked dark from up the corridor, but my route always went past it down to Elaine's office and then Moravec's lair. About to pass by I looked in and I saw him behind his CRT screen, looking at it intently. He often played a solitaire game called "Spider" or read the AP news feed or the BBoard message posting file where threads of discussions, announcements, flames, and screeds were posted, one per page in the page-oriented text editor we all favored. John posted there a lot.

I walked in and stood—John had an informality that made gestures like this OK where others preferred to invite you in. Some time passed while I watched the darkening sky behind him, the view out his windows familiar from my many stops by to chat. He said to me without preface "she's not coming back."

He didn't look up from his screen; I was certain he knew I had walked in. The papers and books on his oak desk and the books and papers piled up everywhere were just as they always were. He was two years younger than my father, and there were other coincidences: John's father's name was John P., like my father; John's mother was Lithuanian like my father's parents; and both John and my father were born in Boston.

My path to Stanford was neither the prodigy's nor the talented's—I was *whiteballed*, which means that someone on the inside pulled my application aside and said "this one." When I got to Stanford in 1975 I had been assigned to Ed Feigenbaum's group but I wanted the AI Lab. I went up to the Lab one day, rather boldly, and asked Les Earnest—the Lab's administrator—about joining the Lab; he said "ask M^cCarthy," so I did. "Can I live up here" I asked and he said "what do you mean by 'live'?" Puzzled I said "have an office"—not realizing yet that some actually lived at the Lab in its unused parts. That's another story, though. Over the four years in between, I had transformed the Lab from a Stanford Lisp 1.6 house to a MacLisp one. This meant faster and more modern programs. I think—or I think I think—this earned me some respect from John. I was in effect SAIL's Lisp wizard.

After a minute or several he continued, probably because my silence. "Vera. I just took her to the airport, and she's not strong enough. I'm a better hiker than she is right now. We went just the other week to the Sierras and she couldn't keep up with me. She isn't coming back." I sat down across his desk from him, facing the oncoming night.

Vera Watson was John's Wife #2. Wife #1 had the exuberant name "Martha Coyote"—I never met her that I recall, probably because they divorced before I got to Stanford; but it's possible I did even though Lab spouses were a rare sight. Vera was a programmer at IBM Research in San Jose. As a mountaineer she was accomplished: in 1974 she made the first woman's solo climb of Aconcagua in Argentina; she climbed Mount Robson in Canada and made several first ascents in the Kenai Range in Alaska. But she was foremost a rock climber. I believe I met her once or twice.

Vera had been asked to join the team attempting the first ascent on Annapurna I by an all-woman team: the American Women's Himalayan Expedition led by Arlene Blum. Annapurna is in Nepal and is considered one of the most dangerous eight-thousand meter mountains. Vera did much of the fundraising but on the expedition she had no major area of responsibility.

I sat there with John for about an hour quietly while he stared at his screen—every now and then he typed a few keys. Behind him fog started down after reaching the top of the Coastal Range; coyotes made their racket. He and I were both lousy at personal matters, and I knew he knew nothing more needed to be said. I believed he was crying because above his beard his face was red and shined in the screen's light.

M^cCarthy was frequently right. Sadly so. Vera did not come back. Not her, not her body—it is still in the crevasse the sherpas saw her in, still roped to Alison.

On October 17 Vera Watson fell to her death on Annapurna I. She and Alison Chadwick-Onyszkievicz were climbing roped together on a steep, icy slope near Camp V when they fell. Both were killed. Earlier that day they had left Camp IV toward the last camp. From there they had hoped to reach the summit of Annapurna Central. They had no sherpa support.

Arlene Blum wrote a book about the expedition, *Annapurna: A Woman's Place*. When I read it I thought I saw hints: "I shouldn't be eating these, I'm so fat"; Vera was a slow climber the higher up she went; the sherpas called her "Mummie"; Vera was disappointed in her role; Alison was also discontented and wanted to try the more technical, more aesthetic rock-climb route which played to Alison's and Vera's strengths—it would be a better accomplishment than the main objective where the climbers used oxygen and had sherpa help.

But that night all this was unknown, nothing had played out; Vera was on a plane to Asia; I had work to do; John was bereft but I was inept. I got up and went back to the Annex.

Three months later when we knew: I recall walking just before twilight up the short slope toward Felt Lake and watching—for a while—the fog return.

The Bravery of German Grad Students

—Richard P. Gabriel

Summer 1983 was the first time I went to Europe, doing an excursion that started in Switzerland and eventually took me to Karlsruhe Germany and IJCAI 1983—the International Joint Conference on Artificial Intelligence. My wife and I met up with John there, and we all stayed in the same hotel. The first morning of the conference, John and I went over to pick up our registration materials: a badge, the proceedings, a festive commemorative bag, and some tchotchkes.

John M^cCarthy was always a little absent minded, and he relied on his admin to take care of arrangements for his travel, including conferences, but this time she didn't register him for IJCAI—and he didn't know that. He and I walked up to the registration table; it was manned by four or five grad students at the university where the conference was held. One of the students asked his name, and John said "M^cCarthy." The student looked at the badges and a list of names and said "I'm sorry, no one by that name is registered—did you pre-register?" John said he didn't know because his admin always did that, so he added "can I just register now?" "No, I'm sorry, registration is full." John turned and started to walk away back the way we came. No protest, no argument—this was his nature.

Sometimes I do things that I don't notice I've thought about before doing them; this was such a time. I walked up to the student who had just said no and said "wow, I really admire you, the bravery to bluntly turn away John M^cCarthy—the father of artificial intelligence and the inventor of Lisp—from an AI conference; you must have had some remarkable training, or maybe all German grad students have strong spines; I know I would never have the nerve to do that."

