



## An Oral History of the Linus Pauling Institute, November 11, 2011

### **Title**

“Tough Times”

### **Date**

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### **Location**

Valley Library, Oregon State University.

### **Summary**

In interview 4, Lawson describes the ways in which the Linus Pauling Institute of Science and Medicine responded to the Mayo Clinic controversy. He also details the vitamin C and cancer research that was conducted by Ewan Cameron while at LPISM; the critical and public response to Pauling's 1986 book *How to Live Longer and Feel Better*; and research on vitamin C and AIDS that was conducted by Cameron and Raxit Jariwalla.

From there, Lawson shares his memories of the personal and professional characteristics of a former LPISM colleague, Matthias Rath; LPISM's response to a rezoning effort initiated by the city of Palo Alto; and the departures from LPISM of scientist Emile Zuckerkandl and administrator Rick Hicks.

Lawson likewise recalls the death of Ewan Cameron; the departure from LPISM of Matthias Rath and the litigation that subsequently ensued; the role assumed by Linus Pauling Jr. in administering LPISM; and important financial donations that LPISM received during a very difficult period in its history. The session concludes with Lawson's thoughts on the Institute's past relationship with the Elizabeth Arden company, and the impact on LPISM of Linus Pauling's death in 1994.

### **Interviewee**

Steve Lawson

### **Interviewer**

Chris Petersen

### **Website**

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

## Transcript

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

**Chris Petersen:** So in our last session we talked quite a bit about the Mayo Clinic controversy. And I don't know that we need to go over the details of that again, but I'm interested in knowing a little bit more about the response from within the Institute, especially if there was ever a plan or an idea about developing a research program specifically in response to what the Mayo Clinic had said.

**Steve Lawson:** I don't think that there was a plan to develop a research project in response to the Mayo Clinic studies. I think that Pauling and Cameron and anyone else who was sympathetic to their position realized that the studies purportedly done to replicate Cameron's work were very flawed. And as I mentioned last time, Cameron and Pauling were angry that the *New England Journal of Medicine*, for instance, did not publish critical letters in a timely fashion. Typically, medical journals will publish critical letters when the original clinical trial reported in that journal was still fresh in people's minds. And I think Pauling actually invoked his lawyer to contact Arnold Relman of the *New England Journal of Medicine*, to find out what had happened to the letters that had been submitted, because the etiquette is that when you submit a paper or a letter to a journal for consideration for publication, you can't submit it elsewhere. So this kind of stymied the ability of Cameron and Pauling to air their grievances about the Mayo Clinic studies in print, in a journal, because they had already submitted really cogent responses, and Relman seemed to be sitting on these for quite a long time. I think finally they published something, but it was nearly a year after the original study had been published. Letters are read, but they certainly don't attract the kind of media interest that the original study attracted.

I think Cameron and Pauling felt that they needed to continue showing that vitamin C had value because they were both convinced by this time that vitamin C had value for many cancer patients. And Pauling was also becoming - a little after the second Mayo Clinic trial, he had heard from Abram Hoffer, the Canadian psychiatrist who had stimulated his interest in B vitamins and schizophrenia back in the early 1960s or mid-1960s. Hoffer had been treating cancer patients with high-dose vitamin C given orally, as well as an expanded treatment regimen that included B vitamins, fatty acids, zinc, and some other micronutrients. And these cancer patients seemed to be doing quite well, so Pauling encouraged Hoffer to collect that data with the intent of analyzing and then publishing it. And they did that, they published two papers in the *Journal of Orthomolecular Medicine* on Hoffer's observations. I think this was not a response to the Mayo Clinic trials per se, but a continuation of Pauling's deep interest in vitamin C and cancer.

Hoffer was a M.D. PhD, a psychiatrist by training in profession. You might wonder why he was treating cancer patients. Well, it turns out that many cancer patients, especially when given diagnosis of terminal cancer, develop psychological problems; depression, anxiety, what not. And they were being referred to Hoffer by oncologists in Vancouver and Victoria and British Columbia to treat these mental manifestations that accompanied the bad news about the cancer diagnosis. So Hoffer began treating these people for mental health issues and kind of serendipitously observed that they were living much longer in many cases than they were expected to live, and he brought those observations to Pauling, who encouraged him to collect the data. Cameron and Pauling continued to be very interested in vitamin C and cancer. Cameron, I think, was a bit discouraged by the political implications of this whole imbroglio at the Mayo Clinic. I think he became very frustrated and discouraged, and his attention was also turned elsewhere. He was very interested in fatty acids and cancer, and had set up a project at the Institute to study the effect of fats in a tumor model.

[0:05:00]

He was also becoming more and more interested in AIDS, and the potential value of high-dose vitamin C in treating AIDS patients. As you know, he and Pauling worked on a book that absorbed quite a lot of Cameron's time and attention in those last years, which was never published.

**CP:** Can you talk a little more about the fatty acids line of research?

**SL:** Cameron had known of David Horrobin's work in England, and Horrobin had written a book on omega-3 fatty acids. He was a researcher and, I believe, also a clinician who was very interested in the orthomolecular approach to health using fatty acids and other micronutrients. But he was particularly interested in fatty acids and brain function. Horrobin, when I saw him at some point in the 1980s, early 1990s, had reported on a preliminary clinical trial, done in

England with, I believe, schizophrenics who were given fatty acid supplementation, and MRIs had been done of their brains. They found that the ventricular spaces shrunk as a result of ingestion of these fatty acids over a period of time, which also correlated with some symptomatic improvement. Horrobin and Cameron were becoming very interested in the psychiatric application of fatty acids. And then from rodent studies, it's been known for a long time that omega-6 fatty acids, polyunsaturated fatty acids, may augment tumor development in some animal models and there may be a protective effect by omega-3 fats. So I think Cameron was interested in teasing apart those effects of different types of fatty acids in a mouse model.

**CP:** That's an experiment that was set up at the Institute?

**SL:** Yes.

**CP:** In 1986 *How to Live Longer and Feel Better* was published. Is this something that the LPISM staff was a part of at all? Or was it entirely a Pauling project to himself?

**SL:** Dorothy Munro helped him with that because, of course, she was his secretary and she worked a lot on that book. And I think he had help perhaps from Fred Stitt, maybe some other people at the Institute. But it wasn't an Institute-wide effort; it was done by Linus Pauling. I think Zelek Herman probably helped him in getting references and things of that nature, too, but as far as I know, Pauling himself produced the draft, and I believe he shared that probably with some people, including Fred Stitt, for proofreading and suggestions and so forth, but it was largely his project. And he directed the royalties from that book to the Linus Pauling Institute of Science and Medicine because he undertook the book as an employee of the Linus Pauling Institute. It wasn't something he was doing on his own for financial gain; he really wanted that money to come to the Institute to support research.

**CP:** What sort of reaction did the Institute receive from people who read the book?

**SL:** Well there seemed to be a lot of interest in the book. The original hardcover was published by W.H. Freeman and that wasn't around long. Then there was a paperback also published by Freeman that was a trade paperback. It was larger than a regular pocket book paperback, and that seemed to sell very well. Shortly after the Freeman editions, the mass market paperback rights were auctioned and Avon was the successful bidder. And I think it was a best seller for Avon as well and went through many, many printings. So people really responded to the book. I think it was on the *New York Times* Best Seller list for a while. I'm not sure what the rank was or for how long, but it sold very well. I don't think that the main impact was revenue for the Institute, but more of an awareness of Pauling's ideas in orthomolecular medicine and the fact that a lot of this research was going on at the Linus Pauling Institute. So it definitely directed attention to the Institute. Of course, that was before the Internet, so people reading the book and wanting to learn more about the possible impact of vitamin C and other vitamins and nutritionally essential minerals on cognitive function or health, prevention and treatment of cardiovascular disease, and cancer, would typically call or write to the Institute. And that resulted in a huge [0:10:00] enterprise because we didn't have very many staff to deal with all these letters that would come in. Ewan Cameron, who had been a Non-Resident Fellow of the Institute I think moved to California to take a position as Medical Director maybe around 1984, 1985, sometime in that mid-1980s period. As I said earlier, a lot of his effort was directed at responding to these letters and phone calls from people with medical problems who wanted to know about the putative therapeutic value of micronutrients, especially vitamin C. Fred Stitt also helped in that area quite a lot.

