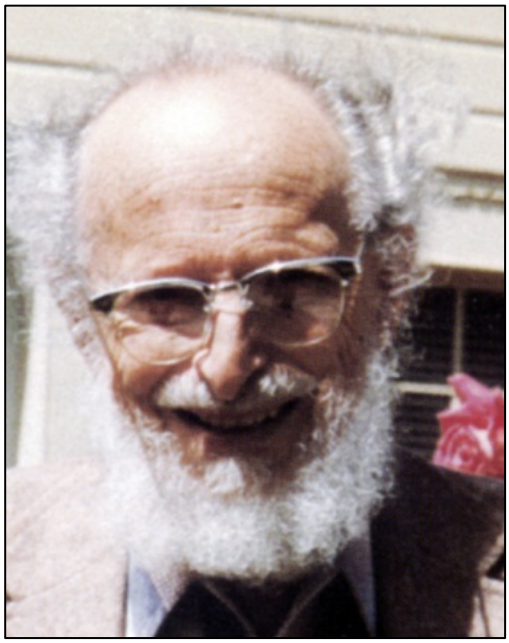

Sidney Weinbaum, 1990. From *E&S*, Fall 1991

SIDNEY WEINBAUM
(1898-1991)

INTERVIEWED BY
MARY TERRALL

August 15, 20, and 22, 1985

ARCHIVES
CALIFORNIA INSTITUTE OF TECHNOLOGY
Pasadena, California

Subject area

Mathematics, chemistry, Communism—United States—1950-1960

Abstract

An interview in August 1985 with Sidney Weinbaum, Caltech PhD (1933), a mathematician who was a research fellow in Linus Pauling's laboratory in the Division of Chemistry and Chemical Engineering in the 1930s and worked from 1946 to 1949 with Pol Duwez at the Jet Propulsion Laboratory. In 1950, Weinbaum was arrested for perjury (regarding his alleged membership in the Communist Party) and for "abetting" Party activities. He was convicted and sentenced to four years in prison. In this interview, he recalls his childhood in the Ukraine; his undergraduate years at Caltech (1922-1924); and his work for Pauling. He recalls various friends in the Caltech community, his interests in chess and music, his political activism. He discusses his war work for Bendix Aviation and Curtiss-Wright Research Laboratory; his return to Pasadena after the war to work for JPL; his interrogation by the FBI; his arrest and trial; the support or lack of it from various friends and Caltech faculty; his life in prison; and his release and subsequent happy life with his second wife, Betty.

Administrative information

Access

The interview is unrestricted.

Copyright

Preferred citation

Weinbaum, Sidney. Interview by Mary Terrall. Pasadena, California, August 15, 20, and 25, 1985. Oral History Project, California Institute of Technology Archives. Retrieved [supply date of retrieval] from the World Wide Web: http://resolver.caltech.edu/CaltechOH:OH_Weinbaum_S

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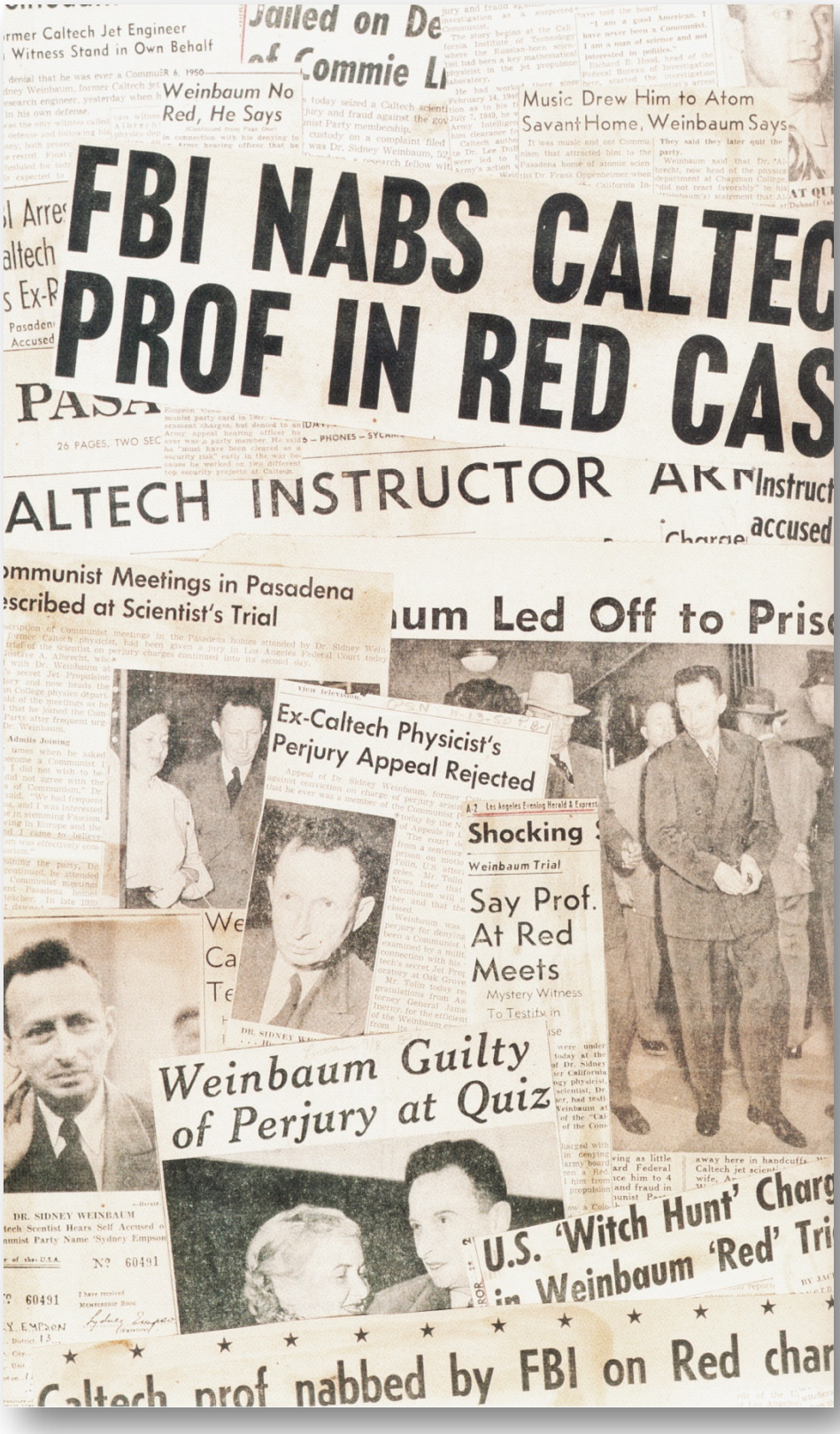

Local newspaper accounts of Weinbaum's arrest and trial. From *Engineering & Science*, Fall 1991

CALIFORNIA INSTITUTE OF TECHNOLOGY ARCHIVES

ORAL HISTORY PROJECT

INTERVIEW WITH SIDNEY WEINBAUM

BY MARY TERRALL

PASADENA, CALIFORNIA

http://resolver.caltech.edu/CaltechOH:OH_Weinbaum_S

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INTERVIEW WITH SIDNEY WEINBAUM

Session 3

CALIFORNIA INSTITUTE OF TECHNOLOGY

ORAL HISTORY PROJECT

Interview with Sidney Weinbaum **by Mary Terrall**

Santa Monica, California

Session 1	**August 15, 1985**
Session 2	**August 20, 1985**
Session 3	**August 22, 1985**

Begin Tape 1, Side 1

TERRALL: I'd like to start out just briefly with your family background in Russia.

WEINBAUM: I was born eighty-seven years ago, in the last century, to a middle-class Jewish family. My grandfather was a successful businessman, and he had a store of agricultural implements, not in our city but someplace else. And he had seven sons and two daughters. My father was the oldest one. And every son started by helping my grandfather in business, and then he would set him up in a different city in business. And so my father was the first one that was set up that way.

TERRALL: In what city was that?

WEINBAUM: That was in the Ukraine, a city called Kamenets-Podolsk, which was at that time a provincial capital of Podolia, and it was located—and that's an important fact that affected to some extent my life, too—very close to the Austrian frontier, let's say about fifteen miles from the Austrian frontier. That part of Austria became Poland; another part of Russia, Bessarabia, became Rumania, and that was about twenty miles away. So it was strategically in a very bad location. It had about 40,000 population, out of which I would say the Jewish population was probably close to half. I don't know if you know that under the czarist regime, the Jews were allowed to live only in certain parts of Russia. However, you see, there was also a large official Russian population. The court for the province was there, and the governor lived there, and all the state institutions were there.

Well, reasonably, I was expected to go to high school. And in those days, only 15 percent of the entrants were allowed to be Jewish. And the city, as I said, was about 50 percent. For middle-class Jews, that's all they wanted—to give education to their children, so that if you were a doctor or something like that, then you could live anyplace in Russia. So at the age of ten, you went to high school. Now, in my case, what happened was that a new man was appointed the minister of education in Russia. And just that year, they passed a new law that it will be only 10 percent Jewish. And they didn't count only the new entrants—they didn't take any Jews in school until the total Jewish population in the school fell to 10 percent. I'm telling you these stories to give you an idea of what the political situation in Russia was.

TERRALL: So it became more and more impossible, in fact, for a Jewish child to go to high school.

WEINBAUM: So you see, what I did, I took an examination as a so-called extern, just to get the credit. I took it after the first year and after the second year. And only at the age of twelve, a few of us were accepted.

TERRALL: It was done by examination, then?

WEINBAUM: So I got credit. So, in other words, if I wanted to get into the third class, I had to take the examination only for the second class. I won't go into details now how it was when three of us got into a class that never had a Jew before, the kind of reception that we got there. I have a lot of interesting stories about the high school and what it was like, but I'm not going to talk about that. But the spirit of opposition to the authorities in school made a change in that relationship between the Jews and our classmates. One of the Jewish fellows was a very disagreeable fellow. And one day he threw out a chair onto the street from the second-story window, and it almost hit a passerby. So, imagine the uproar on account of that! He was a Jew and he was a disagreeable fellow. The assistant director of the school came and talked to us and said, "You have to tell us who did it." Then the director of the school himself came, and nobody pointed a finger at who it was, none of the classmates, because the group spirit was so much stronger than anything else. So that's a very interesting thing. These things made an impression upon me when I was a young fellow.

