Richard R. Silbar
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Autobiography

Richard R. Silbar, 1937 - 20XX

I usually refer to myself as Dick. This is a draft of which might serve as an obituary for me – some day, presumably not too far in the future. For what it's worth, I am 85 years old as I write this.

The short version: I had a long career as a nuclear physicist at the Los Alamos National Laboratory in New Mexico. My reason for going there in 1967 was to help with the building of, and the running of, the Los Alamos Meson Physics Facility, a medium-energy particle accelerator. LAMPF was commonly referred to as a "meson factory." Its 800 MeV proton beam was used to produce copious amounts of pions, the short-lived particles predicted long ago (1936) by Yukawa. Pions are presumed to be a major reason for the binding together of the neutrons and protons that make up atomic nuclei. Over my fifty-year career I published about a hundred referreed papers in physics journals relating to pions, in one way or another.

Now a somewhat longer version: the following autobiography can be filled out by a number of more detailed essays that I have written about specific topics. They can be accessed from my website, http://pages.swcp.com/~silbar/Essays/, assuming that it still exists.

I was born in Milwaukee on January 19, 1937 to Robert G. and Ruth Ann Papke Silbar. I contracted pneumonia as a new-born, but was told that I recovered because of the newly-discovered sulfa drugs. In any case, the three of us moved after about a month to Mount Clemens, Michigan, where RGS began work with Covered Wagon. RAPS, who had taught music as an elementary school teacher, stayed home to care for me and to produce my brother Jim.

The war came, and RGS was assigned to work at the War Production Board in Detroit. He also raised tomatoes in a Victory Garden and made model airplanes in what little spare time he had. Sometime before kindergarten RAPS taught me how to read, which meant that, on entering school (in the January semester), I didn't have much to do. So I fell in love with another early reader, Rosemary Van Meer. I don't know what ever happened to her, because sometime around the first grade RGS was transferred temporarily to Lansing, where I learned how to play the kazoo. Then we came back to Mount Clemens for my second grade and half of the third.

The war ended and we moved to Birmingham. The school system there did not start students (like me) in the January semester. So they (whoever they were) decided to

jump me ahead into the fourth grade. I didn't do all that well there, and sort of flunked cursive handwriting. On my great-aunt Bertha's recommendation, I was sent back to the start of third grade, after which my academic prowess improved.

At the time of that handwriting fiasco, RGS, the newspaperman, declared that *his* kid was going to learn to type. Which I did, using all ten fingers, as opposed to his using only three or four. For what it's worth, my handwriting became legible about the sixth grade. And being able to type (recall that only *girls* took typing back in those days) did get me a summer job at age 17 as the camp secretary at the D-Bar-A Scout Ranch.

As that suggests, also on my father's urging I became involved with Scouting (see my essay Scouting.pdf). I eventually became an Eagle Scout, despite only earning the Lifesaving Merit Badge by the skin of my teeth. I did learn to enjoy hiking and backpacking in the process (see Hiking.pdf), something that stayed with me into my 80's.

In Birmingham, with my mother's guidance, I learned how to read music and to play the piano (see Musician.pdf). I graduated to the cornet around Middle School, but that dwindled away when I switched to the debating team as a sophomore in high school. I also, under RGS's tutelage, learned (painfully, after many re-writes) how to write a concise news story. This was *not* for a school essay but for the Owl Hoot, the local Cub Scout newsletter.

Among other things I learned from RAPS was how to collect butterflies, which involved running around in fields and woods with a butterfly net and a bottle of chloroform. In high school, besides the debate team, I tried out for the tennis team three years in a row. And got cut from the team each time. Maybe the coach considered me too small to play high school tennis?, but the irony is that after I got to Los Alamos, I started to play squash. And I got pretty good at it, becoming nationally ranked in my age brackets. (See Squash.pdf.)

I graduated from high school and matriculated at the University of Michigan in 1955. Initially I decided to major in chemistry, but, after a tough titration in the quantitative analysis class, decided that a physics major was more to my taste. This was helped by getting part-time and summer jobs working in various laboratories in the physics department (see Franken.pdf). I stayed on at the U of M for my graduate work, helped by an NSF fellowship. I finished my Ph. D. work, as a nuclear theorist, calculating muon capture rates in 2s-1d nuclei under Herbert Überall.

In addition to Rosemary Van Meer, during my growing up times, I fell in love, successively, with a number of girls. One of these was Maggie Lincoln, whom I met on a blind date in 1961. We married (in Ann Arbor, on my birthday) in 1963, just as I began writing up my thesis. We stayed happily married for 57 years. She died in

August of 2020 after a rough final three years with assorted medical problems (see ObitMLS.pdf).

After defending my Ph. D., I had two post-docs, first at Johns Hopkins University in Baltimore and then at Catholic University of America in Washington, D.C. At this time Maggie began her career as a free-lance science writer, which she continued in for many years after we moved to Los Alamos in 1967. She specialized in articles about recent developments in physics, astronomy, and computing. I have to admit that I too learned something from the stories she wrote.

