



An Oral History of the Linus Pauling Institute, September 19, 2011

Title

“Working with Pauling”

Date

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Location

Valley Library, Oregon State University.

Summary

In interview 2, Lawson recounts his interactions with various members of Linus Pauling's family, including Pauling's four children. He also reflects on the donation of Pauling's papers to Oregon State University, discusses the Pauling home at Deer Flat Ranch, and shares his thoughts on specific aspects of Pauling's personality. Lawson likewise expresses his opinions on a selection of biographies that have been written about Pauling and recalls Pauling's final illness, death and memorial service.

Interviewee

Steve Lawson

Interviewer

Chris Petersen

Website

<http://scarc.library.oregonstate.edu/oh150/lpi/>

Transcript

***Note: Interview recorded to audio only.**

Chris Petersen: We'll start like we did last time, where you just introduce yourself: name, date, and location.

Steve Lawson: My name is Stephen Lawson. It's September 19th, 2011 and we are in a room in the Valley Library on the campus of Oregon State University.

CP: So this is the second of our interviews that is basically dealing with Linus Pauling and his personal characteristics. We went over a lot of different things in our last one. I wanted to start today by talking about the Pauling family and the interactions that you had with Pauling's children. If you would like to start with Peter?

SL: I believe I met Peter probably in the late 1970s or early 1980s for the first time when he was visiting his father in California from England. Very interesting fellow. He was, in a way, the black sheep of the family in terms of his personal habits. He seemed to drink quite a lot and was a smoker, and some of those habits had health consequences for him late in life, but he was a very personable, very direct person with a good sense of humor. I really enjoyed my interactions with him.

In late 1994, I received a box addressed to me at the Linus Pauling Institute of Science and Medicine in Palo Alto with no return address and no letter inside. The box held what appeared to be Linus Pauling's chemistry Nobel Prize medal, and I was very perplexed by this. I didn't know why it would be sent to me or who sent it, except that the postmark was from Europe. I didn't know whether or not the medal was authentic. I called up Henry Taube, a Nobel Prize winner in chemistry at Stanford who was a good friend of Linus Pauling—and he and I compared the medals. The medal that I had got in the mail seemed to be authentic except that it seemed to be an alloy rather than gold.

I put it aside in my office and about two weeks later, I received a second package from Europe, again, no return address, no correspondence. This time, there was the Nobel Peace Prize medal inside the box. So now I was really stumped and very curious as to why these were being sent to me and who had sent them. About a week or two after that second box had arrived, I received a phone call from Peter, who was in England at the time, and he asked me if I'd received anything unusual in the mail recently. I said, 'well yes Peter, I have. I received two replicas of your father's Nobel Prizes.' He said, 'oh good, I'm glad you got those.' He very graciously had gone to the Academies and had duplicate medals struck in an alloy for family members and for the Linus Pauling Institute of Science and Medicine, which I thought was very nice of him.

CP: Yeah.

SL: And I think he had done that just after his father's death, although I don't recall the details.

CP: Did you ever have a chance to talk about his scientific research at all with him?

SL: I never really had a chance to talk to Peter about his scientific work or his work on chemical structure. We did talk occasionally about the vitamin C and cancer work that Pauling was doing in collaboration with Ewan Cameron in Scotland. Peter was very interested in that work, of course, although I don't know that he actually communicated much with Ewan Cameron, even though they were on the same island there off Europe.

CP: Ok, Linda?

[0:04:18]

SL: I've known Linda for quite a long time. I think I met her either at a party at her parent's house in Portola Valley or perhaps at the Linus Pauling Institute of Science and Medicine in Menlo Park. She's a very nice person. I knew her husband, I think, before I met her, because her husband would visit the Linus Pauling Institute in Palo Alto occasionally to talk with his father-in-law, Linus Pauling. They had jointly authored papers in theoretical physics and chemistry. Barkley was a very interesting person. I remember asking him to explain one of the papers to me that he co-authored with Linus Pauling, and he said he was stumped by it, which is very amusing. I got to know Linda a little bit better when the

Linus Pauling exhibition was being planned because we both served on the advisory committee. We met together with family members and other people from the scientific community and Soka Gakkai quite often to plan the Linus Pauling exhibition and its different venues.