Fred had joined the Institute as a volunteer in the 1980s - he had known Pauling at Caltech and was actually thanked in Pauling's book on the chemical bond, *The Nature of the Chemical Bond*. So he and Pauling had had a long relationship. Fred was retired and had an office at the Institute. Fred became the newsletter editor and also helped develop some standardized information packets that the Institute could send out to people who had these questions. Because at that point the volume of mail and requests was so large that oftentimes these things couldn't be handled on a personal basis because it was just overwhelming. Some of the questions were very peculiar, idiosyncratic, and required a little bit of work to answer, a little research to find out the appropriate response. Some other questions were a little more generic, and these information packets were designed to answer those questions. And Fred was heavily involved in that, putting together these different generic packets that could go out to people.

**CP:** So he vetted that mail for the most part?

**SL:** Fred and Ewan Cameron and Dorothy Munro. I think Carol Bastelier had been doing this at the Sand Hill Road facility, but I don't think that she was still a part of the Institute in the 1980s when we moved to the Page Mill Road facility. Actually, she had identified quite a few issues that I think that were very important for people to think about, especially with respect to liability, trying not to provide medical advice but being compassionate and helpful to people, but also not trying to tell them what to do medically because of course we couldn't do anything like that. And Carol struggled with a lot of those issues and sort of laid the groundwork for a successful strategy for answering these kinds of questions.

**CP:** It's interesting that Cameron was so closely involved considering his pretty heavy research agenda too.

**SL:** Yeah, well, I think he enjoyed it, you know, he definitely was interested in research but he really was a patient-oriented doctor, and he would have been a terrific doctor to have for personal care because he was very compassionate. He was a good listener, and he was not at all afflicted by the kind of arrogant or rushed attitude you find in many contemporary physicians. The insurance reimbursement for physicians can dictate how medical practice is actually done in this country and doctors aren't allowed to spend much time with patients. Cameron was not like that at all, he was much more old school and really liked to listen to people and their problems and think about what the appropriate treatment or response would be. So I think that he enjoyed responding to the public, who brought these health questions or concerns to the Institute.

**CP:** So, in 1987, we mentioned this a little bit already, but the vitamin C and AIDS research starts to pick up a little bit. I'm wondering if you could describe what that research was.

**SL:** Yeah, to the best of my recollection, Raxit Jariwalla had come to the Institute from Johns Hopkins and I believe he knew John Leavitt at Johns Hopkins. John Leavitt had joined the Institute to direct our molecular carcinogenesis program which, again, didn't really have anything to do with orthomolecular medicine. It was more looking at molecular carcinogenesis; how genes and certain proteins can be involved in the development of cancer. He was particularly interested in mutant beta actin, which seemed to be a reliable marker for many types of human cancer, and used protein profiling extensively to do quantitative and qualitative studies of these gene products that correlated [0:15:00] with cancer.

Raxit was a virologist, and he set up the laboratory for viral carcinogenesis because his initial interest was in cytomegaloviral carcinogenesis and carcinogenesis due to herpes virus type 2 infection. I worked with him to some degree in that program; we were looking at small fragments of viral DNA that were sufficient to cause transformation of rat cells. We grew rat 2 cells, which were quasi-normal cells, in culture and then transfected them with these small fragments to see if there were any observable changes. And we found the EJ and EM fragments caused the rat 2 cells to become tumor forming cells when injected into animals.

We also did a lot of protein profiling. I had expertise in protein profiling and Raxit really didn't, so that's what I brought to his project. And together we also worked on a program that was supported by a philanthropist from Long Island, New York, on phytic acid, which is found in seeds. It's an antioxidant that protects seeds from oxidation because seeds need to store their genetic material very carefully to be free from oxidative damage while they are waiting to germinate. So phytic acid plays a very important role in protecting the seed genome, and this fellow in New York had decided that it may have some anticancer effects. We tested the anticancer effect of phytic acid in Syrian hamster embryo cells and a number of tumor cell lines. I was doing a lot of that work, the cell culture work, and that generated a few papers, including papers that showed that phytic acid seemed to affect cholesterol levels in animals and triglyceride levels in particular, and also could inhibit metal-induced carcinogenesis in animals. We had a patent awarded for that work.

Raxit was well versed in virology and carcinogenesis. And, of course, in the 1980s, being close to San Francisco, everyone was well aware of this new syndrome that was primarily affecting male homosexuals, although there seemed to be, I think at that time, some incidence in hemophiliacs, too, who were undergoing blood transfusions. But the etiologic agent responsible for this ARC—AIDS Related Complex—a syndrome that preceded overt AIDS wasn't known. It wasn't known that HIV was responsible for AIDS, so there was a lot of concern about AIDS, ARC and how infectious this disease might be. And there was a lot of emphasis on things like drug use and sex habits by male homosexuals that may contribute to immunodeficiency. People weren't sure if it was behavior or some kind of pathogen involved. Over time, of course, in the 1980s it became clear from Montagnier's work in France and also Gallo's work in the United States that, 'A ha!', there is actually an infectious agent here, a virus that's probably responsible for causing AIDS. And then cells were

available that were infected with this virus, HIV, and Raxit did a lot of work with Steve Harakeh, who was from Lebanon, and with Linus Pauling looking at the effect of vitamin C added to the culture medium in which T-lymphocytes infected with HIV were grown. They wanted to find out whether vitamin C would have any effect on the viability of the virus or replication of the virus. They found that it really affected viral replication very potently, dramatically inhibited viral replication. That was assayed by amounts of reverse transcriptase and also the formation of syncytia, which are abnormal [0:20:00] cells that are pathologic correlates of T-lymphocyte HIV infection.

That led to a paper that was published in PNAS with three of them as authors. I think Pauling was a senior author and Jariwalla was perhaps the first author. And that paper presented the results of the cell culture experiments. There wasn't any clinical data, but they suggested that this might provide a promising approach for the treatment of AIDS. By that time, AZT had become available, too, for treatment of AIDS patients. AZT is pretty effective at inhibiting the de novo infection of uninfected cells. So you give AZT to patients and you preserve those uninfected cells from becoming infected with the virus. Vitamin C prevents viral replication. The idea was that if you give AZT and vitamin C, then you're inhibiting viral replication and you're protecting cells from becoming infected. This might, if it didn't eradicate the virus and kill the cells that were infected with the virus, at least it could cause AIDS to become a manageable disease, perhaps.

**CP:** At what point did Cameron get involved?

**SL:** Well, I think Cameron got involved because obviously there are medical issues involved here and Jariwalla had a Ph D., but didn't have a medical degree. The only other person at the Institute with a medical degree was Wolcott Dunham. Wolcott was doing some work with guinea pigs and neuroleptism at the time, but he was pretty advanced in age at that time, and Cameron was still very vigorous and of course very interested in a lot of these issues. And I think through conversations with Jariwalla and Pauling, Cameron just naturally gravitated to that, especially once it had been demonstrated that vitamin C might have an important role to play there.