I went easily through high school—too easily, because it so happened that I was the only good student in my class. So I didn't have to work at all, and I took life too easily afterwards in that respect. It was an eight-year high school, I think the equivalent here to the junior college, by the subjects that we took, because we took not only history and literature but we had psychology and logic and what have you. In geography, we had to point out the different cities in the world on maps that were not labeled. A whole quarter was devoted in the eighth year to economic geography that showed us what are the imports and exports of every country. I'm telling you this to show that it was much more than high school.

TERRALL: What about mathematics?

WEINBAUM: Well, I went to a classical school. And from a classical school afterwards you could go to any university or technical school. So we had very good training as far as algebra and geometry and trigonometry were concerned. I mention this because there were also private schools. Even a lot of Russians couldn't get into the classical gymnasium, because the standards were very high for admission. And some of these private technical schools gave even more mathematics, went a little bit into calculus. But you couldn't go to university from there; you could go only to technical schools. So that was the setup with education.

TERRALL: Did you know what you wanted to do?

WEINBAUM: Well, that was another difficulty, because my interests were in mathematics. It's true that I was also a very avid reader, and we had a very good library at home. Unfortunately, there was no Russian encyclopedia; our encyclopedia was a German one, and I didn't know German. I knew French but not German. I got a smattering in school, because we had to have several years of German, several years of French, and I had six years of Latin, besides everything else. Latin was considered as important as the Russian language and mathematics. These were the three cornerstones in high school.

Anyway, the Russian army didn't have enough ammunition. The reason I mention that is because it was one of the cornerstones why the Revolution in Russia was successful—a lot of the soldiers started to run away. But anyway, because my city was so close to the frontier, it was

unavoidable that it was going to be occupied. And my high school was transferred way into the depths of Central Russia.

TERRALL: This was before you finished high school?

WEINBAUM: Yes, I still had a year to go.

TERRALL: Then this would be what year?

WEINBAUM: That was 1915. And it so happened that we had some relatives in Odessa, so we went to Odessa.

TERRALL: Your family moved there?

WEINBAUM: Well, you see, my father went to Kharkov—that's a very large industrial city—because they didn't want to leave what remained of his machinery to the enemy. There was very little industry in our city; whatever was left was evacuated to Kharkov, and Father went there. But Mother, I, and my sister went to Odessa. My sister was five years older than I. Women could not be admitted to the universities, but there were special advanced schools for women, and my sister had been attending one of these in Kiev. Well, anyway, in Odessa there were a lot of youngsters like myself, most of them from Poland. There were two evacuated high schools. One of them was from one of the smaller cities, and one was the Seventh Warsaw high school. So anybody who wanted to transfer couldn't go to an Odessa high school, but had to attend one of these two schools from Poland. I went to Warsaw Seventh School. The school held afternoon sessions after the Odessa high school was over. So I graduated eventually from the Warsaw Seventh School.

Now, that was still wartime. You asked me an important question before: What did I plan to do? You see, I had a very unhealthy childhood. I had every possible illness in the world. And on account of that, I had such an unhappy childhood that I don't remember anything before the age of eight; it's sort of erased. The doctors made a faulty diagnosis that something was wrong with my heart, and I was not allowed to play any games that involved motion. And you know, with children, what that meant—I wasn't allowed to run, I wasn't allowed to do anything

like that. We had a one-horse carriage; the man who took care of the horse also took care of the yard. At the age of eight, when I started to take piano lessons, my teacher lived on the second floor and the man was supposed to carry me up. And when I first went to high school at the age of twelve, my classroom was on the second floor, so my parents insisted that I be carried up. Can you imagine the ridicule that I had? After the first week, I put my foot down and put an end to it. Hence I didn't want to be a doctor, because I felt doctors were below contempt. Law didn't attract me, either; I liked mathematics. However, the only jobs available to mathematicians were as high school teachers, and Jews couldn't be high school teachers in Russia. So the only thing left was engineering. But the only way one could avoid being drafted into the army was to go to medical school, so I had to pacify my parents and go to medical school.

Now, in Russia, there were only ten universities. Transportation was unbelievably difficult. At that time, mail practically didn't work; maybe in two months, three months, a letter would arrive. So the only means of communication were telegrams, and that would take a week or so. So one was not free in choosing the university to which to go. There was a university in Odessa, but I had graduated from Warsaw high school, so I had to go to the Warsaw University that was evacuated to Rostov-on-Don.

I'll describe to you one trip that I made. For half a day, I stood in the corridor of the train; if I fell asleep, I wouldn't fall down, we were packed so tightly. Finally, about two hours before Rostov, there is Taganrog, another fairly large city, and so a lot of people left—Rostov was the end of the line. The train had compartments, and I got a seat—not only a seat but I could lie down. And after about fifty-six hours of travel, I fell asleep. The next thing I knew, somebody was shaking me. I opened my eyes and there was an old woman with a broom, standing near me. The train was already on the sidelines, and she was cleaning the thing and found me asleep. But, you know, my suitcase was still there.

TERRALL: Was that the first trip to the university, then?

WEINBAUM: That was the trip to register in medical school. Because I was considered to be so impractical, my father went there first and found for me a place to live. You know, I could write

a novel about my life; I'm covering just a few things. So, anyway, I went for a year to medical school.

TERRALL: This would have been around 1916.

WEINBAUM: This was 1916. Then the Revolution occurred in 1917. Warsaw University was one of the most reactionary universities in Russia—probably *the* most reactionary—because it was Polish. I don't know if you know the relationship between Russia and Poland. Part of the reason that Poland hates communism is that it came from Russia. The Poles felt also like an oppressed people. There was a lot of Russification there, and the Poles very much resented it.

TERRALL: So Warsaw University was moved.

WEINBAUM: Moved to Rostov-on-Don.

TERRALL: That means that the faculty and the administration—?

WEINBAUM: The faculty and the administration, everything.

TERRALL: So you were going to the medical school at Warsaw University.

WEINBAUM: Yes. Logically, I should have gone to Odessa University; we lived right in Odessa. Anyway, I was doing pretty well in the university. And of all places, I lived with a Cossack family. When one speaks about Cossacks, usually one speaks about part of the army, the people who were supposed to bring a horse of their own and so on and be in the cavalry. But some of these Cossacks got some education and moved to the cities. It was a very pleasant family. They had a grown-up daughter who was a couple of years older than I. By that time, I was a fairly accomplished pianist—I forgot to mention it, because that connects with something else. She was a pianist, too, and we played four hands when I had time. And then the Revolution came.

TERRALL: My images of the Revolution are all from Moscow. So I wanted to ask you what it was like there.

WEINBAUM: This was the first, so-called democratic, revolution, in March. And the students went and demonstrated for changes in the government. Not only this, there was also a very great feeling against the police. So the students took over the police. But we didn't even know how to use a gun or anything like that. We were given guns. I'll tell you one experience that I still remember. It was very early spring, and right away in every place there was politics. So the leaders of the student body took the center of the city, and the rest of us got the suburbs. I and a few of my friends from medical school kept together, and we got into a suburb. It was a rather hilly suburb, and most of the streets were not even paved there. In some places, when the snow melted, there was so much mud that you were sinking into it. And my trouble was that my galoshes—not that they would help very much in that mud—but they were stolen on the first day of the Revolution, when I went someplace. So the police were with us. We carried the guns, but they told us what was going on. And the only thing that still is so much in my memory is that there was an artillery dump of some sort someplace in that neighborhood, in the midst of a little forest. Besides that, you see, because we were not officials in the student body or anything, we had the night shift, from eight in the evening until eight in the morning—twelve-hour shifts. And they took me there, gave me a real gun, put it over my shoulder, and left me overnight for twelve hours to protect that artillery dump. I didn't know how I was going to protect it. [Laughter] And it was an awful night.

TERRALL: So the students were a very active force.

WEINBAUM: It's very characteristic of the students in Russia that a lot of the left-wing university students were from families who worked for the government, or from professional families. And it was characteristic that they were that way in the universities. In the old days, in the universities, one thing that protected the students was that the police had no right to go on the campuses. But they usually had the cooperation of the authorities, you see. So these left-wing youngsters would graduate and then go and work for the government, and either they had to change their opinions or they couldn't work for the government. So a lot of them turned just to the other side.

TERRALL: So this was the situation before the Revolution—that activist students would then have to go into the bureaucracy.

WEINBAUM: Yes. They went into the bureaucracy; that was the only way they could make a living. And that's what made people change. Well, anyway, after the Revolution, I made up my mind that I was going to go to engineering school. I was not going to continue my medical studies whatever my parents thought, and even if I was subject to the draft. I went and consulted a lawyer, and he said that the students can be drafted only as a group; no general draft would touch the students.

TERRALL: This would have been after one year of medical school?

WEINBAUM: Yes. You see, I originally got a deferment because of the medical school.

TERRALL: But then the whole situation had changed with the Revolution, anyway.

WEINBAUM: Yes. So now I didn't know where I would be accepted, because in all these technical schools there was a limited number of students who were taken. So I applied to three places. Two of them were mining institutes, and to some extent I was probably influenced by the fact that I had an uncle who graduated in Germany in mining engineering. He was the brilliant man in the family; he graduated number one in the mining institute in Germany. So I got a notice that I was accepted in the Petrograd—not Leningrad then—Petrograd Institute of Technology, where I especially wanted to go into the metallurgy section. That led to another interesting adventure. Again, you see, what happened is that if you don't submit your paper at the particular date, then they give your place to somebody else, because let's say there are 3,000 applicants and they take 500 people or 800 people or something like that.

TERRALL: The universities continued to operate during this time?

WEINBAUM: Yes, all the time. Under any regime they continued operating. So I had to pick up my papers in Rostov and take them to Petrograd, and I couldn't do that by mail, because it would never arrive on time. And by that time, transportation was even worse than before. But it was six weeks I would have to stay in Petrograd before school began, so how am I going to get back to Odessa? I wanted to go back to Odessa and then, in six weeks, come back to Petrograd. By that time, I was already used to the discomforts of the trips.