I remember when we moved files from the Linus Pauling Institute of Science and Medicine here to Oregon State University, many of the files from Pauling's office were moved to Weniger Hall before they were transferred to Special Collections. I was looking through some of the files for some reason and came upon a letter from Richard Feynman, Nobel Prize winner at Caltech, to Linus Pauling, apparently in response to a letter that Pauling had sent to him earlier. The earlier letter was referenced in the response from Feynman to Pauling. Feynman, at that time, had been diagnosed with a fatal disease, and I think Linus Pauling had written to him suggesting that high-dose vitamin C may have some value. Apparently in the earlier letter that Pauling sent to Feynman, he had enclosed some reprints of papers that he and Cameron had written on vitamin C, explaining host resistance and stimulation of the immune system and so forth. So Feynman had written back to Pauling thanking him for providing all this information to him and mentioned that he was going to share this with his physician.

In a separate paragraph, he mentioned that he had been thinking about Pauling's long, very productive career and all the major contributions that he had made to science and humanity. He closed by saying something quite clever and funny. He said: 'You know, Linus, I'm thinking about all of your achievements and all the wonderful things you've done for society, but I think your greatest achievement, your greatest contribution, has been your daughter Linda.' I thought that was quite funny.

CP: Do you recall any conversations that you had with the children of them reflecting back on their parents at all? Talking about them and what it was like to be a Pauling?

SL: Not really. I think when I was engaged with Crellin, Linda, or Peter, we were usually in social settings in which there were a lot of people around, so it wasn't easy to have a protracted conversation. We talked about various businesses relationships, but I never asked any questions about family history, even though I had opportunities. It just never occurred to me to delve into their personal relationships with their parents. Maybe I felt it was a little improper for me to do so.

CP: So, Crellin then?

SL: I had known Crellin for quite a long time. He came by the Institute, as did all the children from time to time, so I would see them although I didn't communicate much with them. Crellin became more active with the Institute as his father's illness progressed and as we were struggling to identify future options for the Institute. He was also the executor, I believe, of his father's will. Some of the elements of that will affected the Linus Pauling Institute of Science and Medicine, so one thing that I discussed with Crellin in great detail concerned royalties to some of Linus Pauling's books. Pauling had written, for instance, *How to Live longer and Feel Better* as an employee of the Linus Pauling Institute of Science and Medicine, and he had directed that all royalties and revenue from that book be given to the Linus Pauling Institute. When it came time to tie up some loose ends concerning the Linus Pauling Institute of Science and Medicine, I was interested in whether that same principle would apply to some of Pauling's other books. In particular, *Vitamin C and the Common Cold* or *Vitamin C and Cancer*, which of course again was written as an employee of the Linus Pauling Institute of Science and Medicine. So Crellin and I discussed those issues several times and he seemed to be very reasonable, which I thought was great.

CP: And of course you know Linus Jr. quite well. Was there any memories or thoughts that come to mind immediately when you think about the times that you spent with him?

[0:09:57]

SL: I enjoy Linus Pauling Jr. very much, and of all the children, I've worked most closely with him. I think I probably know him best of all the children. I had seen him from time to time when he came to California to participate in trustees meetings because he's been on the Board of Trustees of the Linus Pauling Institute of Science and Medicine probably since its inception. Periodic board meetings were held over the years and I would see him then, but I never really met him until the Institute was reorganized in the early 1990s. There was a desire, I think, on the part of the Board and on the part of Linus Pauling Jr. to spare his father from some of the administrative responsibilities and tasks associated with running

the Institute on a day-to-day basis and let him concentrate on research which really is what he wanted to do. And since time was becoming more precious, everyone felt that he should do what he wanted to do, which was to focus on science. So I talked a lot with Linus Pauling Jr. after I was asked by the Board to become Executive Officer and then later Chief Executive Officer. Linus Jr. became Chairman of the Board of Trustees.

He and I worked very closely together for several years and communicated very often about financial, personnel, management issues at the Institute. In particular, there was the possibility that the former President and Director of the Institute, Emile Zuckerkandl, would start a new Institute called the Institute of Molecular Medical Sciences to which we would sublease space in the building at 440 Page Mill Road. That was a very complicated and somewhat controversial and divisive issue. Linus Pauling Jr. and Linus Pauling had asked me, along with a couple of other people at the Linus Pauling Institute of Science and Medicine, to analyze this possibility and report as to whether or not it would work, practically, and if so, how we would manage that sublease and sharing of the physical space in the building.