**CP:** So what was the reaction to this research, both in the scientific community and in the public?

**SL:** Well, I can't really say that I know what the reaction was in the scientific community. I think by then maybe many people thought that Linus Pauling was just going to publish great stuff about vitamin C no matter what and that, you know, we'd never find anything coming from the Pauling Institute that had anything to do with a negative effect of vitamin C. It just so happens that all these experiments were positive. So vitamin C's not snake oil, but it does have a lot of very important and interesting biochemical and physiological functions in the body in protecting against and treating different diseases. It's not a panacea, but it's a really remarkable substance, and it's easy to see why Linus Pauling got so interested in it early on. So I can't say what the professional reaction was.

I know that there were doctors who treated AIDS patients who were very interested in our results. In particular there were several physicians from San Francisco General at the AIDS ward there who came down to the Institute and gave seminars, and who were in contact with Pauling and Jariwalla about this. And there was a lot of anecdotal evidence as well from San Francisco and New York and other major urban centers that had a lot of AIDS cases where some of the patients who were self-medicating with high-dose oral vitamin C seemed to be doing a little bit better than others who were not taking high-dose vitamin C. But there weren't any controlled clinical studies at that time. I don't think to date there have been any controlled clinical trials on vitamin C and HIV infection or AIDS. And of course the RCTs are most persuasive when it comes to adopting new strategies in medicine. So absent RCTs I think probably a lot of physicians just ignored it, you know, 'it's just in the realm of anecdotal evidence, it really doesn't mean anything, it's just coincidence. Yeah, the vitamin C might have some value but it's such a pedestrian substance and I'm sure that there are more promising biotherapies that we could get involved in.'

You can't completely disregard the political or financial elements in that whole debate, either, because a lot of physicians who are charged with running clinical trials to evaluate drugs stand to benefit financially from the revenue stream should that drug turn out to be effective. So a lot of people have tremendous incentive to study drug therapy and there's just not the same type of incentive with vitamin C. But public reaction, I think, varied. Of course people who were afflicted with AIDS or had friends who were afflicted with AIDS were [0:25:00] quite interested and very appreciative of the Institute's work. Other people, who felt, for whatever moral reason, that AIDS was a behavioral disease and we shouldn't really waste money studying these problems that are due to behavior. If people would just change their behavior, we wouldn't have to worry about this... So some of those people withdrew support. And again, as we saw after the negative

Mayo Clinic studies on vitamin C and cancer, there was a lapse in some financial response to our direct mail solicitation campaign. But, of course, that never influenced the work that we undertook. We undertook work that was fundable, either from grants or contracts, or from unrestricted funds that were available to us from bequests or from the direct mail program, but I can't ever recall any discussion that suggested that any line of work at the Institute should be stopped because it was having a negative effect on finances. I think that kind of emulates Pauling's courageous attribute in not backing down if he felt he was right, and I think the Institute adopted that same strategy. It's important research to do, and we're not going to back down just because there's a loss of revenue.

**CP:** You mentioned that Cameron and Pauling wrote a book about this subject, but it was never published. Do you know why that is? Did they shop it around?

**SL:** Well, my feeling is that they wrote the book without having talked to any publisher in advance to find out, first of all, if there was any interest in the book. So they had no publishing contract. And secondly, I think the book was finished or nearly finished when Cameron became ill, and I think his illness probably led him to pay less attention to it or be less excited about it. But I infer that, I don't know that for sure.

**CP:** We talked earlier about the vitamin C and cancer research and the perspective from within the Institute, the staff being generally on board, behind the thinking. Was the case the same with the vitamin C and AIDS work as well?

**SL:** I think so. I mean I never talked to anybody at the Institute who expressed any scorn or negative feelings about that work. I mean, I think everybody - the Institute was relatively small and fairly collegial. There were certain tensions and conflicts that developed over time, of course, time to time, as in any organization, but I think people were very respectful of one another when it came to science like that.

**CP:** In 1989 Matthias Rath arrived at the Institute and I'm wondering if you could share you're first impressions of Rath?

**SL:** My first impressions were that he seemed like a very knowledgeable, earnest fellow. He clearly had developed some exciting ideas with Linus Pauling, and it was great to see Linus Pauling enthused about this lipoprotein(a) and vitamin C story. So my initial reactions were quite favorable. It wasn't until I became aware of some other activities that seemed to be going on outside of the purview of the Institute-the Linus Pauling Heart Foundation and some other things that seemed to be a little obscure and not really conducted in a transparent way, that people began to question motivation. 'Why are these other organizations being set up? What are they designed to do? Are they designed to compete with the Linus Pauling Institute of Science and Medicine? Is it complementary activity?'

Because a lot of that kind of information wasn't forthcoming, when you have kind of that black box it generates lots of rumors and that's unfortunate. And I think that there was certainly some of that going around at the time. Linus Pauling also had been diagnosed with prostate cancer and Rath was providing some medical services for Pauling himself. I think everybody appreciated that, that here was somebody at the Institute that Pauling, you know, was really interested in from a scientific standpoint and was also looking out for Pauling's physical welfare. So I think initially everybody was quite enthused about this collaboration.

**CP:** How would you characterize his personality, Rath's?

[0:30:00]

He didn't really seem to have a terribly great sense of humor. He seemed to be very, I won't say solemn, but very serious minded. Polite, seemed to treat people fairly.

**CP:** Did he socialize with the rest of the staff?

**SL:** There was some socializing. Throughout the history of the Institute different employees and groups of people would go out for dinners or lunch or go to bars on weekends or whatever, and there was some of that kind of activity as well.

**CP:** What was his research program that Pauling was excited about?

**SL:** Well, Pauling of course had been long interested in vitamin C and cardiovascular disease, and he had written about this in his book, *How to Live Longer and Feel Better*. He'd also written about it in articles for *Executive Health*, which was a newsletter. He'd also written about it for the Linus Pauling Institute of Science and Medicine newsletters in the 1970s and 1980s, primarily in the 1980s. So he had a long abiding interest in the possible value of vitamin C and preventing or treating heart disease. Rath had some specific interests and data on the potential relationship between vitamin C and lipoprotein(a), which is a major constituent of atherosclerotic plaque and also a risk factor for heart disease.

The problem with lipoprotein(a) is that its levels in the blood don't seem to be amenable to modification by dietary or even drug strategy. They're genetically determined and they're very difficult to modulate. So there was a lot of skepticism as to whether vitamin C could actually affect lipoprotein(a) levels in blood. Rath had, apparently, some small set of clinical data that showed that vitamin C might have value in decreasing lipoprotein(a) levels, and I think that was very interesting to Pauling. And then together they developed a hypothesis that lipoprotein(a) may serve as a surrogate for vitamin C in animals, including people, that do not synthesize vitamin C. There was some evidence that lipoprotein(a) levels in animals and people not synthesizing vitamin C were high, and lipoprotein(a) levels seemed to be low in the blood of those animals that were synthesizing vitamin C, and that led them to think about, well what is lipoprotein(a) doing that vitamin C might otherwise do in the body? They believed that lipoprotein(a) might be synthesized by the body to contend with and repair fissures that develop in the vasculature due to oxidative damage or sheer stress and other things of that nature. So it might have a valuable role in repairing lesions, but because it's a very sticky molecule it could end up developing into atherosclerotic plaque. And from the original hypothesis there were a number of corollaries that developed, including the potential role of lysine in helping to either decrease plaque or remove lipoprotein(a) from the blood.