So we had friends who had a son who worked for the ministry of transportation in Petrograd. They said, "Let us wire to your son"—me, in other words—"via our son, that his mother is very sick and his presence is necessary at home. Then he can get a leave of absence from the institute." You see, in Russia, everybody had to have a passport, but a student had a booklet from the university that acted as a passport. That sounds fine, doesn't it? Well, if we hadn't done it, I probably wouldn't be here now. So I went to Petrograd. First of all, there was a question of how I'm going to find a place to stay these few days. I see a hotel just across from the railroad station. I go to that hotel and just as I enter, somebody is vacating a room. So I got a room. I take the streetcar to go to the institute, which was on the outskirts of town, and who boards the streetcar but someone I knew in high school. We had one very brilliant Pole that was in the Warsaw high school, who came with the school. He was so glad to see me. He also went to another school first, but he already had a room and wanted me to room with him. When I got to the institute, and I was in line there, they addressed the man in front of me as Weinbaum, so I sort of tapped him on the shoulder. Well, he turned out to be already a student, a third-year student. We couldn't find any kind of relationship whatsoever. Not only did he know his way around but he had brought some special food with him, and he showed me around.

I called that man, the one who was supposed to get the telegram that I was going to use to get the leave of absence. I left a message and then he called me, and he says, "Oh, I am very sorry. I have very bad news for you." You see, I was trying unsuccessfully to contact him before, to tell him that if he received a telegram, that it was for me. So, I said, "Oh, that's nothing. It was just—" If I had been in his presence there, he would have killed me, because he got the telegram just the day before, and he couldn't make any sense out of it. He thought it was *his* mother who was sick. He went to the ministry and got a leave of absence from the ministry to go home.

TERRALL: He thought it was his mother?

WEINBAUM: His mother. And I tried to explain this thing to him, but it didn't quite work. Anyway, I got my leave of absence. The day before, the truce was broken, and the German army started to move on Petrograd. And because of that, the lines were four, five blocks long, trying to get railroad tickets. It would have taken me months before I could have gotten out of

Petrograd and probably I wouldn't be here now. With this thing of his, I just went to the window and got a ticket, because it was for a government worker. And that's how I got out of there.

TERRALL: So you went back to Odessa then.

WEINBAUM: Yes, then I tried to go to Ekaterinoslav, which is now Dnipropetrovsk. That's the industrial center, where there is a mining institute. Well, by that time, school had started. I was attending classes, but they didn't accept me, because they didn't have any spaces for more students. There were other people in the same situation. One of them was from Kharkov. He was going back and forth to Kharkov, and I asked him to register me at the Kharkov Institute of Technology. Why? Because by that time, my mother and sister had joined Father in Kharkov. So I went to Kharkov and went for a year to the institute. Next summer we went home; we still had our house in Kamenets. After the summer was over, my mother and sister decided to remain there, and Father and I went back to Kharkov. By that time, too, in Kharkov I resumed taking music lessons. In Odessa, when I went to high school, I went for half a year to the conservatory and was transferred to the highest class in the conservatory. But in Kharkov I didn't want to continue in the conservatory, so I went to what was supposed to be the best professor there. I could read music very easily, and after he tried me out, he was willing to give me private lessons.

So anyway, here I was, left with Father. By that time, communication broke down completely. And we were not in touch with my mother and sister in Kamenets. At Christmas, Father says, "You have more than two weeks' vacation. How about our trying our luck and going to see them?" It was fine with me. I just took one change of underwear, nothing from school, or anything like that. In those days, you went to the railroad station and waited; maybe there will be a train. So we got to Kiev. And in Kiev we stayed a couple of days, couldn't get on the train. And finally, instead of arriving for Christmas, we came New Year's Day to Kamenets. It was already about eleven o'clock in the evening. In those days, there was a curfew, and all the houses were dark. We came to our house—we lived in a suburb—and it was all lit up. My sister had gotten married that day! And there were still some friends that hadn't left the party. They didn't even know we were coming, you see.

To make the story short, we didn't know it, but while we were traveling, Kharkov was occupied by the Moscow regime. The first Ukrainian government was a very reactionary one,

and it welcomed German occupation, though by that time the German army was already disintegrating. All my books, all my clothing, everything except what I had on me—and fortunately it was winter, so at least I had my winter coat on. And I never after that went back to Kharkov.

But the different regimes were all the time overflowing. For a while, I worked in a sugar plant. That was the only industry close to Kamenets. And in the mornings we used to look at what flag was flying when we went to work, because that was the favorite place; everybody wanted to get sugar. So one would look and see: Is it Ukrainian, or Red, or Polish, or White Russian? [Laughter] There were four different possibilities. So, you see, that was quite a time.

Now, coming back to Caltech, then. I never had any intention of coming to the United States. Because in our eyes—and maybe it was true—we were idealists, young people, and believed that in the US only the almighty dollar counted. As a matter of fact, in Kharkov, we went on New Year's Eve to some club for a little show, and they had sketches. One of the sketches was a duel in the United States. And here two men stand with their guns, but there is a salesman. And he takes the guns and says why you should buy this gun and not another gun. He takes the coat off one of the men and tries to sell it. Then he takes off the shoes from the other man. [Laughter] And so, you see, that was our concept.

My father used to like to grow things; he had a big garden. He didn't work it himself, because the gardener got only fifty cents a day, and the girls that came and brought their lunches with them were getting twenty-five cents a day. My father said that when he will retire, that's when he was going to go to California and get a little farm, and grow the things that he likes. We grew a lot of vegetables, and flowers especially. So, anyway, I had no intention whatsoever of coming to the US. But I mentioned this uncle of mine. He remained in Germany, because of the war and so on, and he became very rich during the inflation period. And somehow, about a year before I left Russia, he let me know through other people that if I could get to Germany, I could stay with him and go to school there.

Begin Tape 1, Side 2

TERRALL: Were you thinking then in terms of leaving Russia because of the Revolution?

WEINBAUM: At that time, I was very much concerned with my education.

TERRALL: And it was getting interrupted every few months.

WEINBAUM: I got a year and a half of technical school. But because all the engineers had left by that time, I was the chief chemist at a big sugar plant. I could leave the country, because of the way the plant was run under the Red regime—and as I said, there were changes of regime there continually. As a matter of fact, once the fighting was going on right in front of us, because we were just two blocks away from the railroad station and that's where all the fighting took place. So anyway, what happened was that I didn't see how I was ever going to go on. And here I had that offer from my uncle.

TERRALL: This was after the war?

WEINBAUM: That was during the [Russian] civil war, in '21. Under all regimes, there was a committee running the plant. It consisted of the head of the plant—he wasn't even an engineer, but he was a knowledgeable man, because he grew up with the plant—the chief agronomist, and a representative of the workers. And they chose me as the secretary. So I was in a position to write myself an order to go and inspect the sugar-beet plantations that went as far as the frontier. You see, the plant was also very close to the frontier, say fifty miles from the frontier. I didn't know what authorities I would meet on the way there. As a matter of fact, somehow I didn't meet any. But the city on the frontier was under Red authority. In one shoe, I put the instructions in Russian. And in the other shoe, I had someone write it in Ukrainian. So if they asked me for identification or anything like that, I had to get to the right shoe to get my identification.

The story of how I crossed the frontier is another story that I won't bother you with, and my adventures after that. So finally I got to Poland and managed to locate a well-to-do uncle by marriage. I had gotten word from him that if I was going to Germany, he would help me. Anyway, he was in charge of a big outfit, wholesale and some retail, owned by Italian bankers. He was an engineer by education. So I got there and I found out that my German uncle had lost almost all his money. But this other uncle promised to help me in Poland. So I applied for Polish citizenship.

Meanwhile, I had a cousin—that's sort of interesting, too, to show how the laws in Russia were at that time. As I mentioned before, women could not go to universities. On my mother's

side, I also had seven uncles and one aunt, who wanted to be a doctor. I don't know how many other people in the family even graduated from high school, because they lived in a very small place, and here was this girl who wanted to go to medical school. So she went to Paris, and she graduated there. But on one of her trips home, she married a very nice man, who was also a doctor. He stayed in Paris—she was still going to school or something like that—but he couldn't practice there, because he had a Russian degree. Then she started practicing there. Obviously, it was not a very good situation. Now, in Russia, a doctor that graduated from anyplace in Europe could practice, so they went back to Russia. She wanted to be in the same city as my mother. So he first came by himself to see if he could establish a practice in Kamenets. He was a nose-and-throat specialist. And then she came, too; she practiced for a short time and then stopped. Now, why do I tell you that? You see, after the war, Odessa was occupied by the French troops. These French troops were getting propagandized by the Bolsheviks, and the French government got scared about what was going to happen to their army. So the French troops left Odessa, and they took with them the French citizens who were there. But because my aunt was a graduate of the Sorbonne—and by this time she lived in Odessa; my uncle was dead—they took her and my cousin along. They went through a lot of trouble. They were taken someplace in Turkey in one of these special camps for refugees from Russia.

The youngest brother of my mother lived here in California. And he was quite a different type of person. He worked with his hands. He was a manual worker eventually for the city of L.A. He was the favorite of my mother and my aunt. So my aunt and my cousin came here. And my cousin John, Johnny Carr, started as a freshman at Caltech. He was a very good student, as were some of the other Russians that came later. He wrote to me, "Why don't you come here? There is a very good school. And there are some relatives here." And things like that. Well, I didn't particularly like the idea. But when I was refused citizenship in Poland, I decided I might as well go. He was a good student and he vouched that I had already some engineering education in Russia—Caltech was very young at that time.

TERRALL: This would have been in the twenties.

WEINBAUM: That was 1921; it took a year before I got here. But they sent me a notice that I was admitted to Caltech. And with this, I was able to obtain a visa, because in those days you had to

wait for years before you could get a visa. So I came here in 1922. I had, fortunately, one little paper from my first year in engineering school with a record of the examinations that I passed. You see, you didn't have to attend classes in the universities or technical schools if you didn't want to; you had to attend the laboratories. But you had to take examinations. Professor [Paul S.] Epstein could translate these things. So I came to Caltech. Caltech was very nice to me. The idea was that I would take the more advanced courses.

TERRALL: But as an undergraduate.

WEINBAUM: As an undergraduate. But after three and a half years out of school, I had to take advanced calculus. And the amazing thing for me was that while I had had top grades in college in Russia in these subjects, somehow it was a mechanical thing. When I tried to review, maybe because I was older with all the experiences of life, the whole picture of calculus fell into place for me. So I started as a junior. In those days, most of the students in advanced calculus were graduate students, because the universities gave very little training in mathematics. The physicists and the chemists usually minored in mathematics, and they had to take some courses. And who was among all the people in there? Pauling was one of the students.