So I worked very closely with Linus Pauling Jr. during that period and also, of course, in trying to stabilize the finances of the Institute, which were always teetering in those days. [I] worked with him on public relations and later, very closely on trying to identify options for the future of the Institute because with Linus Pauling's demise and the problems that confronted us in Palo Alto, it was not certain that the Linus Pauling Institute could carry on as a viable research organization or even if that was the ideal option for the future. So we spent many days analyzing and debating what the right future for the Institute might be and eventually decided that keeping the orthomolecular mission as a lasting legacy to Linus Pauling's work in orthomolecular medicine, which is why the Institute was founded in the first place, would be the most appropriate future for the Institute. So Linus Pauling Jr. and I set about trying to identify, as I said, options for relocation.

CP: You mentioned Barclay Kamb, I'm wondering if there are other people—are there any extended Kamb family or any other Paulings out there that you've had contact with?

SL: Yes, Barclay Kamb's son, Barclay Kamb Jr.—I believe, I'd call him 'Barkey'—is a partner at Cooley Godward in Palo Alto, and his wife was asked to become a Trustee of the Linus Pauling Institute of Science and Medicine after the reorganization in the early 1990s. We had quite a few onerous legal issues to deal with at the time, and Barclay, being part of that law firm that we hired to provide legal counsel and advice, was very helpful to the Institute. I talked with him many times and saw him socially as well. I don't believe that I had much interaction with the other extended members of the family. At about the time of Pauling's death, there were many visits from extended families: Linus Pauling Jr.'s family, Linda's family, and others. I met many of the grandchildren and children and so forth, but I can't say that I really had very meaningful conversations with any of them.

CP: You brought something up that I hadn't thought to ask you about, but it makes perfect sense. I would guess that you had a pretty unique perspective on the transfer of Pauling's papers from—I presume a lot of them were at the LPI offices

SL: Yes.

CP: —to OSU. Can you reflect on that?

[0:15:10]

SL: Yeah, that was very interesting. I've always been in favor of transparency and access and I thought that access to Pauling's papers and memorabilia should be encouraged for scholarship because there is a lot to learn. The more people look into Pauling's career and activities, the more interesting and astonishing it becomes. It's really a multifaceted project, although I did have some concerns about the intent of Special Collections to make Pauling's papers available online. It struck me as a really terrific project, especially the scientific papers, the research notebooks and so forth. But I was concerned about the correspondence being scanned and made available online for a couple of reasons.

One, many people would write to Pauling asking for advice on medical issues: they had cancer, they had various diseases, they had a friend or relative or colleague with disease, and they wanted to know how much vitamin C to take or what other therapies might be appropriate to treat this particular disease. Sometimes they would include a donation. Typically

the way these donations were processed, the photocopy of the check might be made and then stapled to some of the correspondence. I was concerned that there needed to be some judicious oversight of the way material was scanned and made available online because of the confidential medical and financial information related to some of Pauling's correspondents, which I didn't feel should be released to the public. So I was a little hesitant in making that material available to Oregon State University until Special Collections had come up with some sort of strategy to screen that material to protect those confidential issues. People had written to Pauling over the years and never suspected that their letters or information would be publically available on the Internet, partly because the Internet hadn't existed when they wrote and for other reasons.

Many of Pauling's files, his manuscripts, a lot of his scientific work, and his correspondence were maintained by Dorothy Munro at the Linus Pauling Institute of Science and Medicine. So those files were under our control for many years, and then I worked with you and Cliff Mead, who was the Director of Special Collections at that time, to ensure that this material got transferred to Special Collections. Most of the material was moved by a moving company from the 440 Page Mill Road address in Palo Alto to the campus of Oregon State University. To simplify things, almost everything in that move went to Weniger Hall and was stored in various rooms. From time to time, those files, filing cabinets, and materials were then transferred to Special Collections.

CP: I'm interested in particular about the chalkboard. Do you have many memories of Pauling's use of that board? And then how it was moved to Oregon? Because that's not an easy project.

SL: I do have some memories of that. He seldom erased the green board that was in his office. Sometimes he inadvertently erased things because he would move too close, or a guest in the office would move too closely to the board and their coat or shirt would inadvertently erase some of the writing on the board.

I once asked Dorothy Munro, maybe out of vanity, why my name wasn't on the board because I noticed that the names of some of the Institute employees were on the board and I was curious as to why my name wasn't. And she said, 'well that's because he knows you so well. He doesn't need to have your name on the board as a mnemonic device.' For people that he didn't interact with regularly, to associate the name on the board with the person when they came into his office was very useful to him. The entrance to his office was adjacent to that green board, so he could very easily look from the person to the board and back, and attach the name to the person who was standing in front of him.