While in Washington, we spent much of the summer of 1966 overseas, in Europe. I attended a summer school in Istanbul, but we continued on through Greece, Italy, Switzerland, Austria, Luxembourg, and Iceland. Maggie and I developed a love for foreign travel which we gladly indulged in, frequently, up to the trip to Quebec in 2015.

After arriving at LANL in 1967 as a member of the Theoretical Division, I spent a lot of time acting as liaison between the theorists there and the experimentalists down the road at the meson factory. LANL at that time was still operated as a branch of the University of California. This arrangement offered lab employees a set of generous health and retirement plans and four weeks of vacation time per year.

Soon after our arrival in Los Alamos we discovered that one of the official languages of the state of New Mexico was Spanish. Our lack of knowledge of this language was emphasized to us on our first vacation to Ecuador, Peru, and Bolivia in 1968.

So in 1969 we decided to learn it (see LearningSpanish.pdf). We took advantage of the four-week vacation to go to Mexico City to enroll in an intensive course offered at the Instituto on Calle Hamburgo in the Zona Rosa. Classes all morning, and in the afternoon we would go to Mexican movies from Churrobusco. (The “churros” were mostly terrible Westerns. In one, the good guys rode their horses into a saloon full of bad guys. No horses were harmed in the big shootout.)

On our return to Los Alamos, we worked through the book for the second of their four-week courses. We also went on Tuesday evenings to the Española Drive-In for yet more churros. We returned to Mexico City for Course Three in 1971. After that we were somewhat comfortable handling Spanish in social situations. A big help in this regard was our meeting Roberto, also a student at the Instituto, but in his case for learning English. We came to know his family well over the years. After the earthquake, Roberto gave up being an accountant to become a priest. I still hear from him from time to time.

In later times, when we vacationed in Mexico, Guatemala, and Chile, we developed a taste for going to archaeological sites (see Ruins.pdf). Back in Los Alamos, when not working, we continued backpacking and, despite Maggie's initial reluctance, learned how to ski (see Skiing.pdf).

The University of California until about 1998 was the sole administrator of LANL. Another advantage of working for a university was that one could take sabbatical leaves to teach at a real university or to do research at another laboratory. I was able to do that several times, starting in 1973-74 for a year at the Swiss meson factory (see ShortCH.pdf). That year helped considerably to polish our German (but not the Swiss dialects). Later on there were two teaching semesters at Stony Brook and UMass Amherst. As for laboratories, there were shorter stays of two to five months at the the Institute for Nuclear Researches in Moscow (see USSR.pdf), Orsay outside of Paris, Rutherford near Oxford, Tel Aviv, and Jülich near Köln. We also had several non-physics vacations in Switzerland, France, Italy, England, Costa Rica, and Canada. As I said above, Maggie and I were able to indulge our fondness for foreign travel.

It was around 1985 or so that the Department of Energy decided to discontinue funding for Medium Energy Physics. This meant that the accelerator called LAMPF would change its focus to producing neutron beams for other kinds of physics. That is, it would no longer be a meson factory. LAMPF was re-christened as LANSCE, standing for Los Alamos Neutron Scattering Center. This was not quite my physics cup-of-tea and I began thinking of other things I might do.

One thing, which was also not *quite* my cup-of-tea, was to, earlier, accept an assignment as a LANL employee loaned to the Department of Energy's Division of Nuclear Physics to help with their support of medium-energy nuclear theory. This was for the 1981-82 school year. It involved a lot of travel, evaluation of proposals, and (of course) paperwork. There was another such assignment in 1991, also to the DOE, but to the Innovative Exploratory Research Group. This one involved less traveling but a lot of evaluation of (sometimes kookie) SBIR proposals. In both cases, it was a relief to return to LANL and continue doing my own research, usually in collaboration with T-Division colleagues.

It was around 1985 that Steve Jobs, having been expelled from Apple, founded the NeXT Computer Corporation. I got the lab to buy me one of his black one-cubic-foot computers. And became enamored with it. I even got involved in contributing essays to the NeXT Users Group. It was also at this time, 1986, that LANL cottoned onto the fact that Artificial Intelligence was becoming (possibly) important to its mission. They decided to offer an intensive four-month course in how to built Expert Systems, a branch of AI that had recently become its newest brain-child. I signed up for the course, as the only member of T-Division to do so. In the process I learned a lot of new (to me)

computing techniques, in particular, the LISP programming language and object-oriented programming (see AIForay.pdf).

On graduation from that course, I then joined some of my class-mates in trying to develop Expert Systems (ES) of interest to various LANL groups outside of T-Division. This resulted in a number of contributions to AI symposia around the country. But it turned out to be rather hard to actually build an ES. As far as I know, none of us succeeded in building a useful ES for *any* laboratory program. The ES branch of AI sort of slowly faded away to become superseded by the neural network deep-learning systems ubiquitous today.

In 1994 LANL was hit with a sizeable funding cutback and it had to reduce its staff to survive. To ease the social burden the University of California offered a tempting Voluntary Early Retirement Plan. I was already aware that, by order of Congress, the administration of LANL was no longer to be by UCal alone, but by a consortium of it and several corporations like Bechtel and Lockheed. That would likely lead to a less relaxed way of laboratory life – more paperwork and a more rigid, expanded set of administrators. So I decided to accept the VERIP offer and retire, with a good pension and health insurance, at 57 years of age.