TERRALL: He was a graduate student in your advanced mathematics class?

WEINBAUM: In that class. It was his first year at Caltech. That's where I met Pauling. And notwithstanding the great competition, I did quite well. But I did very poorly in engineering courses, especially in the laboratories, because I had a partner who went quickly through everything, and I couldn't understand even what he was saying. It took me at least a year to understand everybody. I was under the impression that people speak all different languages here, because of the different accents. But the professors, after all, they put things on the board; I could understand them fairly soon.

BETTY [MRS.] WEINBAUM: You should also add that you were fluent in French.

WEINBAUM: Well, that's a different thing. You see, what Betty reminds me of, I had to get credit for, say, mathematics, so I took advanced courses, for physics I took courses. But what about a language? And Russian was not a language taught in those days; German was the one that usually was taken in the sophomore year. I couldn't speak English when I first came. I came here in May and went in the beginning of September to Caltech. There was a professor by the name of [John] Macarthur who taught German; I understood that he was also giving courses in French. I spoke French to him, and he had difficulty in French. So he not only gave me the credit for German but he gave me credit for French courses and advanced French courses. What that did for me was that by the time I became a senior, I had plenty of units.

In English, I developed a very good relationship with Professor [Clinton] Judy, because I was a very strange bird. I went to him and asked him what he would recommend for me to read; I wanted to read American literature. The cultural level of Caltech's students in those days was low, because the requirements for entering Caltech weren't that high. You know, one of the top students who graduated with me asked me once, "Is Moscow the capital of Germany?" Unbelievable!

Judy was nice to me; I don't remember how it came up, but I have been a stamp collector all my life. Even on the night that I crossed the border, I had very few things with me, but a few of the stamps that I had were traveling with me. So he was saving stamps for me from his correspondence. Another thing: I don't know how it became known that I played the piano. So, you see, I played a couple of times at student assemblies, which took place every Monday noon. And later on they had a Czech student who played the violin; he didn't make the grade at Caltech, and eventually he became professor of music in the University of the Pacific, in Stockton. He also was quite an entertainer. He did it for the students, too. He could play with his violin behind his back, and students loved that. So we started to play together. As a matter of fact, the only time I owned a tuxedo—I was already a senior at that time—was when he said, "Let's make some money." He was able to make contacts and make arrangements, and we played together two or three times in different places, and got $10 or $15 apiece.

By the way, I should mention that while I was in Caltech, I managed to get a few music students. I had a cousin who was fifteen or twenty years younger than I—the daughter of my uncle, in whose house I lived for six years. She was just a child then, but she was taking violin lessons. So I went to her teacher to find out if he could recommend me for some piano students.

Well, it so happened that at that time he was going to be the soloist at the Hollywood Bowl. So he said, "Well, I'll pay you; I need some rehearsals." He tried me, and I could sight-read well. So he recommended me to two or three places. I traveled hours by bus. But still, at least it gave me some pocket money. In those days, the freshman class was invited to the Millikans'. [Robert A. Millikan was chairman of Caltech's Executive Council. 1921-1945—ed.] They also invited girls from some girls' schools. So when I was a senior, I was asked to play for them.

As I say, Caltech was very nice to me. But I made D's in some of the engineering classes. In one of them, [Royal W.] Sorensen was the professor. And then, when I was a senior, he gave a special, purely theoretical, engineering course. Well, there, because of my mathematical background I didn't have much competition, and I was getting 90 on the papers when the next grade was maybe 30 or 35. So Sorensen became a friend of mine, too. As a matter of fact, it was through Sorensen that I eventually got a job during the war in industry. I met him on the campus one day and I felt that with the Germans running rampant, I would like to be of some use. So he said, "Well, there is a request for a mathematician from Bendix. Why don't you go?" And that's how I eventually got in there. And this has an important connection also with a later story. So anyway, I had a very interesting life up to that point.

TERRALL: And it wasn't a problem for you, that you were that much older than the other students?

WEINBAUM: No, that wasn't a problem, because there were a few people who, even if they were not actually in combat, had been drafted during the war and had been in offices and whatnot. Another man who also was older was Jesse DuMond. And Jesse DuMond became my closest friend all through life.

TERRALL: He was a student then?

WEINBAUM: At that time, he was a graduate student. I met him in the same mathematics class where I met Pauling. And interestingly enough, I also met [Francis] Maxstadt in the same class. Maxstadt had great difficulties in mathematics, but he was my instructor in engineering. And here I was having trouble in engineering. [Laughter] So in my senior year, I took many graduate courses. I took kinetic theory with Millikan; I took thermodynamics with Epstein. I established

myself pretty well at Caltech. And as I say, they were very, very nice to me. But when I graduated from Caltech [1924], it was very difficult to get jobs—for one thing, because I was a foreigner. When I was a senior, they introduced, for the first time, graduation with honors—there was none before. I had A's in all the graduate courses—not necessarily even at that stage in all the undergraduate courses. So I graduated with honors. Now, certainly I would have liked to continue my education, at least to get a master's degree. But I had to find a job. First of all, I had lived a long time with my uncle, and I wanted to be able to at least pay part of my expenses—and he helped me to come here. And they were not people of means, you see. He was a very exceptional man; Betty liked him very much.

By the way, Betty is my second wife. And I want to repeat something that I said when I was introduced to the Half-Century Club [of the Alumni Association] in Caltech. We were given two minutes to tell the story of our life. Fortunately, because my name begins with a 'W', I had a lot of time [to compose it]. I may not remember the exact wording, but I said something like this: that I was very fortunate to have been at Caltech and to meet so many outstanding people and to make so many friends for life there. But unfortunately, Caltech was also guilty of what happened to me in later life and changed completely my life. However, I said, even that had a very important contribution to my life, because otherwise I wouldn't have met my present wife, who makes life worthwhile for me. And that's still true. Not that I didn't have a lovely woman for my first wife [Selina], but she became mentally sick. She came from Russia. I went to Europe and we got married.

TERRALL: When was that?

WEINBAUM: It was in 1928. Let me go back for a moment. After I graduated, the only jobs that one could get here were draftsman, shop supervisor, and so on. I went to Sorensen and [Robert] Daugherty, another of my professors, for recommendations. I went to a place that obviously was some kind of a shop, some engineering instruments, where probably I could have fit in very well. But when it became known that I came from Russia, the head of the shop wanted to talk to me. He was a big man, and obviously he didn't like me—I don't know what I told him; I am sure that I didn't tell him anything revolutionary, but I didn't get the job . Another situation was that I went to the Otis Elevator Company. And the man who interviewed me was so happy—it was a

draftsman job—that here is a Caltech person who wants to work for Otis. Then I got a notice that I didn't have a job. And he made me understand that it was because I am not a citizen, but I'm sure that it was because I came from Russia.

MRS. WEINBAUM: Excuse me. I think you should interject the fact that Russia was not recognized by the United States of America at that time. It was not until 1933, after a long procedure.

WEINBAUM: You see, when I graduated, I had a mother in Russia, and a married sister. Her husband was a surgeon, but he was trying to get an academic career.

TERRALL: Was your father still alive?

WEINBAUM: No, my father was dead before I left Russia. So I had to help at least somewhat. I tried to get any kind of a job. So I couldn't stay for graduate work. Epstein suggested, for example, that I should apply for graduate work a year or two later. But that would mean that for three years I would only be getting enough for myself, barely enough to live on. I had fulfilled all my subject requirements for a master's degree and needed only a thesis. So I asked whether sometime in the future I couldn't come, even for half a year, and get a master's degree. I got a very nice letter that it is against the policy of the institute to do things like that, but in my case, yes. So, as I say, I was very nicely treated by Caltech. And in Jesse DuMond, I made a lifetime friend. I also made a lifetime friend in Ralph Hultgren, now professor emeritus at Berkeley. You see, I was a chess player, and I organized all kinds of chess teams at Caltech. It came to the point that once a freshman came to see me in Caltech in the middle thirties. I asked, "How did you find out about me?" He said, "Oh, in the material that we get from the institute, it says that if you are interested in chess, see Dr. Weinbaum." I didn't realize it until I started to come back to Caltech later. I never had any personal relationships with [William R.] Smythe. I knew him, but I never was his student or anything like that. But the warmest reception that I got in Caltech was from Smythe. On one of my trips to look for a job, I came across Smythe, and he said, "Oh, you know, we have a graduate student in Caltech—Ward, by name—who is an excellent chess player. Let me take you to meet him." And it was the beginning of a friendship with Morgan Ward. It was the same thing with [Harry] Bateman, you see. In the thirties, we were on our top

chess team all the time. Even when I was an undergraduate in Caltech, I organized an elimination chess tournament in Caltech. So I was known through many activities, which was unusual for Caltech at that time.

So anyway, I had a very difficult time to find a job. None came from the Caltech recommendations. Finally, I got a job as a draftsman in a place that was making metal furniture for banks. They had just started to build metal cages for tellers in the banks. But the business fluctuated. It paid minimum wage, fifty cents an hour. And I would often be laid off. In one of these times, Caltech got me a temporary job at a place that manufactured welding torches. Well, I was a good draftsman, but I didn't know how to ink or how to print very well. So I had a very hard time there. And the man in charge was very much dissatisfied. Finally, I learned how to do these things. But the owner liked me, because he had a couple of problems that he approached me with that I was able to solve for him. Actually, he was not the owner, but he ran this particular factory that belonged to a small company with offices in Denver.

Anyway, as time passed, I was going from job to job. I had a little research job that was quite interesting for a few months. And when I was laid off, I entered a chess tournament in Oakland. I never could play in the state chess tournament before, because it was every day for a week. I was laid off for two weeks, but I didn't know whether the job would continue or not. I was the only man from Los Angeles who came there. The important thing was that it was the beginning of a lifetime friendship with one of the students who participated in this tournament. I was chess champion a couple of times in Los Angeles in the twenties, but in the state tournament I finished third, and I won and drew with the two top players. But I lost to this fellow, Ralph Hultgren, who became my friend, and maybe that's the reason he became my friend, I don't know.

TERRALL: He was a Caltech student or not?