I think Cliff Mead managed the technical aspects of moving the chalkboard. I know that there were issues about electrostatic dislodgment of the chalk particles from the board if different types of acrylic were used and there was discussion about spraying the board with some sort of sealant that would forever fix the chalk to the board, but whatever technique was used—and I believe a box was built around the board and it was moved very carefully—they did an outstanding job because as far as I can tell, there was no loss of information when the board was moved from Pauling's office to Special Collections.

CP: I'm getting away from Pauling a little bit here, but something else that you referenced that I want to ask you about is the traveling exhibit that you worked with Linda on. This was the SGI exhibit? What it was about and what went into it?

[0:20:38]

SL: Daisaku Ikeda, the head of SGI, and Linus Pauling had met and conversed prior to the establishment of the Linus Pauling exhibition, so they were acquaintances. I think SGI or Ikeda had expressed a desire to do something for Linus Pauling or the Linus Pauling Institute of Science and Medicine. I think that desire was transformed into the exhibition partly due to conversations perhaps with Linus Pauling Jr. in the early 1990s. We thought it would be a way of educating the public about this extraordinary man and introducing school children to Linus Pauling as a role model, because Linus Pauling worked in chemistry, and chemistry is not that sexy a subject to many citizens in the United States. Cosmology, theoretical physics, things like that—things that Einstein was involved in or Carl Sagan was involved in—seemed to resonate with people, but chemistry is a little bit difficult and oblique to many people. So we thought that having an exhibition devoted to Linus Pauling and all facets of his career as a humanitarian, as an activist, as a scientist, as a medical researcher, would be a way of honoring Linus Pauling, and his legacy and introducing his incredible work to school children and people around the world.

CP: And it was hugely successful.

SL: It was hugely successful. Millions of people saw it in Europe and Japan and many locations in the United States. It was terrifically well executed and designed. Very, very, diligent and creative design people working with Soka Gakkai designed the exhibit to fit into the available spaces in D.C. and San Francisco and Boston. Everyone who saw the exhibit thought it was very impressive. Soka Gakkai, when the exhibit had finished touring, gave all the elements of the Linus Pauling exhibition to Oregon State University.

CP: Ok, getting back to Pauling a little bit, I'm wondering, did you ever go to Deer Flat Ranch?

SL: I did go down to Deer Flat Ranch. They had a little guest house that was built, I think, at the south end of the beach, adjacent to the main house. I went down fairly late in Pauling's life. I think it must have been around 1993, perhaps even 1994 when I went there. My visit was associated with a deposition that our attorneys were doing of Linus Pauling related to a litigation with Health Now and Matthias Rath. I remember driving down and taking him the Sunday paper because I knew that he always liked to read the Sunday San Francisco Chronicle and the funnies. So I took him that large paper, got to see the house, and wandered around the beach. It was very enjoyable. It was a little sad, too, because it was difficult to see him somewhat incapacitated, but it was really a terrific experience to be there.

CP: Yeah. So I'm trying to get a sense of the space here. This was a very important place to Pauling.

SL: And it was easy to see why it was so important to him because it was very remote and secluded. There were no distractions, a terrific natural environment in a house perched on a bluff overlooking the ocean. Very tranquil space and I think it's easy to see how he got a lot done there without any Internet connection or fax. I believe he might have installed a fax machine later on, but it was an ideal place for him to work and think without distractions. When he was in Palo Alto, his time was sought by many people for many different reasons: old friends, colleagues, the public, the media. And I think it was difficult for him to concentrate at his office at the Linus Pauling Institute of Science and Medicine, at least on Page Mill Road, because there were so many demands on his time. When he retreated to Deer Flat Ranch, he removed himself from that. I think he really loved that time alone down there.

CP: Do you know what has become of the property?

[0:25:29]

SL: I believe the property is still owned by the family, but I'm not sure what they intend to do with it.

CP: We don't have a good sense of what Pauling did for fun. Do you have any ideas on that regard?

SL: Well, I know that he liked to watch some programs on T.V., some serialized programs. He read quite a lot. He loved to read mystery books. I think we may have talked about that in our earlier conversation. I would loan him mystery books, and he would loan me books. A lot of his books, before he died, ended up at a book store on California Avenue in Palo Alto because he would stop there to trade books. It was a book store where you could trade or sell your used books for books that they had in stock. I remember looking through the bookstore and finding Linus Pauling's name in many of the books in the mystery and science fiction area that he had brought in to trade for other books that he was interested in reading.