Pauling published in the *Journal of Orthomolecular Medicine* in the early 1990s, three case reports of people who had suffered from severe, exercise-induced angina, who had had very serious cardiovascular disease, bypass, and other surgical interventions and still had angina. And they read Pauling's paper's with Rath and decided to try adding lysine to their regimen. In some cases these people had already been taking fairly high doses of vitamin C and then added lysine. They weren't controlled studies so these were reported as anecdotes. The amount of lysine and vitamin C was quite variable, but it was on the order of 3-6 grams per day of each and they reported fairly rapid relief from angina. So Pauling speculated that perhaps because the relief was so rapid that lysine might even bind to lipoprotein(a) in plaque and help remove it, and that was possibly explaining why these people were not suffering from angina because the thickness of the plaque was decreasing. Well, it turns out that subsequent research has revealed that vitamin C has very important effects in vasodilation and improving blood flow in people with atherosclerotic plaque through its effects on tetrahydrobiopterin, which is involved in synthesis of nitric oxide, which improves blood flow. But the role of lysine in this process is still obscure, and I don't think, other than Pauling's [0:35:00] hypothesis, I don't think that there's been much speculation as to why lysine in particular might have had this benefit, because, as I mentioned, some of the people reported in these case studies had already been taking very high-dose vitamin C without presumably any benefit, yet when they added lysine there seemed to be a fairly dramatic effect.

So that, I thought, was an interesting area and probably a rich area for research, although as far as I know no one's really looked into it. Those were some of the ideas that Pauling and Rath were developing in that period, I think, that were exciting to everybody. And as I came to understand, the Linus Pauling Heart Foundation specifically set up to raise money to support clinical trials on some of these potential therapies, including proline, lysine, vitamin C, niacin, and so forth.

**CP:** We'll talk more about Rath here in a second. There's a couple things that happened sort of chronologically that I wanted to touch on first. In 1990 there was a re-zoning effort in Palo Alto at which time the city gave the Institute three years to move basically.

**SL:** Right.

**CP:** What was the reaction to that and how did you start planning for that?

**SL:** Well, that was very interesting. That was about the same time that Emile Zuckerkandl and Rick Hicks retired from the Linus Pauling Institute of Science and Medicine and set up the Institute for Molecular Medical Sciences. We leased them space within the facility at 440 Page Mill Road. That was a very contentious time. Emile still had strong interests in preserving a research program, yet didn't have a lot of funding available to him. So Pauling wanted us to find out whether

or not – us meaning Stephen Maddox, myself, and Zeke Herman – to find out whether this was practical and feasible to sublease space – and Linus Pauling Jr. was involved in that as well – to sublease space to IMMS within the building. How the building might be partitioned and how equipment might be available to IMMS or how they could share equipment and so on. That was kind of a contentious time at the Institute but resulted in a sublease, because we found a way to make everything work to everyone's satisfaction.

At about that time I had become Executive Officer of the Institute and was working very closely with Linus Pauling Jr. because Linus Pauling Sr. was undergoing treatment for cancer and still had problems in structural chemistry and theoretical chemistry and orthomolecular medicine that he really wanted to devote his time to. So Linus Pauling Jr. and the board decided to free his father from administrative responsibilities and Linus Pauling Jr. would step in as President or Director of the Institute and I would assist him. Initially I was asked by Linus Pauling to assist him, and then later, when it became clear that he wasn't really interested in exercising any administrative responsibility, Linus Pauling Jr. stepped in. And then I worked very closely with Linus Pauling Jr. That was my first understanding of the fact that the Institute had this zoning problem. Apparently it had been known for a long time, but nobody had really done much about it. Linus Pauling Jr. and I and the board realized that absent an endowment and a lot of money, it was really going to be difficult for us to sustain the Institute as a viable, biomedical research organization if we had to move, because we had a very favorable leasing arrangement with our landlords - the cost of the lease went up only adjusted by the CPI, the consumer price index. So we were paying, I think, 50 or 55 cents a square foot for a 20,000-plus square foot building in Palo Alto, and to move we would have been looking at probably 5, 6, 7, 8, 10, 12 dollars a square foot. So the prospect of moving was not very satisfying because it meant that we would be spending much more money on just simply renting the facility and not have much money available to pay staff, recruit, or do research. So that was not an appealing option at all. Yet I was suddenly aware that we had three years and that we really had to leave because the master plan in Palo Alto called for changing the mix of commercial and residential properties because they were becoming very concerned that there weren't enough residential units for people who worked in Palo Alto.

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I had long discussions with city planners, city staff, the planning committee for Palo Alto and some of the council members. My opinion at the time was, 'well, that's fine, you can build condominiums or apartment buildings here, but there's no way you can ensure that the people who rent or buy these condos or apartments are going to work in Palo Alto. People might move here and work in Sunnyvale or San Francisco or Hayward, the East Bay or the South Bay, and you are just going to increase traffic, and it's not necessarily the outcome you're striving for with this zoning change.' But be that as it may, we really had to face the inevitable, which was the zoning was going to change. So I decided that it was imperative to delay that until we could really come up with a proper solution for the Institute's future. And taking a page out of Linus Pauling and Ava Helen's book, we set up folding tables around town, outside grocery stores and cafes, and had petitions. I can't remember the exact wording of the petition but it was something to the effect—please sign the petition if you'd like the Institute to stay at its location in Palo Alto, if you feel that we're doing good work, and so on. We had quite a few names on those petitions and they were eventually delivered to the city council. I made a presentation to the city council, Linus Pauling made a presentation to the city council, and eventually we squeaked through with city council approval to delay that zoning change for another three years because they recognized that we were doing valuable work and that we really needed more time to chart a proper course for the future. And as one of the Palo Alto City Council members mentioned, she didn't want to read in the *New York Times* that the city of Palo Alto had kicked the Linus Pauling Institute out of town.

**CP:** That's interesting; I had never heard that before.

**SL:** Yeah, so that was a very successful campaign. I should mention that during these city council meeting appearances, you know I felt, 'well, it's good and fine for me to go talk to the city council' and I'd met all of the city council members individually and pleaded our case to them, and they seemed to be favorably disposed to the Institute, although some of them were wavering somewhat. I figured that I could make a pretty compelling argument in front of the city council during public testimony, but I thought it would really cinch it if Linus Pauling himself could appear. And I asked him if he would be willing to do that and he said yes. So he went with me to the city council meeting, and it just so happened that that meeting of the city council, where they were scheduled to vote on this issue, was the first appearance by Gerhard Casper, who was the new president of Stanford University. There was a tradition that the President of the university



would go and make, I think on an annual basis, a State of the University Address to the City Council, because Stanford is adjacent to the city of Palo Alto and they have a lot of mutual interests and conflicts. The city is always interested in finding out what Stanford's doing and Stanford's always interested in finding out what the city is planning.

So Gerhard Casper was there to spend twenty minutes or so giving his address to the city council. And as Pauling walked in, and the chambers were full of people who were waiting to give testimony, Gerhard Casper recognized Pauling and ran over to him and the two of them exchanged pleasantries—they had never met before. Gerhard Casper, who I believe was scheduled before me or Pauling on the agenda, spent quite a lot of his allotted time talking about what a wonderful person Linus Pauling was. Talked about how 'at Stanford there are many Nobel Prize winners, there are so many that they really don't turn heads anymore, except for Linus Pauling.' Because Linus Pauling was such an outstanding scholar - such an outstanding peace activist and scientist - that when Pauling was there, heads did turn. And I thought it was quite nice of Casper to talk about Pauling in those glowing terms. Casper is a lawyer, so he didn't really have, professionally, much exposure to Linus Pauling's work in science, but nevertheless he recognized that Pauling was a really eminent scientist and really wanted to pay tribute to him. That kind of cinched the case for us I think. Also, there was a fellow in the audience that stood up and introduced himself by name and said that Pauling's work was very important and the Institute's work [0:45:00] was very important and he really wanted to encourage the city council to delay this zoning change.