WEINBAUM: He was a Berkeley student. Eventually, he graduated number one from Berkeley, and he went some place to a mining school for a year. And when in '29 I came to work with Pauling, he came to Pauling as a graduate student. Later he was a National Research Fellowship, and eventually he went to Berkeley and became the head of the mining department there. He's just a few years younger than I. And we see him each time we go up to Berkeley.

MRS. WEINBAUM: He's now emeritus.

WEINBAUM: And he was number two on the chess team while he was at Caltech. Eventually we had three different teams, in three different categories by strength, from Caltech. You know, I am full of anecdotes about people. In one of the tournaments, I played my game with Bateman in his home—you know, he had a home just across from the campus then. He wore a chess sweater! He had been a team captain for the Cambridge chess team when he was a student there. I don't know if you know what kind of reputation Bateman had. He lived in a rarefied mathematical atmosphere. Smythe was a great admirer of Bateman. And I realize now that the fact that I was a somewhat stronger player than Bateman put me in a great light with Smythe. I also got Bateman involved in chess playing. When we had a state tournament in L.A., I couldn't play in it, but we wanted to get people from different cities. I had been told that Bateman was such a strong player; I didn't know him at that time. So I thought, well, we'll send him an invitation. And he sent a $10 bill to enter and played in the state tournament and played afterwards in the L.A. championship tournament. He actually played the year that I won the championship.

So some of my most interesting friends in the twenties when I came here I made through chess. In those days, students in Caltech—and probably now, too—had very little connection with the faculty. But I met a number of very interesting people through chess. And some young people also became lifetime friends of mine. One of them was very helpful to me after I lost my job, came back from prison and couldn't find any job and so on. He had a big factory of girls' clothing, and I became an "expert" in girls' dresses.

TERRALL: Who was this?

WEINBAUM (TO HIS WIFE): What was the firm's name?

MRS. WEINBAUM: Jean Durain.

WEINBAUM: Jean Durain. It was his wife that was the designer of these things.

MRS. WEINBAUM: But it's not in existence anymore.

TERRALL: So you kept up your Caltech connections during the time that you weren't in fact in school but working around Los Angeles.

WEINBAUM: Well, one person was Jesse DuMond. And I also didn't keep it up to the extent that I should have. I don't know why. I am spending a lot of time now—after all, I have nothing to do and I'm eighty-seven years old—I'm spending time trying to figure out why I became the person that I am now in my old age, in my outlook, if you wish, in the philosophy of life, and so on. Because if I cannot solve that problem when I know all the different circumstances, how can I solve the problems of the world? I got lost now. What was I saying?

MRS. WEINBAUM: I think that you did not include the fact that you went back to Europe, and you brought your bride.

WEINBAUM: That's where I was! So finally I got a job that looked as if it was going to last. I had already worked for a couple of years there, and I had a good relationship with the man who managed the shop. So I took a three-month leave of absence—or six weeks, I don't remember. But I couldn't get a visa to the USSR. You see, it was very difficult in the twenties to get to visit Russia. But I wanted to go there and get married, because I couldn't bring my wife-to-be without being married; you see, she could enter the United States as my wife.

TERRALL: Did you still have your Russian citizenship?

WEINBAUM: No, I had already gotten my U.S. citizenship by that time.

TERRALL: So you knew your wife-to-be already?

WEINBAUM: Yes. She was a very distant relative of mine. I even gave her some music lessons years and years ago. She became a very accomplished pianist. So I went to Europe, and that's another story. You see, my office wanted to use my trip to Russia to show some of the special things that they had developed. So I went to Amtorg [Amerikanskoe Torgovlye (American Trading)] in New York. We had no diplomatic relations with Russia, but there was the Russian trading mission in New York. Amtorg was interested. I went to Paris with their support, and

still I couldn't get a visa to go to Russia. And it was very difficult to leave Russia; you could leave, say, if you wanted to emigrate to Mexico. So somehow, on that basis, my future wife left. And the adventures involved in getting married is another chapter of my life. Anyway, I came back in '28. In '29, the company I was working for was sold to Union Carbide or something like that. And they replaced the whole upper structure, which wasn't much. The manager left because he wouldn't work for Union Carbide; he wouldn't have the independence that he had with the small company. And they replaced me as an engineer; they hired just a draftsman.

TERRALL: So you lost your job as soon as you got back.

WEINBAUM: No, not that soon; it was a year later. My wife had just gotten pregnant, and here I was without a job. And that's when I went to Caltech and saw a few people there. Not Pauling; that never occurred to me. Fortunately, just about a week after this, the place where I worked on and off as a draftsman called me for a job again. And I went there, and a week or two later I received a call from Pauling—that he had, for the first time, money for six months for a technical assistant; but he felt fairly confident that it would be continued after that. So if I wanted to come to work with him, he'd be pleased. You see, Pauling knew me, and the job had quite a mathematical aspect to it. It was crystal structure, but the calculations were very complicated. As it turned out, he had some mathematician who had done something during the summertime for him. I don't know what it was, but it was very unsatisfactory, whatever he had done.

SIDNEY WEINBAUM

SESSION 2

August 20, 1985

Begin Tape 2, Side 1

TERRALL: When we finished last time, you had just gotten asked by Pauling to come to campus. He said he had a short-term research assistantship.

WEINBAUM: Yes. He was given six months of money for his work. Eventually, he got a Nobel Prize for this work.

TERRALL: He was working on X-ray crystallography at that time?

WEINBAUM: Yes. That's what I was going to do. He was working on chemical bonds. Because the crystals are formed in a certain definite way, you can calculate the distances between the atoms. Then why is it in some crystals the distance is more, in other crystals less? So that's experimental data; if you develop a theory for that, you can check and see whether it is correct. Or if you already have a theory, then you say the distance should be so-and-so in this crystal, within a certain error.

TERRALL: So he was working on the theory.

WEINBAUM: Yes, on the molecular bond. What governs the particular distances? It's not a random thing; this follows certain definite natural laws.

TERRALL: Who was funding this? Do you know where the money came from?

WEINBAUM: I don't know from whom he got money. He also said that he felt that it would be a renewable thing. But I know that at the end of the six months, I was getting a little bit worried.

TERRALL: Did you go to the job with the understanding that you would be enrolled as a graduate student?

WEINBAUM: No. That question didn't arise, because it was a six-month thing. I enrolled only when the renewal came after six months. My assistantship was supposed to be a full-time job. When I first registered, they said I had to register for the minimum allowed units, which I think was forty. The maximum was sixty-six or something like that. However, they allowed me to register for a certain number of units in the summer. Then when I came to register for the next year, Professor [Howard] Lucas, the organic chemist, was in charge of the registration. When he saw that I registered for a total of forty units, he says, "How come? That's all nonsense. You register for sixty-six." So my problems were solved, and in three years I had enough credits. When I was hired, my salary was $2,000 a year, which in those days was not bad, especially for doing things that I would like to do. Then a couple of years later, all the salaries in Caltech were cut by 10 percent, so I got that cut. Then, the year that I got my degree [1933]—if anything, you'd expect maybe you'll get a little raise or something like that—I was cut down to $1,200, because I became a research fellow. I had been a technical assistant, but when I became a research fellow, then I got less. It was pretty difficult at that time already on $1,200, and I had a child, and my wife was sick. It was quite a problem.

But coming back to this, what also fortunately occurred during that time was that Pauling also had some other money for two or three months. I don't know whether the name of [Boris] Podolsky is familiar to you—he was one of the theoretical physicists who got their PhD's at Caltech. He made quite a name for himself; he even had a paper with Einstein [A. Einstein, B. Podolsky, & N. Rosen, "Can Quantum-Mechanical Description of Physical Reality be Considered Complete?" *Phys. Rev.* 47(10): 777–80 (1935)]. Pauling had just come back, either that year or the year before I came there. He had had a fellowship to go to Europe [1926-1927]. And I think he worked with [Arnold] Sommerfeld; I don't remember where he worked in Europe. But anyway, those were the days when quantum mechanics appeared. And Pauling became interested whether also quantum mechanics could not be applied to chemistry, to calculate the bonds. And in that day only very simple things were done, things that had just one electron in them, but he was interested in molecular problems. And he had that theoretical physicist, Podolsky, working on it. He came to Pauling's lab after spending a year or two in Russia. You know, in the thirties there were no jobs in the U.S. The problem requires some very extensive algebra. So, besides doing crystal structure, I was also checking his algebra.

TERRALL: This other student?

WEINBAUM: He was a PhD at that time. Also, you see, the thing is that if you make one mistake, then whatever you get afterwards doesn't mean anything at all. Or it may not even work out, if someplace you put a plus sign in the algebra instead of a minus sign. And as I say, it was exceedingly complicated algebra. At that time, they decided they will have to use electric calculators instead of hand calculators. And so every firm wanted to sell their electric calculators, and two of them gave them to us free to try out. So when we made an extensive calculation, we both made it, and every few minutes checked it.

As I say, I am full of anecdotes. There was a professor of mathematics, Dr. [Clyde] Wolfe, in Caltech. There was a man in Los Angeles who was sure that Shakespeare was not written by Shakespeare but by whoever it was, I don't remember now. Wolfe was doing calculations for him; one of his specialties was theory of probability. So he was looking at repetition of words and things like that, to show that it was not the same as the known writings of Shakespeare. I understand that this man had about six or eight calculating machines, and he had a little swivel chair in the center there, so Wolfe could swivel his chair and go from machine to machine. However, when we got the calculators, they were much more modern than what he had. He may have even had one of those that had to be operated by hand, I don't know. So, he somehow found out about it, and he came to take a look and to see how they worked. Well, a few weeks passed by. One day I came back to work, and the machine was stuck; it wouldn't work. So I called the company; "That's impossible, it was in perfect order." The company representative came back and he tried it out; it didn't work. He said, "What did you do with it? Did you try to take it apart or something like that?" Well, they gave us a different machine. Months passed by, and I met Wolfe on the campus. And he says, "I came one day to try out your machines. Nobody was there, so I just worked for a while. And then I wanted to know how it is put together, so I took it apart, and then I put it back together." So the company was right.

TERRALL: Were these calculating machines really useful to you?