He didn't seem to have much interest in cinema, plays, show business, art, fine art, or music. Those things very seldom came up in conversation. He did not really seek out those kinds of experiences. I think he was happiest just doing his own work, thinking about scientific problems. The few times that I had cocktails with him in his apartment at Stanford, he was happy to sit and talk about a wide range of things. He liked to drink vodka. We would typically have vodka and tonic. Sometimes he would just drink straight up vodka, or maybe with water, and talk about a wide range of subjects. But popular culture was not of great interest to him.

He was a rare individual in that there was really no division between what he did recreationally and what he did professionally. He was a scientist through and through and derived pleasure from working on scientific problems. I'm sure that he did a lot of things on his own or with his wife, visiting different places with his wife that were enjoyable to him.

But when I knew him best, late in life after his wife had died, it didn't seem that he was that engaged in activities other than science.

CP: Well, I have a little list of personality characteristics that are often assigned to Pauling and I'm hoping you can reflect on some of these. The first would be his work ethic.

SL: Oh, he was very industrious. He seemed to work all the time. As a matter of fact, I remember going to parties at his house in Portola Valley and using the bathroom. Often times if you go into someone's bathroom, you'll find a Prevention magazine, a Reader's Digest, or Entertainment Weekly, or Time, or the newspaper. Pauling's bathroom was stacked with journals—scientific journals.

CP: Creativity?

SL: Well, I think it goes without saying that he was extraordinarily creative and had an interesting way of visualizing and thinking about scientific problems. I think in terms of creativity at least in the scientific realm, he was unsurpassed. When you think about the nature of his stunning contributions to molecular medicine, molecular biology, chemical structure, I don't think it gets much more creative than that.

CP: And many people talk about his memory.

SL: His memory was prodigious. It's rare that you encounter someone who has such a clear memory of so many details. Pauling was frequently able to recite the co-authors of papers that had been published—not just his own papers, but other papers—that had been published thirty, forty years earlier—the date and the journal and abstract. I think that is one of the reasons that he was able to make so much progress in science. He was able to conjure facts from deep in his memory and fit them together in a real synergistic way to make new discoveries.

My father also had a stunning memory. I won't say it was photographic, but it was close to being photographic. He was able, late in life, to remember things that he had learned as an undergraduate at Massachusetts Institute of Technology that I found very surprising. I would try to stump him with calculus problems when he was a business man, and he was not 'stumpable.' Pauling was very similar, perhaps even better than my father on the memory score.

CP: How about ego?

[0:30:57]

SL: Well, I think Linus Pauling had a healthy ego. I think he was well aware of his abilities. Some people, I think, misinterpreted that confidence as arrogance, but I never really interpreted it that way. It seemed to me that he knew what he was talking about. He was able to justify his opinion or his statements about various issues.

CP: Did you ever see him angry?

SL: Let's see, I'm not sure that I ever saw him angry. I saw him when he was less than happy, but I'm not sure that would qualify as angry. I've seen him concerned and maybe sad, but not really angry. During the Mayo Clinic imbroglio in the late 1970s and mid 1980s, he had every right to be very angry and perhaps he expressed his anger to some of the participants in that controversy. But I never saw him angry.

CP: How about fatigue?

SL: He tended to move somewhat slowly. Sometimes that was because he was carrying a heavy box with correspondence, books, and papers with him. He never really seemed to be fatigued. He wasn't physically vigorous at the time I knew him, but he certainly didn't seem fatigued. But he was not a physically dynamic person.

CP: How did he handle disappointment? I know that there were a lot of grant applications that came and went during this time that didn't get funded. Did you ever see him reacting to that?

SL: Yeah, I think he was disappointed, clearly, and all the emotions that go along with disappointment. But he never felt dejected because I think he felt that he knew better than many of the people who were denying him grant funds. He was disappointed that he wasn't rewarded by playing the game the way he had been told to play it by the funding agencies. So he was somewhat chagrined that he couldn't get the money from federal agencies to do the kind of research that he felt was very important.

I didn't see him angry at particular people, but he was unhappy that he couldn't get financial support to do work that he felt would be very important in public health. The vitamin C and cancer work is a good example. When Cameron had started treating terminal cancer patients—hospitalized, waiting to die—with high-dose intravenous and oral vitamin C and reported to Pauling that some of these people were having very dramatic responses, Pauling and Cameron collected a lot of the data, pathology, histology, x-rays, and so forth. Pauling felt that data were probably persuasive enough to get the National Cancer Institute to set up a randomized, placebo-controlled, double-blind clinical trial to test the efficacy of vitamin C in cancer.