Two of the grad students bolted from behind the table and sprinted after John, one saying "Professor M^cCarthy, please forgive me, I did not recognize you at first; of course you can register, at no cost; please forgive me and my colleagues."

After, John told me he thought that worked pretty well. IJCAI had a special banquet the next-to-last evening of the conference, and naturally he was not registered for that, either. We decided to try the same trick.

It worked.

In My Book This Is Love

–Helen Cunningham

I “met” John M^cCarthy on one of the world’s first online forums. Perhaps *THE* first: Stanford CS department’s networked discussion forum called `su-etc.cs.stanford.edu`.²

I was a grad student in Experimental Psychology, young idealist liberal raised in a family of Roosevelt liberals with all the usual positions on civil rights, women’s rights, gay rights, economics, history.

It was mid-1987 and one day I posted a comment about the Robert Bork (Ronald Reagan’s nominee to the Supreme Court) hearings that were lighting up the Senate Judiciary Committee. Teddy Kennedy had issued a virulent screed against Bork’s “originalist” views of the Constitution. Being a Kennedy-o-phile I was 100% in favor and full of liberal disdain for Bork.

John M^cCarthy was one of the first to respond to my pro-Kennedy post, noting that Kennedy’s screed was close to 100% untrue. M^cCarthy was right of course but I didn’t know it then.

Thus began my years-long and mostly-delightful intellectual battle with a man who reminded me very much of my father, in appearance and in his appetite for spirited argument, peppered with a mixture of logic, insight, occasional sarcasm, and a willingness to exaggerate if necessary to make a good point. In true father-daughter style, he alternately charmed & enraged me.

The topics we tangled over were the usual liberal-conservative flash points, but one in particular stands out.

I threw an accusation at him (one still used by liberals today) that Europeans committed genocide against Native Americans. John steadfastly maintained that this is untrue, and what Europeans actually did was to marry them. That’s stuck with me over the years as an example of John’s cool rationalism and his ability to simply observe the world around him.

Eventually John & I stopped arguing online and started meeting in person. Nothing romantic, purely father-daughter engagements over Chinese food. He shared with me his road from liberal to conservative, and may have been the first person I heard speak the famous line that “A man who is not liberal in youth has no heart, and a man who is not conservative in old age has no brain.”

He spoke eloquently about the dismal political system he encountered while working with Russians and visiting Russia. These conversations helped shape my own future course as I became a keener observer of the way things actually are, and followed the same arc over the following years from passionate liberal to dispassionate conservative.

He shared a few personal things, but indirectly. His eyes softened with suffering when speaking of his wife Vera Watson. He mentioned, in an offhand way but the meaning was clear, his keen sense of loneliness when he received a prestigious award at a time when he had no one to share it with. Subtle things, looks and words of a man who came of age in a very difficult time in America: The Depression, World War II, the immense uncertainties of life.

Over time I came to understand that John, like my father, expressed regard & fondness for other people mostly through arguing with them. Not in a heated emotional way, and not over petty matters. Rather in an intensely engaged intellectual manner, over topics that mattered. In my book, this is love. And in this way John M^cCarthy was a very loving man indeed.

²SU-etc was a later version of BBOARD, which was a discussion file on the SAIL computer before it was moved from its DC Power Lab location to Campus. SU-etc was federated among about twenty computers. BBOARD was created in the early 1970s, and the following was its description:

The file BBOARD.TXT[2,2] will be used experimentally as a bulletin board file for the user community. This is the appropriate place for discussions of controversies and so on. The command MAIL BBOARD will send a message to this file. The BBOARD option in LOGIN (in OPTION.TXT) will type out recent BBOARD entries when you log in, analogously to the GRIPE option. The file can also be read using the \BBOARD filehack in COPY and E.

In 1977 a lengthy discussion about the movie “Star Wars” took place on BBOARD, including theories about the backstories of the characters. Because some of the audio effects were created by members of CCRMA, which shared the Lab with SAIL, that “page” was printed out and given to George Lucas, who perhaps adopted some of the ideas.

Lasting Autograph

—Richard P. Gabriel

In the late two thousand aughts my friend and colleague Robert Hirschfeld asked me to ask John M^cCarthy to autograph a copy of the Lisp 1.5 Programmer's Manual. Robert is a Smalltalker, and because Alan Kay, Smalltalk's creator, admired Lisp and in particular the Lisp-in-Lisp interpreter, `eval`, he wanted the signature to be on that page in the Manual. By that time, John was in poor health, mostly bedridden, and with declining mental clarity—perhaps dementia, perhaps Alzheimer's. Over the past few years I had been visiting him occasionally, just to talk and keep him alert; sometimes I'd read a chapter from a novel he enjoyed. He had a caregiver, and his wife—Wife #3, Carolyn Talcott—had seemed (to me) to have drifted away from him.

I don't remember much about the visit. The entrance to his home was dark and his bed was down another hallway to the left in a living area, not a bedroom. As I arrived he was sitting up on the edge of the bed in red & black pajamas. He seemed to recognize me. We talked a bit, and then I asked him about signing the book. He said he would and then put it on his knee and with the pen I brought he very... slowly... signed it.

This was the house where I would also sometimes go to explain how I repaired the programs he sent me to help him with. Surprisingly—perhaps—he was a lousy Lisp programmer. None of the programs of his I saw was more than a few pages long.

We chatted a little more, then he grew tired and got properly into bed. That was the last time I saw him. He signed at the top of page 13 above the definitions of the functions `apply` and `eval`:

I used to understand all this. I'm sure you can.
John M^cCarthy