At the end of the meeting, I was with Pauling in the underground garage waiting for the car to come around and Pauling mentioned to me that he remembered that fellow who gave public testimony. He was a student of his at Caltech. He remembered an incident with him, and said that when he was teaching - he had the Socratic method of teaching where he would pick out people to answer questions because the classes were apparently small enough he knew who all of the students were and knew their names. So during one of his chemistry lectures he had a question and he picked this fellow out to answer the question. And the fellow proceeded to give an answer that was really not the right answer, but I guess he felt compelled to say something. So Pauling just nodded and thanked him for the response and at the end of the class Pauling went up to him and said, 'I'd like to talk with you for a moment.' Pauling said, you know, 'it's perfectly okay when you don't know the answer to a question to admit that and say you don't know the answer. Actually, it's far better than confabulating.' I thought it was rather amazing that Pauling remembered that particular incident and this fellow who I'm sure he hadn't thought about or seen for decades.

**CP:** That is interesting. Backtracking real quick, I was interested to hear that when Zuckerkandl left that Hicks went with him.

**SL:** Yeah, Zuckerkandl and Hicks were good friends and allies and they'd worked very, very closely together and had sacrificed a lot for the Institute. Emile had loaned the Institute money, gone without salary or decreased salary, and Rick Hicks had also been very self-sacrificing, trying to help the Institute progress over the years. I think Rick felt, when Emile's contract was not renewed, that he would leave as well. Both of them left, but Hicks was then asked to join the Board of Trustees of the Linus Pauling Institute of Science and Medicine, which I thought was a terrific, collegial, and important move for the Board of Trustees to make, because Hicks had a lot of insight into fund-raising for the Institute and just a lot of knowledge and insight about the Institute in general. And I thought it would be very important for him to be associated in a continued way with the Institute. I thought that was a very strategic move to ask Rick to become part of the board.

And Emile, of course, had his hands full with trying to get his new Institute, the Institute of Molecular Medical Sciences, off the ground. Emile had actually wanted me as well as a number of other people - Jim Fleming and Greg Spicer, Teni Boulikas and other people who were doing more molecular biological work not really directly allied with orthomolecular medicine. For instance, Greg Spicer was doing work in molecular evolution, Jim Fleming was doing work on the molecular basis of aging, Teni Boulikas was working on histones and DNA repair, and a lot of those programs didn't really fit into the orthomolecular scope of the Institute. When the Institute was reorganized and Hicks and Zuckerkandl left, the board decided to refocus limited resources on orthomolecular medicine, so they wanted to have a much more narrow focus and kind of pare away some of those programs that were not closely allied with that mission because we just could not afford to do everything. Those programs that were being pared away, Emile hoped to collect in this new organization, the Institute of Molecular Medical Sciences. And he did, to some extent, that pretty successfully.

**CP:** So this divergence in the research agendas was the primary reason for Zuckerkandl's departure from the Institute?

**SL:** Yeah, my understanding was that the board was very concerned about finances. The board had become increasingly concerned over the late 1980s about the cost of all the programs at the Institute and the variable fund-raising success. The Sasakawa donation, \$500,000 a year for ten years, was coming to an end and couldn't be renewed due to their charter stipulations. So it was difficult to find money to support some of this work that was not grant funded, and a lot of it was not grant funded.

Jerzy Jurka had a nice grant from the Department of Energy that was funding his work on alu sequences, and non-conserved and conserved DNA and so forth. But Emile's program that I was involved in, looking at metastatic cancer, Greg Spicer's work, [0:50:00] some of the other work, was really not funded except through unrestricted funds to the Institute. So the board decided to ask Emile to shrink the Institute so that the expenses would be more aligned with the actual revenue, instead of continuing to grow the Institute or allowing it to continue at, what they considered, an infeasible size. And I think Emile didn't want to do that, so rather than do something that he didn't want to do, he resigned and with him went Rick Hicks.

**CP:** We've talked about Cameron's illness and in 1991 he died. I'm wondering if he treated himself at all with some of the techniques that he'd been advocating for other people?

**SL:** Yeah, that's very interesting. I had asked Cameron about his own habits with vitamin C supplementation much earlier before he became sick and he said that he was taking a little vitamin C but not taking megadoses because he thought that, you know, should he ever get ill that he wanted to reserve those megadoses for therapeutic value. I think he probably took some vitamin C, but as far as I know, he never took intravenous vitamin C. And again, the differential response to people getting intravenous vitamin C or oral vitamin C was not well characterized at that time. It was clear that some of the patients getting IV vitamin C did very well. But also, if you go back and look at the historical record, Cameron's patient pool, some of those early patients that had complete necrosis of tumors got only oral vitamin C and the tumor necrosis was a consequence, temporally, of that high-dose oral vitamin C. I think Cameron and others believed that oral vitamin C had anti-cancer effects, although much later, of course, these transport molecules for vitamin C were discovered. And this was after Cameron and Pauling had both died, these discoveries were made. Now we have a better understanding of the limitations of achieving high concentrations of vitamin C in the blood when you take it only orally, but in those days that wasn't well known.

Cameron may have felt, and I never talked to him about this, but he may have felt that since some of his patients did quite well on oral vitamin C that maybe intravenous vitamin C was not important for him. At the end of his illness, he became less willing to see friends and colleagues. There were many occasions when Zelek Herman and Zelek's girlfriend and I would go to Connie Cameron's house in Redwood City, and Ewan was not well enough to see visitors, so we would sit and chat with Connie Cameron and offer solace and ask her to pass on our good wishes to Ewan. But he clearly was not feeling well enough to see visitors.

**CP:** What was the impact of his death on the Institute?

**SL:** Well, Ewan was such a charismatic and wonderful man that it really had a big impact on people personally. I recall his memorial service in Redwood City. Zelek Herman's girlfriend played bagpipes, and it was just an incredibly emotional event. People were really grieving about Cameron's death. And, of course, Pauling was there and Rath was there as well. Everybody felt terrible at Cameron's death.

**CP:** In 1992 Matthias Rath was appointed Vice President for Financial Affairs at the Institute, how did this come about?

**SL:** That's a good question. That was 1992? This was after Cameron's death, and Cameron was probably Pauling's closest collaborator and Zelek Herman, of course. When Rath arrived with these ideas about cardiovascular disease and lipoprotein and vitamin C, he and Pauling started working very closely on this collaboration. I think that sort of took center stage in Pauling's life. Although he remained committed to some of the problems that he was working on with Zelek Herman, I think his bond with Rath was getting stronger and stronger, and I think Pauling may have unilaterally made that decision to give that appointment to Rath because he had no reason not to trust him. And clearly, I think, Pauling and Rath perceived perhaps a new focus for research in the Institute, [0:55:00] which would be vitamin C and heart disease, especially now that there was this reinvigoration of the focus on orthomolecular medicine. Perhaps

it seemed logical that Rath would be involved there because they had also set up the Heart Foundation and other organizations to try and raise money specifically for clinical trials.

**CP:** So how did things start to unravel with him?

**SL:** Well, I think Rath did a number of things that upset Pauling, caused some consternation, that were kind of - it was kind of a political strategy in a scientific realm, which sometimes can work and sometimes can backfire. I remember there was one meeting, I believe in Texas, I can't remember the specific society, but it was cardiovascular disease researchers and physicians, and Rath had xeroxed something and put it on every seat in the auditorium for everybody to read. Rath was also developing these ideas about, you know, big pharma, trying to suppress or inhibit work on orthomolecular medicine. I think a lot of people share those opinions to some degree. Rath just seemed to be using more of a political strategy to advance the research agenda. And some of those things were done, I think Pauling felt, and others felt, maybe not in an entirely appropriate manner.