The reception he got by the NCI was very negative and they always found a reason that maybe vitamin C wasn't responsible for favorable clinical responses. Maybe it was coincidence, something else. And Pauling said, 'well that's exactly why I want these clinical trials to be carried out to find out whether this has value. Anecdotally, we have evidence that has value. Now we need to find out whether it does truly have value.'

NCI had sort of an odd perspective on the problem. They wanted Pauling to apply for funds to study this in cell cultures and animals—animal models like mice or rats. Cameron already had some clinical evidence, but they wanted to turn the wheelbarrow upside down and start with cell cultures and animals. Typically the normal scientific trajectory would be to establish biological plausibility and see effects in cell culture models and then move on to animal models to find out if you can replicate the in vitro results in an in vivo model. And if that's all promising, then you move eventually into clinical translation.

Pauling and Cameron were actually starting at the end of that paradigm, the clinical realm. He wasn't anxious to go back and start with cell cultures and animals. So it was, I think, a bit frustrating to him and Ewan Cameron that they were being forced to start at the beginning when they already had results in people that seemed to be very promising and, they believed, would be sufficient to set up a randomized clinical trial.

CP: Were you at all privy to, or involved, or an observer to Robert Paradowski's collaboration with Pauling and the development of his biography?

[0:36:39]

SL: Well, Robert Paradowski visited the Institute many times because he was Pauling's official biographer. He came to talk with Pauling, talk with Dorothy Munro, talk with Pauling's colleagues at the Institute and elsewhere many times over the years. I believe I spoke to him in the 1990s about some of the litigation and Robinson and Rath issues.

CP: Are you just as in the dark as we are about this?

SL: I really don't know the status of the biography. I have no idea. I was surprised to learn at one point that he had no book contract, and it seems to me that if you have a book contract then that implies a deadline and you've got to have a product by a certain date. I was surprised to find that Robert Paradowski never had a book contract and was doing this, presumably, in hopes of shopping it around to different publishers at some later date. I think a book contract would have really been a terrific catalyst to getting that project completed.

CP: How about Tom Hager's book?

SL: Tom Hager. I talked with him. I liked his book very much. I think it's probably the best biography of Linus Pauling. Tom, of course, had some access to Pauling late in his career and visited the Institute several times. I thought that the last chapter in the book coinciding with the end of Pauling's life was perhaps a little bit abrupt. I was interested in working with Tom to develop that a little bit more thoroughly, especially with respect to the Rath litigation, but I think the publisher was interested in getting the book on the shelves not long after Linus Pauling's death in August of 1994. I think the book appeared in the Fall of 1994—they were interested in wrapping it up and getting it out there to sell while

Pauling was still in recent memory, because that would have been a good marketing opportunity for them. I have since talked with Tom, although I don't know if he has any desire to do this or if his publisher has any desire to do this. Perhaps a new edition of his book would wrap up some of the loose ends that were left dangling in the original book.

CP: He has published an ebook version of Force of Nature that does have a little bit more to it.

SL: Oh, I didn't know that. How interesting.

CP: How about the Goertzel's or Anthony Serafini? Is there any contact there?

[0:39:25]

SL: No, I never had any contact as far as I can remember with Serafini or the Goertzel's. I read their books. I thought they were interesting. I mean, I think no book is perfect and all have some failures or defects, and I think those two books have their share of failures and defects.

CP: How did Pauling use the media in your experience?

SL: Well, I think Pauling, as a result of his campaign to end atmospheric testing of nuclear weapons and his political activities in the 1950s, learned pretty well how to use the media. I was struck by his facility with the media. I mean, he gave hundreds or thousands of interviews to journalists and media representatives throughout his life. He knew the audience and he knew what part of the story to give to the particular interviewer for that particular audience. He was extremely good at describing pretty complex scientific phenomena in ways that the average intelligent person can understand and grasp. So he was a terrific speaker and was able to distill pretty complicated ideas down to easily digestible communication.

CP: Were there instances that you can remember where Pauling gave an interview in a major publication and then the Institute saw a pretty quick windfall from that?

SL: A what?

CP: A pretty quick windfall or a bump in the amount of correspondence you were receiving.