Was I really going to retire? No, the idea was that I would form a company, WhistleSoft Inc.,[1] that would provide consulting and training in using NeXT computers. That sort of worked, but not lucratively. The NeXT cubes were too expensive to become a commercial success, vis-a-vis the PC's and Macs. Soon enough, Steve Jobs went back to become the head of Apple and the NeXT Computer Corporation disappeared, being bought up by Apple in 1996.

While I was trying to make WhistleSoft work, I was able to maintain a Visiting Staff Member arrangement with my former T-Division group. This left to a few physics publications, in collaboration with colleagues there, some of which are still being read and cited today. I was also cajoled by Don Wood, of Creative Consultants, to sell computer equipment (on commission) to his clients in Los Alamos, mostly at the Lab. In both of these regards it was useful for me to keep up my LANL badge with its Q-Clearance. My life as a computer salesman, however, was not very satisfying, and it only lasted for two years or so.

So what else should WhistleSoft be doing, what with NeXT disappearing? The Los Alamos Small Business Center downtown had hosted some seminars describing the advantages of Small Business Innovative Research contracts. Mandated by Congress, a federal agency that funded research had to set aside a small percentage of its budget for SBIR projects which were of particular interest to that agency. It would propose topics

1 Silbar is a Spanish verb meaning "to whistle, hiss, or boo." See WhistleSoft.pdf.

that a small business could respond to by submitting a proposal. If successful in navigating the competition, it would provide $75,000 in start-up funds for a one-year Phase One grant. Following that, the company could submit a proposal for a much larger two-year Phase Two grant.

So, together with Dick Cooper, an accelerator physicist and a fellow VERIP retiree, we looked at the DOE's Division of Nuclear Physics SBIR calls for a proposal. We found one that fit with our combined expertise. Our Phase One proposal, submitted by the small business named WhistleSoft, was entitled "A Multimedia Tutorial for Charged-Particle Beam Dynamics." Perhaps to our surprise, it was accepted! (It may have been helped to some extent because of my two earlier assignments to the DOE.)

With that $75 K start, we did successfully develop a prototype tutorial. We did this using NeXTSTEP on PC's, being able to utilize interactive graphics, audio feedback, animations, and hypertext. At the same time we were building the prototype, we began writing up a follow-up proposal for Phase Two funding. The major shift from the Phase One proposal was that the tutorials we would make would *not* be for NeXTSTEP computers, but that they would run on much more common IBM PC's and Apple Macs. We also wrote up a Final Report on what we accomplished in Phase One. This report and the Phase Two proposal were duly submitted in April 1995 for evaluation and consideration. Again, to our surprise, our tutorial project was accepted for continuation into Phase Two.

So, WhistleSoft changed its focus to computer-based training in science and engineering. It also became something larger than a two-person operation. We brought in a number of other VERIP retirees (and a high school intern) to help develop content and to do the programming. Apart from creating the tutorials, as WhistleSoft 's president I *also* had to learn a lot about how to run a business. This included things such as meeting the payroll, paying corporation and gross-receipt taxes, learning double-entry bookkeeping, writing a business plan, and marketing our products.

Over the next three years those products included five tutorials on charged-particle optics. In order of increasing complexity they were: "Vectors," "Forces," "Motion in Electromagnetic Fields," "Dipole Magnets," and "Quadrupole Magnets." They were published and distributed by Physics Academic Software. Besides the royalties from PAS, we were also able to generate some direct sales of the tutorials and to develop some smaller training products for a local business and LANL.

Unfortunately, our funding ran out at about the time that computer technology changed and made our way of working increasingly obsolete. Our programming software could not keep up with the changes in the operating systems of IBM PC's and Macs. Also, responding to changes in the university marketplace, Physics Academic Software closed

its shop. This, of course, meant our sales dwindled away. So, in 2007, it was a good time to close down WhistleSoft and for me to actually begin my retirement.

So what did that new retirement entail? I continued going into LANL as a Visiting Staff Member and wrote a few papers with my T-2 colleagues, the last one published in 2014. I also continued playing squash and, with Maggie, we did a lot of traveling, foreign and domestic.

In 2009 Maggie had her left hip replaced, which only slowed us down a little. However, in 2016 that hip needed a revision, and after that there were complications. Her health problems multiplied, including her vision and an onset of Alzheimer's. As a result we down-sized from the house at 168 Dos Brazos in Los Alamos that we had purchased back in 1968 so we could move, in August 2018, into an assisted-living apartment in the Brookdale Senior Living complex in Santa Fe. As I mentioned above, she died after a short hospice in 2020.

I stayed on at Brookdale, as a matter of convenience and because of the friendships I had formed there. I switched to a smaller independent-living apartment, moving into it just before the Covid pandemic hit and slowed everything down. In particular, I stopped driving to LANL and learned how to attend physics seminars remotely, on-line using Zoom. I also gave up playing squash (it had become hard to find playing partners in my age bracket) and converted to pickleball instead. Oh well, pickleball is more social and probably is much easier on these old knees.