I remember seeing one press release that Rath had written, and Pauling had written all over it that it was really unwise and uncalled for, had nothing new to announce. I think Linus Pauling was starting to worry a little bit about the trust that he placed in Rath. At some point, when that executive Vice President position was - I think Rath resigned or that position was eliminated - Stephen Maddox became Vice President for Finance or Fundraising or whatever the particular title was. He succeeded Rick Hicks after an interlude there with Matthias Rath being in that position for a while. And Linus Pauling Jr. and I became increasingly concerned about Rath and his activities and we also became aware of the fact that Rath had not signed the patent agreement. It was incumbent upon every employee, as an obligation of employment, to sign a patent agreement. And the terms of the patent agreement were actually quite generous.

When people join corporations as employees they typically surrender all their rights to the company, and many people can invent or discover wonderful things for companies and not see a dime. At academic institutions it's handled a little bit differently and in our organization, which was modeled after an academic institution, it was fairly generous to inventors. The idea was that if you discover something that may be patentable when you're employed at the Institute, you can bring that to the Institute's administration and - we had a patent committee at the time - a decision can be made as to whether the Institute would like to pursue this - you know, initiate the patent application process. Or, if the Institute did not want to pursue it, then they would surrender it to you and you could pursue it at your own expense. Then you would have the patent and you could go ahead and license it, and if there was a revenue stream it would be solely yours. So the patent agreement stipulated, should the Institute proceed to try to gain a patent for an invention or discovery, should it be licensed, that the revenue would be split between the inventor and the Institute in specified percentages. And everybody had signed that - Linus Pauling had signed it himself, and Rath refused to sign it. I think initially he said he would like to think about it, and I think the choice was given to him. Well, you know, you're really obligated as an employee to sign this, and if you don't want to sign it, then perhaps you should think about resigning. So he asked for some time to think about that. A day or two later he said that he wanted to resign, and he did.

**CP:** What was the source of the litigation that he filed against the Institute? How did that arise?

**SL:** Well, he resigned. I had my hands full with trying to solve a lot of the financial and personnel and research problems at the Institute [1:00:00] and think about where the Institute should go in the future and Linus Pauling's health, and all these other myriad problems that we were facing. I really didn't keep up with what Rath was doing because he'd resigned from the Institute, he was gone. I didn't really honestly care about what he was doing. And it wasn't until maybe a year or so later that we were served with a law suit. He had set up a company called Health Now Incorporated, and this company was suing Linus Pauling and the Linus Pauling Institute of Science and Medicine for interference with its business activities. And the gist of the suit was that Rath apparently had been trying to forge business relationships with supplement companies, and he was bringing to them these ideas about vitamin C and heart disease and lysine and so forth presumably to formulate new products or whatever. And according to the suit he had met with discouragement from some of these company representatives because they didn't know who he was and they would point to news stories about Linus Pauling and vitamin C and cardiovascular disease or heart health. In many of those stories Rath's name was omitted, not because Pauling failed to give him credit, because Pauling, I think, was very fair and egalitarian about that, and would always mention Rath when he talked to journalists or the media about these ideas on lipoprotein(a) and vitamin C, on heart disease and atherosclerosis. But because Rath was kind of an unknown quantity and really had no reputation to speak of - and I'm just inferring this - the media often would drop his name and the focus would be on Linus Pauling.

I think Rath found that very frustrating and discouraging because he perceived that lack of credit as interfering with his ability to make these business relationships with different supplement companies.

He found an attorney and decided to file suit against the Institute. And that led to - actually his complaint was dismissed, essentially - but we filed a cross-complaint, because in the course of this litigation he had made a lot of statements that we felt were injurious to our activities. At the time we were trying to forge a relationship with Elizabeth Arden and Unilever Corporation, who were interested in developing a line of cosmetic products that would include things like vitamin C and antioxidants, phytochemicals. And they wanted to support some research at the Institute and get involved with the Institute in interesting ways. Rath had started to communicate with these people telling them that we were unreliable business partners and so on, and that he owned these rights. So we felt compelled to sue him to stop interfering with our business relationships.

During the course of this litigation, Rath alluded to some agreements that he had executed with Linus Pauling that he claimed gave him all kinds of rights that we weren't aware of. Linus Pauling Jr. and I were bewildered by this, and we went to Dorothy Munro, who pulled out of a file and showed us these agreements that looked like had been written by Rath and signed by Pauling, and then in some cases witnessed by a third party. And they had to do with Rath's rights, essentially. We were very surprised by these documents. They didn't seem to be proper, and we took them to Linus Pauling and showed them to him and asked him if he had any memory of these documents, or the circumstances under which he signed them. And he looked at them very carefully and was confused about them and said, 'well that certainly looks like my signature, but I don't recall the content of this document at all, and now that I read it, I would not have signed it.' So we tried to reconstruct why Linus Pauling signed these documents and we came to the impression - and again it's hard to verify this independently - based on statements that Dorothy Munro and others made, we came to the opinion that Rath had gotten Pauling to sign these documents when he was Executive Vice President and may have gone into Pauling's office with a whole sheath of documents for Pauling to execute. And these documents were probably among those papers and Pauling just signed them without reading them carefully. As a consequence of litigation, the documents that Pauling had signed giving Rath lots of rights and ownership were nullified [1:05:00] for lack of compensation.

**CP:** So how was all of the litigation resolved?

**SL:** Well, the litigation was resolved. You know, typically the court really encourages you to come to a settlement, and there are settlement conferences set up by the court to get the parties together to hash out a settlement because the court really doesn't want to get involved in litigation unless it's absolutely necessary. So they have retired judges who mediate these settlement conferences, and the retired judge seems to have the strategy of keeping people in the room until they give up. And it's a strategy that works pretty often. So we had a number of settlement conferences and eventually, rather than going to trial - Rath's suit against us had been dismissed - so the only remaining issue was our suit against him; a cross complaint for libel and interference with our business relationships, I can't remember the exact terminology. So that was what was on the table to settle, this suit against Health Now and Rath. So we came to a settlement that we were satisfied with - Rath was supposed to pay us, I believe, \$75,000. We were not to disparage his activities, he would not disparage our activities; mutual non-disparagement. And we assigned him some patents that he basically had done the work on, so we felt that it would be fine to give him those patents, we didn't really expect them to generate any income anyway. That was the gist of the settlement, by and large. And Rath never paid the \$75,000.

**CP:** We mentioned a little bit, over the course of this interview, the role Linus Pauling Jr. played essentially in inserting himself and dealing with some of the administrative issues that his father was either disinterested in or unable to do because of his advancing age and declining health. I'm wondering if you could comment a little bit on his arrival at the Institute and the role that he played in those last few years of his father's life.

**SL:** Yeah, well when the staff became aware of the fact that there were problems, financial problems - this was some time in the early 1990s - and then when Pauling had been diagnosed and disclosed his disease publicly, there was quite a lot of anxiety, I would say, because people weren't really sure about what was going to happen to them, to the research programs, to the Institute. There was just a lot of unease among the staff. The board recognized this and realized that they had to do something specific and make some very definite steps and kind of clarify all the ambiguity and put an end to the gossip and really lay things out. 'Here's what the status is now and here's where we're going to go in the future.'