SL: Yeah, that's interesting. Well, of course, during the Mayo Clinic imbroglio, there was quite a lot of communication between the public and the Institute and Linus Pauling. Cameron and Pauling pointed out that Creagan and Moertel, who organized and carried out those Mayo Clinic studies, two of which were published, had not really read Cameron or Pauling's papers and were not prepared to reproduce Cameron's work, technically. So they never gave any vitamin C intravenously and there were other problems with the Mayo Clinic studies that have been dealt with at length by other people.

So when people heard that the famous Mayo Clinic had apparently objectively evaluated high-dose vitamin C in cancer and came up with negative findings, there was a flood of questions about this. Pauling and Cameron had prepared criticisms of the Mayo Clinic's studies, and those were provided to people who were interested. I think that the only—I can't remember exactly big windfalls, financial windfalls, to the Institute from the direct mail program as a result of public statements by Linus Pauling or other people at the Linus Pauling Institute of Science and Medicine. But I do remember that there were negative consequences from both the Mayo Clinic studies and, somewhat later, when people discovered that the Institute was doing work on HIV, and the effect of vitamin C in inhibiting replication of the virus responsible for AIDS. There were people who had moral problems with that work for whatever reason. Some donations dropped off as a result of that.

CP: Do you have a sense of what Pauling's attitude was toward money, especially in his own life?

SL: Well.

CP: We can assume that he was a pretty wealthy guy by the later years of his life.

SL: Yeah. I don't think money was an issue for him, at least during the time I knew him in the latter third of his life. I feel fairly confident in saying that he didn't have any personal money problems. He loaned money to the Institute many times, directed royalties from books to the Institute. So if he had needed money personally, I don't think he would have done that. He seemed like a very generous person. He was giving money to the Institute; he was trying to find money for the Institute to carry out research that he felt was important, so he seemed to be very generous and altruistic. He never seemed to be interested in doing anything that would raise money for himself. For instance, the patents that he was involved in acquiring late in life: one in superconductivity and patents related to lipoprotein(a) and vitamin C. I think the goal there was not to enrich himself but to find more revenue streams for the Institute so that it could do research that he felt was important. So I would say that's a very philanthropic attitude, very altruistic.

CP: Did you ever travel with Pauling?

[0:44:44]

SL: Let's see. No, I guess I didn't. I travelled with him to City Hall in Palo Alto from his apartment, and I would often chauffeur him from his apartment at the Stanford campus to the Linus Pauling Institute and take him home in the evening, mainly because, although his driver's license was still valid, he had decided not to drive so much anymore. It gave me an opportunity to talk with him about scientific issues and administrative issues, and he could regale me with stories from his past in a distraction-free environment. But that's the extent of my travel with him, local travel.

CP: Well in the early '90s, he developed an illness that would eventually take his life. He tried to treat that with an experimental treatment. Do you know much about that?

SL: Well, when he went public with the diagnosis of prostate cancer, of course many people were shocked. But his critics weren't shocked. Many people said, 'you've been advocating vitamin C for all these years and you've been taking vitamin C for all of these years and now you've got cancer. How do you explain that?' And Pauling had a very rational, non-defensive response, which was: most elderly men develop hyperplasia in their prostates. Most elderly men at autopsy are found to have cancerous cells in their prostates. It's just not uncommon. It happens to many, many elderly men. And he said, it's quite likely, although not provable, and I'm paraphrasing, that his high intake of vitamin C delayed the inevitable by twenty years or more because he died at the age of 93 and a half, and of course many men start to develop prostate problems twenty years earlier than that. So it's not a provable assertion, but I think it's just as reasonable as any other assertion about the relationship of vitamin C to his cancer.

He treated himself both with high dose vitamin C—although I believe he did not take intravenous vitamin C, perhaps just oral vitamin C, which is a little surprising, but on the other hand the pharmacokinetics of vitamin C had not been really clearly worked out. This was before the vitamin C transporters had been discovered, so no one really knew exactly how vitamin C got from the gastrointestinal tract into the blood stream and into cells and tissues. It's clear that not all of it got into the bloodstream from a large ingested dose. Some was excreted and some that got absorbed was excreted. The pharmacokinetics were not well understood, and it wasn't until after Pauling died that people started to look into that more carefully. And we now know that there are active transport molecules on cells in the intestine that limit the amount of vitamin C that gets taken up by cells and moved from the intestine into the blood stream. So when you take large oral doses, you cannot get the same blood concentration of vitamin C that you can get when you take it intravenously, because then you bypass these transporters on cells and get the vitamin C directly into the bloodstream.