WEINBAUM: Yes. Before that, they already had hand calculators. But with these tremendous calculations—you can't imagine how much time I spent even on crystal structure, and then afterwards on quantum mechanics. In quantum mechanical problems, however, you didn't have

to worry about a mistake. They were self-correcting. There is a way that you set up these equations, that you are trying to calculate the minimum value that these equations can produce. So it's a wonderful mathematical tool. Even in chemistry, if you have a compound, you want to find the value of its lowest energy state. So if you set up this kind of equation and eventually solve it, there may be some constants in it, but you don't know what particular value to assign to them. And by the variation of the magnitude of these constants, one finally obtains the lowest value for the energy. It's difficult for me to talk about these things now, because it's so far in the past.

TERRALL: It's a very mechanical way of finding a minimum, then.

WEINBAUM: Yes. But you have first to solve the equation. The amount of calculation is tremendous even in crystal structure, where you use trigonometric functions. Eventually, Pauling's laboratory was the first one to use punch cards; someone came and made cards for all the different values of these functions, and then calculations that you would have had to spend six weeks or two months on, now in one day you could make the calculation. These tools are very helpful. Before you made calculations only if you were pretty sure that the structure was right. And then if it didn't give you a good answer, you had to try another one. Now you could try six or seven, one after another, and see which one gives you a better structure. So these machines helped a lot. As far as I understand, punch cards had been used in research only by astronomers before Pauling used them.

TERRALL: Let me ask you one more thing. When you did decide to enter a degree program, how did it happen to be in physics rather than in chemistry, since you were working with Pauling?

WEINBAUM: Because my background was not in chemistry and I wasn't particularly interested in chemistry. Also, I was interested more in theoretical things. I graduated in physics and engineering, not in chemistry. And in the years in between, there were big changes in physics—from quantum theory to quantum mechanics—that I missed. And here I came back, and suddenly I got into that and it was very interesting to me. I sort of got acquainted with particular phases of quantum mechanics. And I think I may have mentioned that in my senior year I took all the requirements for the master's degree, except a little paper. It turned out that I had all the

prerequisites for admission to candidacy in physics, except for one course that I'd have to take. So I had all these things. And as I say, the main thing was that actually I was doing work in physics.

TERRALL: Yes. But what kind of relations did Pauling have with the physics division? Were there other people in this kind of situation?

WEINBAUM: No. I don't think that he had any connection with the physics department whatsoever.

TERRALL: I'm just wondering if there was any problem for you, being in the physics division but doing your work with Pauling.

WEINBAUM: No, because I was working on quantum mechanical problems, you see, and an advanced sort of a problem. So there was no difficulty at all. It took me a year to take that course, and I was admitted to candidacy. And it was important to be admitted to candidacy; because once I became a student, then there was a fee that I had to pay. That fee becomes less after you are admitted to candidacy. So there were even financial things that were pushing me in that direction. It was very nice to work with Pauling. Pauling was very evenhanded with all the people, whether they were very bright or were not that bright. He didn't show any preferences in his relationships with people.

TERRALL: How big a group was it?

WEINBAUM: How many graduate students he had? Well, it's hard to tell, because it varied from day to day. But there were always several.

TERRALL: Working on different problems?

WEINBAUM: In the beginning, there were a number who worked on crystal structure. I think you mentioned Gus [Gustave] Albrecht; Albrecht came as a technical assistant, because he had a background in some of these things—amino acids and so on—that Pauling was interested in at

that time. But he eventually got his degree not at Caltech but at UCLA. Somehow I don't think that they thought he was the Caltech caliber of a student, because otherwise he could have gotten a fellowship. So he worked on crystal structure and was interested in that.

TERRALL: Was Pauling the kind of person who would assign problems to people to work out?

WEINBAUM: That's right.

TERRALL: So he was coordinating everything.

WEINBAUM: He was coordinating it, but he wanted people to be interested in it. And here is another anecdote. Years later, the late forties, I came on the campus while I was working at the Jet Propulsion Laboratory, and I saw what looked like a little boy walking on the campus. And then on two or three other occasions, I saw him again. Well, he turned out to be a young fellow with an IQ of 200 or more; he started Caltech at fourteen or something like that, and his interests were only in science. Anyway, he eventually got his PhD degree someplace in the east. After my experiences, when I came back to see Pauling, he said, "You know who came to see me the other day?" He gave that name and said, "You know, he came and asked me whether he could work with me. I asked him, 'What do you want to work on?' He was speechless." In other words, a lot of these very-high-IQ people can do things very well, but they do not have any particular scientific interest. And during the Depression days, there were quite a few fellows like that, because there were no jobs. If you were capable, you got a teaching fellowship someplace, or research fellowship in one of the universities, and postponed the problem of looking for a job. I know there are some statistical studies that show that a very small percentage of people who get PhD's in the sciences publish a paper afterwards. Or there was a questionnaire among the graduate students in some of the universities, to name some of the scientific magazines, and some people couldn't even name three magazines in their field. Before that, in the twenties, it was only the people who were really interested in science, or some also that could not face the commercial work, who went into graduate work. So it was a different mix.

TERRALL: Did Pauling develop personal friendships with the people who were working with him? Did you know him well personally?

WEINBAUM: Well, we had a very friendly relationship with the Paulings. But in general, there wasn't. I don't think there was any connection between faculty and students, maybe some official parties once a year or something like that, but that's all. We made friends with a number of the International Research Fellows for the short time that they stayed, because they would be invited once and then completely forgotten, and they had no social life at all.

TERRALL: So you see yourself as being exceptional in that respect—that you made more friendships with the faculty and with the visiting researchers?

WEINBAUM: Yes, because with the European background of my wife and me, we were interested not only in science or music—my wife was an accomplished pianist—but my wife had a great interest in painting, because her brother was a painter in Russia, and we were interested in literature and things of that sort. So in chemistry, our relationships were only with some of the graduate students. But socially it was only the Paulings in the chemistry department. Our social life was entirely with the biology department, because the year that I came to work there was also the year when most of the younger professors came to the biology department.

Right at the beginning of the teaching season, at Millikan's home, there was a big party for the newcomers. And so my wife right away got acquainted with all these biology wives, and they sort of struck up a friendship that lasted through the years.

TERRALL: Who were your particular friends in biology?

WEINBAUM: The [Alfred] Sturtevants, the [Sterling] Emersons, the [Jack] Schultzes, the [Henry] Borsooks. You see, there were quite a few. But especially the first three that I mentioned. They had children about the same age as our daughter. And my daughter, when she goes to Washington, always looks up one of her girlfriends from that time, Sturtevant's daughter, who is a lawyer working for the government.

TERRALL: Was Pauling politically active in the thirties?

WEINBAUM: At first, he was not politically active at all.

TERRALL: Or interested? I mean, did you have political discussions?

WEINBAUM: No, no. Even later, I didn't have any political discussions with him. Did I tell you how he got interested in politics?

TERRALL: No, you didn't.

WEINBAUM: This I heard; I don't know it firsthand. Eventually, the Paulings had a big place in Sierra Madre or wherever it was, and they had a Japanese gardener who worked for them. And when the war started, and all the trouble started with the Japanese, he came to Pauling very distraught, and Pauling said, "You know, you have no family; you can use that shack, and if you wish, you can live there." So he did. The house stood on a little hill, and the garage was at the bottom. Mrs. Pauling came down one morning to take the car out, and there were all kinds of four-letter words—"you Jap lovers," and things of that sort. So they called the sheriff, and the sheriff came and took a look at it, and said, "Well, isn't that true?" I was told that that was the beginning of Pauling's political awareness.

TERRALL: I think I've heard that story from someone else.

WEINBAUM: So that's probably true; you got it from two sources.

TERRALL: So, as far as you recall, when you knew Pauling in the thirties, he wasn't—?

WEINBAUM: No. As a matter of fact, I was quite interested in politics. That's basically why I got into trouble. I circulated very successfully two petitions in Caltech during the middle thirties, or early thirties, or whatever it was; I don't remember the dates. One was for recognition of Russia and the other was against the [California] Criminal Syndicalism Act. And for that second one, I had a very good backing, Theodore Soares, who was a retired theologian on the campus in the thirties, and he had an office in the humanities building, in Dabney. When somebody gave me a leaflet about this thing, I saw he was among the people who sponsored it. He belonged to a certain parish, and I even went to him to ask whether he knew anyone who might be willing to sign this petition. And in a couple of days, I got from him a fairly long list of

people. However, I didn't have a car, so I went with a friend, a very presentable lady, to get the petition signed. And we spent two hours, practically the whole evening, to obtain the signature of one man; he absolutely wasn't going to sign it, but just because I showed him that Dr. [William Bennett] Munro had signed. Well, to spend all that time for one signature was not a useful thing. And in Caltech, I certainly didn't go to people like Millikan, but I didn't even go to Pauling in those days for his signature, because he was directly my boss, so I didn't want to do it. And, as I say, at that time I didn't even know where he stood politically. I knew that he was fairly liberal, but you never can tell. For example, Sturtevant was very liberal. But one of these petitions he refused to sign; I don't remember which one it was.

TERRALL: You said you knew the Paulings socially. So your friendship would have been more around cultural things than politics.

WEINBAUM: Yes, and children, food—things of that sort. We went to their place. I didn't have a car, so it was easier for them to come to us. Several times a year we would get together. But, as I say, our real social life was in the biology department. Among the friends we had there was also Calvin Bridges, who became a very close friend. He was politically very liberal.

In those days, Caltech needed money very badly. When Einstein was there, they had a dinner for the people with money. It was a $1,000 dinner; Einstein was the guest of honor. And they invited all the top people on the faculty. Calvin Bridges was not on the faculty, but he was also invited. He sat between two ladies, and all during the dinner he discussed the question of the necessity to redistribute the wealth in the United States. He probably was never invited again. I understand there was quite a bit of consternation among the organizers of the banquet. [Laughter]

TERRALL: Let me ask you a few more things about your graduate work. Was the shift, then, from working on crystal structure to quantum mechanics sort of a natural one?

WEINBAUM: For me it was natural, because when it became obvious that there was a prospect of doing something in quantum mechanics, then I was switched to that, because I had the experience from working with Podolsky. So they didn't have to introduce this thing to me; I already knew how to do it.

TERRALL: So your first exposure to quantum mechanics was through this other fellow.

WEINBAUM: And, also, Pauling and I, as I mentioned to you, took that course in mathematics together, so he knew that I could keep up with this kind of work.