And Linus Pauling Jr. had been a board member right from the early days at the Institute, but I think that he recognized that his father was unwilling or unable to resolve some of these issues in a really meaningful way, so he decided to assert himself more in the role of the board. So he decided, or I guess with the board and his father's acknowledgement, he became Chairman of the Board of Trustees. Linus Pauling became Director of Research I think at that time too, because Pauling was essentially directing a lot of the research at the Institute anyway. At some point I moved from Executive Officer to Chief Executive Officer. Because Linus Pauling Jr. was Chairman of the Board and we had lots of problems, and I had very little experience in large-scale administration - I'd been administering a relatively small research group with a little bit of fund-raising activity and a little bit of public relations - I frequently gave tours to people who visited the Institute and wanted to learn about our science. I had some skills there I guess, or some experience at least. Linus Pauling Jr. and I started to work very closely together. So I had seen him before, but I had never really worked intensively with him until he took over management for his father in the early part of the decade. And I found him to be a very reasonable, forceful, thoughtful person, and I really appreciated his skill and, [1:10:00] essentially, wisdom in addressing some of these issues that faced the Institute. He seemed to have a pretty good way of analyzing some of the problems and together we worked up strategies to solve some of the issues that we were facing.

**CP:** Was it at all contentious within the Institute? His arrival, his assumption of this role?

**SL:** I don't think so because I think that most people realized that Linus Pauling was not going to be an effective administrator of the Institute at that stage, so somebody needed to put their hand on the rudder of the ship and start to exercise some direction. I think people were - I mean, I can't say what everyone's reaction was about me becoming Chief Executive Officer because that was an unusual move. I didn't have an advanced degree, although I had been co-directing a relatively small research group, and there were other people with seniority that one could have predicted would have been asked to become Chief Executive Officer. I'm not quite sure why I was asked; honestly I was a little flattered. I felt very stimulated by the challenge of becoming Chief Executive Officer, learning more about what problems the Institute faced and how to solve them because I always considered myself a bit of a problem solver and here was a whole set of what seemed to be very, very serious problems. I'm not sure I would have taken the job if I had known, when they asked me to become CEO, the magnitude of the problems the Institute faced. But I'm glad I did.

**CP:** What was the biggest challenge, in hindsight, for you assuming that role?

**SL:** Well the biggest immediate problem was funding, and it was heartbreaking for me to lay off people that I had worked with and for, for a very, very long time. Absolutely heartbreaking. I mean, I had tears in my eyes when I was telling people that there was no longer a job for them at the Institute. But it was a fact of life and it was my first exposure to what it's like to be in charge and make unpopular decisions, or decisions that you don't want to make as a person, but you're obligated to make because of the role that you're playing in an organization. So it was difficult.

**CP:** A couple more questions for today. One event in the history of the Institute that seemed to have come at exactly the right time was the donation of the estate of Carl Swadener.

**SL:** Yes.

**CP:** Can you give any background on this? This is something that seemed to have provided a life line for the Institute when it most needed it.

**SL:** That's right. As a matter of fact, I remarked to Emile - because Emile had already decided at that time that he was leaving - it was kind of bittersweet news because on the one hand this was financial salvation for the Institute, but other decisions had already been made, so it came a little too late in some regard. Swadener, to the best of my understanding, had been a donor to the Institute for quite a long time, very small amounts of money. At the time the Institute did not have access to a lot of research capability to investigate donors based on tax filings or real estate holdings or zip code or anything like that. These days it's very sophisticated kind of donor research that philanthropic organizations or foundations can do to find out who among their constituents have the ability to make large gifts of one sort or another. Back then we didn't really have that ability, so there was no way of targeting people who were giving small donations to the Institute for cultivation, for instance, and the other kinds of fund-raising strategies that might be developed to encourage people to give money.

So it was a big surprise when we were notified about this estate that had lots of different aspects to it. I believe there was an office building and a home and gold coins and money, just a lot of different financial instruments within this estate. And it really did allow us to pay off some of the debts to trustees who had loaned the Institute money and to get on an even keel. We also, within a couple years, became aware of another big bequest, the Finney estate, which helped us establish enough money so that we could have an endowment that would make the Institute more attractive to a college or university to which we might move. And it allowed us to bring \$1.5 million at least to Oregon State University, when we moved up here in 1996, to [1:15:00] endow the Director's position. And at that time there was a match in the state, so there was a functional \$3 million endowment, which was really a good endowment to attract really top caliber scientists for this directorship of the Linus Pauling Institute. But getting back to the Finney estate—

**CP:** When was this, the Finney donation?

**SL:** The Finney donation was sometime in the early 1990s. Maybe '93 or '94 or '95, I don't really remember the exact date. At that time I was also negotiating contracts with Elizabeth Arden that I expected would produce a very considerable revenue stream for the Institute for, conceivably, quite a long time. That to me looked like it could be the financial salvation for the Institute and allow the Institute to remain an independent biomedical organization and recruit and attract top caliber scientists. But that was still under negotiation and under development; we weren't quite sure where that was going to go.

I got a phone call from a woman in New Jersey, I believe, who said that she wanted to know if I was aware of - I think her name was Katherine Finney? Kathleen Finney? I'm not quite sure what her first name was, but this woman had been her best friend and was aware of the last will and testament and told me that she herself had been named as the beneficiary in the will and was to receive a condominium, and the Institute was supposed to receive most of the financial instruments that were available in the estate. It was a fairly large amount of money; several million dollars. And the woman told me that Finney had been deteriorating in recent months and a caregiver had come to live with her and this caregiver, apparently, had persuaded Finney to alter her will and leave everything to him. And the woman who called me thought that this was really unethical and unjust, that this person had exploited a deteriorating woman for his own financial gain. It sure seemed that way to me; I mean, I didn't know what the facts of the case were, but I hired a law firm in New Jersey to look into it and it resulted in a nice settlement for the Institute where we got, I believe, several million dollars. The caretaker ended up with several hundred thousand dollars and the woman who brought this to our attention ended up with her condominium.

**CP:** What happened to the Elizabeth Arden relationship?

**SL:** The Elizabeth Arden relationship was quite promising. I was really excited by that because there was a research element to it. They were quite interested in funding research that would find out if vitamin C and other micronutrients or phytochemicals could protect skin cells from damage by sun exposure, because they were starting to develop topical cosmetic products that included these micronutrients. They had some preliminary data from their own labs that suggested that topical application of vitamin C and other substances improved the appearance of the skin. I think from a marketing standpoint they were excited about getting involved with the Institute because as the Director of Research told me - their facility was in Trumbull, Connecticut, he's the one who really got in contact with us and asked us if we were interested in working with them in this regard. He said he had already started thinking about vitamin C and thought 'well, who really knows the most about vitamin C? Well, it's Linus Pauling, I should contact the Institute.' And he did. We decided, because the prospect of revenue was so great, that it wasn't something we should take lightly or dismiss.

We spent a lot of time thinking about this and analyzing it and some of the trustees were concerned about the commercial exploitation of the name 'Linus Pauling.' They thought, 'you know, perhaps if this product bombs and we're associated with it, that maybe it will tarnish our reputation.' But we worked out an agreement where we had review of all the marketing literature that Arden and Unilever would produce. And they could make certain factual statements about what they were doing at the Institute, supporting a research project and so forth, and that we were not engaged in research and development with Arden to formulate new products. That wasn't something that was a part of the arrangement or relationship. And then we agreed to produce a joint newsletter [1:20:00] that would be translated into many different languages and available at the point of sale in high end department stores around the world. We did that one newsletter, which featured an interview with Linus Pauling. Lester Packer also had an article in that, and some information about the Institute, because I saw this as a way of expanding our base of constituents. If we could introduce the Institute and

its activities to younger people or middle aged people that shop at these higher end department stores, presumably they have high income and they might get interested in supporting the Institute's research and may, at some point in the distant future, decide to give us bequests as well if they thought the work we were doing was good. So I thought this was a good way to expand the Institute's influence, get more public education about what we were doing and generate revenue for the Institute. This looked to be, remarkably, a really staggering amount of money. And everything was great. I went to Hamburg, Germany and to New York City and Toronto and participated in press conferences, the marketing materials were all developed, the product line was about to be launched.