A lot of work suggests that one of the major cancer anti mechanisms of high-dose vitamin C is the generation of hydrogen peroxide as a result of either autoxidation of vitamin C or reactions of vitamin C with metals. The hydrogen peroxide diffuses into the tumor cells and disrupts their cellular machinery by different mechanisms. That wasn't really well known when Pauling was self-medicating with vitamin C for his prostate cancer, so he didn't prefer intravenous vitamin C at that point because there wasn't any, perhaps, clear rationale for it.

I know that he had surgery. He underwent a bilateral orchiectomy and also was taking Flutamide, which is a standard chemotherapeutic drug for prostate cancer. I know that he was also working with friends and colleagues at Stanford Medical School to raise monoclonal antibodies against his prostate cancer cells. I don't really know how those things worked sequentially, or whether he was combining some of those modalities. I'm not clear about that, but I know that he tried all of those avenues.

And he was actually quite public about his treatment and about his illness.

CP: Do you recall the last time you saw Linus Pauling?

[0:49:40]

SL: I believe the last time I saw him was when he was deposed by our lawyers in 1994. I think it was late spring or early summer of 1994 at his home in Deer Flat Ranch.

CP: What are your memories of his funeral?

SL: Well, it's tough to have clear memories of such an emotional event. Linus Pauling was an unusual public figure in that many people who didn't even know him personally felt very strongly about him, either positively or in some cases negatively, perhaps. People who knew him really tended to love him because he was such a charming, magnanimous, and wonderful person to be around. When he died, I think everybody who knew him was grief-stricken, myself included. It was very difficult. I was asked to speak at the funeral, as was the President of Stanford University, Gerhard Casper, and a number of other people, and it was very difficult to maintain composure and talk about Linus Pauling at that event.

CP: What was the fallout of his death for the Institute?

SL: Well, the immediate fallout was probably a rise in memorial contributions in honor of Linus Pauling. We were, of course, very concerned about the long-term success of the Linus Pauling Institute because many people who had contributed money believed, rightly so in many cases, that Linus Pauling was at the helm of the ship and was directing the research. And he was Director of Research at the end of his life. We were concerned that absent Linus Pauling, people might start to lose interest in the Linus Pauling Institute and stop supporting it financially. We had no endowment at the time and we had some zoning problems with the building in Palo Alto. We were in a leased building on a commercially zoned site at 440 Page Mill Road, which was scheduled to change to residential zoning. So we knew we had to move and without Linus Pauling, or an endowment, we faced quite a challenge for the Institute.

I alluded to this earlier. The Board of Trustees, Linus Pauling Jr., myself, really grappled for a long time with these issues, thinking about different opportunities and options for relocation and ultimately decided to come to an academic institution because academic institutions, except for a few, tend to be permanent. We started to look at academic institutions that were doing work that was compatible with the Linus Pauling Institute of Science and Medicine's mission where the work in orthomolecular medicine would find a good home and be able to be carried out as a working tribute to Linus Pauling's ideas in orthomolecular medicine.

Very lucky for us, during those deliberations, we were the happy recipients of a number of large bequests. Those bequests allowed us to establish a small endowment—I shouldn't say endowment—but to have enough money to fund an endowment for the Director's chair here at the Linus Pauling Institute at Oregon State University, which at that time was matched by the state. So it was a functional three-million-dollar endowment, which allowed us to attract a very high-caliber Director and subsequently, with the help of the research office at Oregon State University, we were able to attract high-caliber faculty as well.

CP: Well, that's the end of my set of questions on Pauling. I guess I would just ask if there is anything else about Pauling's personality or personal characteristics or the relationship that you shared that you're interested in sharing at the end of this interview here.

SL: Well, I think I've said before that I found him to be very funny. He was very charming, very witty. He seemed to know everyone, know everything. He was just a joy to be around. And maybe I mentioned in our last interview that Zelek Herman and I had finally succeeded in producing some material in the superconductivity project that we all thought would exhibit a higher superconductive temperature. To see the expression of delight on Pauling's face when we showed him the material that we produced was extremely memorable. I have vivid memories of that because he was just as gleeful as a teenager on a first date when we showed him that material. He just had a real joy for scientific discovery. I think that was the thing that most motivated him in life.

CP: Thanks, Steve.

[0:54:22]