TERRALL: Did you take a class from [Richard C.] Tolman? Didn't he offer a class in quantum mechanics in the chemistry division?

WEINBAUM: I don't remember. Maybe it was before I came. But I had a very good relationship with Tolman. Also, Tolman was the first man I always went to for his signature on many of these things, because Tolman was a very liberal person. Coming back to Albrecht: Albrecht said, "I know so many professors at UCLA. Why don't we go and get signatures there?" But he wanted only to introduce me and not have anything to do with it. So again, with this very nice lady, we went over. And all I had to show them was that Tolman signed that, you see. I think that of the six or eight we went to, maybe one or two refused. I can't remember. But there was no difficulty, once they saw that Tolman signed it.

These political activities never came up against me. But the particular accusation [of Communist Party membership] that was made in 1950 came up for the first time, I would say, about 1941. The war had already started in Europe, and I know that I had just started working for Bendix Aviation. By the way, I was recommended by Professor Sorensen for that job. Anyway, a friend of mine—well, I don't have to hide the names now—Frank Malina, came to me quite perturbed. Frank Malina was a very close friend. He told me that he was at a big party in the aerodynamics department, and Clark Millikan had gleefully told him that they were informed that he and I and another two or three names were members of the Communist Party. So I went to see a lawyer friend of mine and said, "What can I do?" I was sure that with an accusation like that, they were going to refuse me clearance. But no! I was cleared throughout all these years. From '41 to '49, when the trouble began, I was cleared to top-secret work. So, why did it suddenly come up? And I have my explanations for that.

TERRALL: What was this accusation by Clark Millikan based on? Did you know him?

WEINBAUM: Obviously the FBI gave that information to the authorities in Caltech. And Clark Millikan was way at the top, you see. And I say "gleefully" because I presume there was not too good a relationship between Frank Malina and Clark Millikan. Anyway, I never expected anything to happen to me so much later.

Anyway, so I got my PhD. I just worked over my thesis a little bit, and it was my first published paper ["The Normal State of the Hydrogen Molecule," *J. Chem. Phys.* 1:593-6 (1933)]. That was the first application of quantum mechanics to molecular problems—not just when there is one electron, when there is a whole molecule. And then the same thing was repeated with the helium ion; that also had only two electrons. Pauling had some other ideas, and I spent a lot of time on them, but the amount of work proved to be too great.

TERRALL: Did you continue working on this, then, after you got your degree?

WEINBAUM: Yes. I continued working with Pauling on this type of problem, or any other problem that required mathematics.

TERRALL: He hired you as a research assistant.

WEINBAUM: I was at that time already a research fellow. I presume money was paid by the— I don't know, it still probably was paid from his sources.

TERRALL: How long did you then stay on in Pauling's lab?

WEINBAUM: I came in '29, and I stayed until '41. I stayed for twelve years there.

TERRALL: Was this an open-ended thing, or did you have to get your appointment renewed every year?

WEINBAUM: Yes, but by that time it was an automatic thing. There was no problem. And once the war started, in '39, I got a little bit more money, but just very little. Actually, during the depths of the Depression, living was so inexpensive, you know. When my wife got so sick for a while that she couldn't take care of the house and so on, I tried to find somebody to help. One

young woman came, and I told her how much money I made, and I said, "The most I can pay is $7 a week." Even $7 a week was $30 out of the $100 a month that I was getting then. But I never realized what the situation was. She started crying like anything. It was a godsend to her. For $7 a week, she would come six times. She had lunch with us; she prepared the food, too. So these were very, very difficult times.

TERRALL: Presumably, then, your political work and political interest picked up during the Depression, like everyone else's.

WEINBAUM: Yes. Well, that's when I became more or less active. I had a lot of socialist friends even when I originally came here. In fact, we met one of them in the park today. I have known him now for over sixty years. He moved to Santa Monica about two years ago.

TERRALL: Did most of the people you knew also have Caltech connections?

WEINBAUM: No. My first more-or-less interesting connections were those that I made through chess when I came here—some very interesting friends, and some just acquaintances. Then, besides that, I met some friends through Epstein. He once told me, "Why don't you call these people? I told them about you. I'm sure that you and they would be interested." And then, I also knew the people in the English department pretty well. I think I mentioned to you that my closest friend at Caltech was Jesse DuMond. I knew him because as an undergraduate I took the graduate courses he was taking. I'm pretty sure he is the one who told Pauling about my looking for a job.

Begin Tape 2, Side 2

WEINBAUM: Alexander Goetz came from very high strata in Germany, so when Hitler had just gotten into power, Goetz made a trip to Germany, and he had an interview with Hitler. And he gave a report to the group that met at [Clinton] Judy's house.

TERRALL: Did you go to that regularly?

WEINBAUM: I went regularly. It lasted only a few years. I don't remember why it disbanded. So I knew Judy very well. Anytime there was something musical going on, for example, when one of these modern composers, [Ernst] Krenek, gave a talk at Caltech, Judy invited my wife and me to dinner. My contribution to these things at Judy's house was a talk on modern trends in music. As I spoke only once, it probably means that those gatherings didn't last very long.

TERRALL: I know a lot of people have mentioned it and recall those meetings very fondly.

WEINBAUM: These meetings probably took place for a few years before I came back to Caltech. Because I was away from '24 to '29, and they were going full blast in '29 when I came back.

TERRALL: What was the political atmosphere around Caltech, and the climate here, in the thirties?

WEINBAUM: I would say it was indifferent, as I found out when I went around with the petition for recognition of Russia. I was amazed how little people knew about Russia, about the Revolution, about what the situation was. And not just one but several of these people in the faculty thanked me for talking to them about this. And even our close friends, with the exception of Calvin Bridges, were that way.

TERRALL: So did you find yourself arguing with people?

WEINBAUM: No. I never argued with people. First of all, they were not interested. And my political interests became finally in support of Roosevelt. That's where I met a number of Communists and a number of them became friends. Because actually, in all these democratic organizations, the people who did the work were the Communists. The Young Democrats in Pasadena, for example: The leadership either was Communist or somebody who knew Communists. Because there was no organizational ability and no desire to put any time in. At best, people would come to a meeting. Some work had to be done.

TERRALL: So the Communists tended to be the more committed of the group?

WEINBAUM: They were committed. Those were the days of the so-called United Front in Europe. Actually, in those days, all these measures, like unemployment insurance and Social Security and so on, were the things that the socialists had been fighting for, for years and years in Europe. Already by that time they existed in Europe, because the workers' movement—the trade unions in Europe—were very politically inclined; that's the way they developed from the early days. While here they were only economically inclined. Now here in the U.S. they have no power at all, while in Europe they still have quite a bit of power.

TERRALL: So you got involved with working for Roosevelt.

WEINBAUM: I knew a number of people. We worked together, and we worked even on the congressional level. In those days, Pasadena, Glendale, Burbank, North Hollywood, and even Lancaster was all one district, the Ninth Congressional District. Some of the people I knew at that time are still now among my best friends. Not Caltech people but from that political work. They are among the most decent people that I met in my life.

TERRALL: Did you get to know Frank Oppenheimer in this context?

WEINBAUM: The whole Oppenheimer thing for me is very interesting. Frank Oppenheimer may be one of the reasons why a lot of people got into trouble. Because, like all rich people, well, they don't give a damn about anything.

TERRALL: Because he was very open about—

WEINBAUM: He joined an open group. He was absentminded enough that when he sent a suit to be cleaned, he had his Party card in that suit. I think he was pretty open among students, not necessarily saying that he was a Party member, but to the extent that when there were big meetings in Los Angeles—he had a truck in those days; to show how proletarian he was, he had a little truck—he would take some of the students in the truck to these meetings, and things like that. Well, naturally, he became a friend after I met him. The most amazing thing was to find him among the witnesses for the government case against me.

TERRALL: But he never really said anything.

WEINBAUM: But, you see, that brings a very interesting point. If I was found guilty, it means that all of them were liars. Because they said enough to get me convicted, but if I had been a member, they lied by saying that I wasn't a member or they didn't know I was a member. They still perjured themselves. But I am the one who was sent to prison, and not they; as a matter of fact, no accusations were brought against them. After Oppenheimer testified, my lawyer turned to me and said, "Should I cross-examine him? He actually didn't do us much harm." It did us a lot of harm just having an Oppenheimer testify. He was not Robert Oppenheimer, [but] still it was a big name. I said, "Ask him how come he is testifying?" So the lawyer asked him, and he said, "Well, two men from the FBI"—by that time, he had lost his job as a professor and was living in Colorado, or wherever they had their ranch—"and they came to me and said they wanted me to testify. I refused, and they said, 'How do you ever expect to teach again, if you are not going to do that?'"

TERRALL: He said this at the trial?

WEINBAUM: Yes. On the same day, later on, [former Caltech graduate student Eugene] Brunner refused to testify and was thrown in jail. The next morning, my lawyer said that he just had a call from [Harry] Bridges—you know, the longshoreman labor leader who was also in a lot of trouble. They wanted to deport him, because he was an Australian; he was a close friend of Robert Oppenheimer. Anyway, he said Frank Oppenheimer wants to be recalled as a witness. And that's, again, characteristic of these rich people. It never occurred to him that he didn't need a job; he had money he could live on, while Brunner lost his job. So he wanted to be recalled obviously to refuse to testify. How could anybody else dare to refuse when he didn't refuse?

We also became, through Frank, very friendly with Robert Oppenheimer . Robert spent very little time in Caltech. A couple of times we invited him, and he came to dinner. He used to drop in quite often, because we lived very close to Caltech, so on his walks he would just stop to say hello. So, as I said, we were friends; I would say we were even close friends with Robert Oppenheimer. When the thing happened to me, I thought that a few people should know about it. And I wrote to them so that they would know, from the tone of my letter, that I was not going to say anything that might be prejudicial to them. And here I have to come back again, because

this is the crux of the case. When they [the FBI] approached the Jet Propulsion Laboratory, that they wanted to see me, I was told about it, and I went to see them. They didn't like what I had to say. But their approach was this: "We know that you like your family very much, and that you would like to support your family. And if you work with us and tell us who are your friends—though you cannot work anymore at Jet Propulsion Laboratory—we can arrange it so that you will get a satisfactory job someplace else." Then they said, "Well, we know, too, that you were a member of the Party, because your relatives are in Russia"—my mother was living in Russia. And so they put pressure there. So I was never accused, you see, of anything specific. And I have to give credit to the prosecuting attorney, because, actually, for a while I thought he was my defender, because he was telling what a nice man I am.