The President of Elizabeth Arden, Bob Philips, left Arden to take a job with Unilever in London, which was the parent company of Elizabeth Arden. And they hired a new President from Chicago and this new President came in and proceeded to turn the company upside down; suspended a lot of the research contracts, except for ours, suspended a lot of the marketing efforts for new products and things like that. So, unfortunately, although everybody had expectations for great success because of this management change at Arden, it really interfered with the roll out of all these products and marketing strategies and everything else. She left the company after a year and it took them a couple of years after that to fully recover. So, needless to say, our high hopes were somewhat dashed because of management issues at Elizabeth Arden.

**CP:** And they never followed up on it in any of the years afterwards?

**SL:** They may have. You know I don't really follow the cosmetics industry, so I don't know what they did subsequently, but the relationship with the Institute eventually came to an end. They continued to provide money because we had a contract with Elizabeth Arden. We had a sublicense from LC Progeny to use the name 'Linus Pauling,' so we could use that name in our contractual association with Elizabeth Arden. They were funding a research project, as I mentioned, that was transferred to LPI at Oregon State. So the funding continued for some time. Eventually that project funding ran out and that was the end of the relationship. They also underwrote our newsletter and provided - I was talking to John McCook who was the Vice President for Research at Arden. After Pauling's death I brought up with him the prospect of doing a very nice, commemorative issue of the newsletter that would pay tribute specifically to Linus Pauling. And he thought that was a terrific idea. We didn't have the money to produce anything really nice ourselves at high volume. Arden very graciously underwrote the commemorative booklet that we produced in lieu of a fall newsletter, in 1994, after Linus Pauling died.

**CP:** That's the blue one that we have now?

**SL:** Uh-huh.

**CP:** Wow, interesting. So the last question for today is: August of '94, Linus Pauling dies, how would you characterize the state of the Institute at that point?

**SL:** Well, it was a terrible day. I mean it was a day that we knew was inevitable, but you never want to get that news even when you know you should be expecting it. It was a summer day, a beautiful day in Palo Alto, Pauling had been at his ranch in Big Sur, and Zelek Herman and I and some other people had been down to see him. There was a deposition actually, of Pauling, I believe earlier that summer, by our attorneys that we went down for. But I didn't have any direct knowledge of his deterioration or health status. I knew that he wasn't doing really well, but I didn't really have any firsthand knowledge of how he was doing.

[1:25:00]

We had worked up an obituary based on information available to us from his biography and Paradowski's work and probably from materials that were available to us from Special Collections. So we had an obituary ready to go. This was before the Internet had become pervasive, so the obituary was to be faxed upon notification of Pauling's death.

It had been a typically difficult day at the Institute for me. It was always challenging in those days with litigation and financial problems and thinking about the future disposition of the Institute and so forth. And I remember going home that day in August and I had a couple of beers before dinner and I got a call from Linus Pauling Jr. before I had a chance to eat. And Linus Pauling Jr. told me that his father had just died. And it really hit me hard because, you know, I was

kind of surprised at my own emotional reaction because I really loved Linus Pauling; he was just an amazing person. So immediately I got back in my car, I went back to the Institute and I started faxing these obituaries to the media.

They went to CBS, the *New York Times*, NBC, CNN, whatever media contacts we had, I sent them out. *San Francisco Chronicle*, *San Jose Mercury*, there were probably fifteen or twenty of these to be faxed out. No sooner had I faxed the third out, the phone started ringing, and in those days we had an old fashion phone system where you could see a number of little pegs that would light up for an incoming line, and I think there were as many as six incoming lines. You could look at a single phone and see six of these clear pegs and a peg would be lit depending upon an incoming call. After the third fax, one of these little pegs lit up. I answered it while I was continuing to fax, and it was *Newsweek* or something and they wanted some pithy quotes about the life of Linus Pauling. It wasn't difficult for me, but it really took some effort to hold myself together to give them cogent statements about Linus Pauling because I was feeling really sad and I was manically trying to fax all these obituaries out. And before long every light was lit and blinking: it was the *New York Times*, it was CBS, it was everybody under the sun that wanted statements. So I spent that early evening responding to all these phone calls for more information. Then the next day, of course, everybody at the Institute knew that Linus Pauling had died. There was a lot of grief; people were crying, it was a really difficult time for everybody.

**CP:** In terms of the footing of the Institute itself though, at that point, how would you characterize it? I mean, the namesake of the Institute had just died and what's the outlook for the organization at that point?

**SL:** Yeah, we had, of course, in the Board of Trustees meetings - which we had very regularly by the way, reports that went out to the board every month because there were so many problems and we wanted everything to be done as perfectly as possible. So I would write a report to the Board of Trustees every month and send it off to all of them by fax, and that would cover all the personnel issues, financial issues. I would have the accountant give us statuses for our bank accounts, investments and so forth so that everybody knew all the time exactly where we were. And of course we took very seriously the problem of leaving the building in Palo Alto, and Linus Pauling had expressed the desire for the Institute to remain independent because I think he felt that we could probably be unswayed by mainstream medicine or mainstream science if we retained independence. We could be more iconoclastic, more of a maverick organization, but absent that, he completely supported the idea of integrating into an appropriate university with academic activities that would resonate with the Institute's mission. So he was supportive of that, but he died before the discussions with Oregon State University had really matured.

We had lots of people coming to the Institute presenting different options to us, ideas about what they would do with the Institute, should we transfer funds to them, the name and so on.

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There was one fellow who was a relocation specialist who had contacted me, who had a lot of contacts with universities around the country and, thanks to his good graces, we initiated discussions with university administrators in Wisconsin and Boston University and Oklahoma. A lot of different places to find out if there was any interest in the Linus Pauling Institute. Pauling was certainly aware of the desire that the board had to keep the Institute going as a working tribute to his ideas in orthomolecular medicine. And there were different options being discussed. One, for instance was, I think this was brought up by one of our trustees, maybe what we should do is close the Institute down, liquidate everything and take that money and establish a chair in Linus Pauling's name at Caltech or Stanford or someplace like that, that would be most meaningful to Linus Pauling. There were lots of different possibilities that were pretty seriously discussed in those days.

**CP:** But financially you had a couple pretty big gifts that came and that basically kept you above water for a little while.

**SL:** That's right. And that really improved the probability of securing the interest of an academic institution, too. One problem that we confronted with lots of universities was that they just didn't have a lot of vacant space. Vacant space doesn't exist in the university environment; I mean it is subsumed by departments or units right away. So there wasn't a lot of existing space in any of the universities that we talked with where we could just waltz right in and make ourselves at home. And people had different impressions of the reputation of the Institute. You know, there were always people who believed that Pauling was flaky with vitamin C and orthomolecular medicine, and there were probably institutions that shared that attitude as well. We recognized that any institution that was looking to gain the Linus Pauling Institute would also be gaining perhaps a little bit of a risk as well, and the litigation, you know, had been covered in the papers.



It was a difficult time and there was no question that it wasn't a perfect organization with a stellar, medical/scientific record that was coming in with no stains. There were some problems, image problems perhaps. We were concerned that would make it very difficult for people to warmly receive the Institute. The money really improved the probability because when you can bring money, well, suddenly university administrators can see more potential if you're bringing some money with you.

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