To continue: When the time for my parole came, everybody I talked to among the guards and some of the younger people said, "Oh, you're certainly going to get parole." Well, I knew otherwise. Because when I appeared before the parole board, they started to ask me who my friends were.

TERRALL: They were expecting you to cooperate.

WEINBAUM: Cooperation for parole, you see. Actually, the whole accusation was a technical accusation—that I had said "No" to a question about Party membership. So the chairman [of the parole board] said—I don't remember how he worded it exactly—"Why should we give you parole, if you don't know how to cooperate with us?" So, you see, it was a matter of punishment and nothing else. And I told him, "Look what happened to me. If I tell you who my friends were—" Oh, there was a very interesting thing. They had these Party books. And the one that they claimed was mine—everybody gives a Party name, you see, and [Frank] Oppenheimer had Folsom or something like that, for the prison. The one supposed to be mine was a name that they couldn't connect with anything. That's why they thought I knew somebody that I admired who was a very, very incognito person. They could not stand that. It came up again and again—where did I get this name? I couldn't tell them where I got it, because I *didn't* get it. [Laughter]

TERRALL: Let me just go back to the thirties again, before we get ahead of ourselves here. You were talking about [Frank] Oppenheimer and how he could afford to be so open about his

involvement. Wasn't it also true, though, at that time, that no one had any idea what was going to happen later?

WEINBAUM: But you see, actually, maybe the authorities even didn't know about Oppenheimer. But anyway, Robert Oppenheimer was such a respected person that they might not look that way at Frank Oppenheimer. As far as Robert Oppenheimer is concerned, I think all the books and the series on television and so on missed the most important thing about him—of a man who thought he was God. As a matter of fact, there is a novel that was written under this title.

MRS. WEINBAUM: Haakon Chevalier, *The Man Who Would Be God* [1959].

WEINBAUM: Yes. Actually, Chevalier thought he [Oppenheimer] was God.

MRS. WEINBAUM: Until the very end.

WEINBAUM: And then, when a toy was taken away from him, he crawled, you see.

MRS. WEINBAUM: You mean his clearance.

WEINBAUM: And he said that he was a fool. I couldn't read the whole report, it's a big report, but I turned the pages—and the way he spoke about his love affair with that woman who committed suicide [Jean Tatlock], and things of that sort, and the way he practically beat on his chest about what a fool he had been. You see, this was such a tragedy for him. And my explanation for that is that he looked down upon everybody—and though nobody spoke about this openly in Caltech, most of the professors didn't like him, because he always behaved as if he were so much above them. And, by the way, when he became close to the Communist Party, his manner did change. When he gave a talk, you could understand what he was talking about. Before that, if he gave a talk, I think he made it a point to talk so that maybe one or two people would understand him, because he didn't care about the rest of the people. If I had met him at that time, he wouldn't even have remembered my name. And by the way, knowing me as well as he did, I met him at the airport during the war, and he was with somebody, and he introduced me, and not as Weinbaum but as Wein-something. In other words, he was protecting himself.

And now I remember what I started to say. I wrote to a few people, and Robert Oppenheimer was among them. At that time [1949], I thought only that I had lost my job in the Jet Propulsion Laboratory. So I thought that Robert may find a possibility to suggest a job for me.

Well, the next weekend, the doorbell rings—and in those days, I expected a different kind of visitor. And here he was, with Mrs. Tolman. In other words, he came with a protector for the interview. And we talked together. After the meeting that I had with Mrs. Tolman years before that, I couldn't talk completely openly. But it was clear to Robert Oppenheimer that there was no danger to him from me. I never heard from either Frank or Robert again. Never! And they knew that I was the sole supporter of the family. I know that my family would not have accepted any help from them. But they didn't make an attempt, because, among other things, they were scared. They wanted to protect themselves as much as possible. And so you see, when rich people get some fancy ideas, let's say—and even Frank drove a little truck instead of a car—they utilize other people. And when these people become unnecessary to them, here they go. I remember that [physicist] Philip Morrison, whom I met, too, wrote someplace that after a while, when he met Robert Oppenheimer in the street and engaged in a conversation, Oppenheimer referred to General [George] Marshall by first name, to show how well he knew him. And as I started to say before, he looked down upon everybody else—for one thing, because he was such a cultured person and he knew some Sanskrit and so on. I once, by the way, had lunch with the professor from whom he learned Sanskrit. But at that time I didn't know the Oppenheimers. That was through chess; he was one of the top chess players in the Bay Area—Professor [Arthur W.] Ryder, who made all these translations from Sanskrit into English.

Anyway, the thing with Oppenheimer was that he never got a Nobel Prize, because he never contributed anything new. He right away understood a new idea and knew how to go further with this new idea and so on. But this was such a big loss for him. These people that he'd looked down upon—some mere experimental men or something like that—got a Nobel Prize but he did not. So when the opportunity to build an atomic bomb came, that was his great contribution. And then the "glory" was taken away from him. He obtained that great renown, and instead of saying "To hell with you" when they took his clearance away— What did he need that clearance for anymore? He had made his contribution. And by the way, if humankind is going to continue in existence, he would be considered one of the most evil men who ever

lived, because he was responsible for the bomb. I still feel pretty certain that without his guidance—because he knew how to manipulate people—the bomb may not have been developed in time to use it and mankind would have been saved a lot of trouble.

MRS. WEINBAUM: And I think it's to the credit of [General] Leslie Groves, who recognized these weaknesses and still felt that he was an important instrument to use by Groves. And Groves used him to the bitter end.

WEINBAUM: You see, Groves was convinced that Robert Oppenheimer was a Communist. Still, he knew human beings well. And by that time, he already knew the scientists, and he was appalled by the scientists—that right away the talk got into some kind of scientific thing instead of practical things. And he thought that each one of these outstanding scientists was an egomaniac, and the only person who could bring them together was Oppenheimer, who created that great aura of his sagacity. And he knew how to manipulate people. He manipulated the labor leaders when he became suddenly a great friend of theirs.

MRS. WEINBAUM: He even manipulated [Edward] Teller, so Teller could do his dirty work later on.

WEINBAUM: Well, yes, but Teller developed into a great enemy of his as the time went by.

I must say that I consider I led an interesting life—now, looking back—in many different respects. I met so many different people. And where I got my greatest education was in prison. Prison was the thing that is responsible for my living to be an old man. I came out a different person. But that's too long a story, and it's a personal story, and not connected with Caltech.

But coming back to Caltech: You wanted also to know what was the attitude of the administration. Well, officially, you probably know better than I do. I would like to have something: If you can give me a copy of any statements to the newspaper that Caltech made and things like that, because in those days I looked at the papers but I somehow never came across such a statement. I was looking mostly during my trial, to see how they reported the trial, and they did a very fair reporting.

So far as the faculty is concerned, I must say that there was one very reactionary professor in Caltech, by the name of [Gennady] Potapenko. When I went back to Caltech to

work with Pauling, Potapenko asked me to his office and accused me of spreading rumors about him—that he belonged to some group that originated in Yugoslavia that was plotting against Russia, to return to something similar to the czarist regime and so on. I had heard this. And I said, "I heard this, but I have never had any occasion to talk about it. From now on, if somebody tells me, I'll tell them that you deny this." But even *he* told me [later], "Well, I don't believe that you belong to the Party, but you are just close to it." And it's true. I knew a lot of very good people who were Communists. And some of them were not so good. [Laughter]

TERRALL: To go back a little bit, to your own story: When the US got into the war, you decided to go into war work.

WEINBAUM: I went to work for Bendix Aviation.

TERRALL: Was that in Los Angeles?

WEINBAUM: It was first somewhere near Hollywood. They had a little research group, and first we were there, and then they got a special office for us in North Hollywood.

TERRALL: So you didn't have to move from this area.

WEINBAUM: At that time, we lived in Altadena. That's when I bought a car, because I got a little bit more money. And I was very impractical, too. I could have gotten much more money.

TERRALL: Did they hire you to do mathematical work?

WEINBAUM: Yes. They had, for a short time, a mathematician there. They had a certain circuit that they were using, and that circuit was breaking down. So they were very much interested in whether the problem could be solved mathematically. And those were also the early days, when the first mathematical work came in television and things of that sort. Well, anyway, I don't know why that young man left; he probably got a better job. So I inherited this thing. There were a lot of people there who didn't know anything about anything. Bendix had gotten into this business late. In those days, there were people who liked to play with electronic equipment. The

man in charge there was one of these men—he got an engineering degree by correspondence. I'll give you an idea of how these young men worked. You know, in mathematics, we use series sometimes, and you have to prove that a series is convergent, because in that mathematical process, if you put in something wrong physically, the thing can come out that the solution is going to break down and lead to infinities. Well, the point of all that was that if you make some calculations for certain values, and the series is not a convergent series, you will get a meaningless answer. For example, if you send a wire from New York to Los Angeles, it will arrive in Los Angeles before it was sent. You see what I mean? And one of these young men thought that that must be true, because that's what the solution was saying.

But for me there wasn't too much work. And then when they moved us, the man that was put in charge was a vice-president of the company, I believe. He had just come back from the east, where they were working on the first automatic approaches for planes to come down, and he asked me to look into it. And so I got into working on the theoretical part of antennas. That helped me a lot afterwards, too, because it brought all these different mathematical things together. That man there, the one who got his degree by correspondence, got dissatisfied, and both of us were looking for something else. One funny thing was that we even went to the navy office, where they were in search of scientists. I was willing to go anyplace where I could be of more use than I was here in Bendix. The navy was very anxious to get me, but one has to pass a physical. They gave me to some sergeant or something, and my heart tends to beat very fast. Especially since he made me go through some exercises, my pulse was 140 or something like that, and he got terrified. He put it down on the paper, so they couldn't hire me. But they begged me to come again and have another test, and they would tell the man not to find anything. But I changed my mind.

Well, anyway, this man who went there with me didn't want to join the navy, and he eventually got a job in the physics department of the new laboratory that was built in Buffalo during the war for war research—the Curtiss-Wright Research Laboratory. And he was very anxious for me to come there, because he thought I would be of assistance to him, too. They were going to pay my fare for an interview, but they would pay me when I got there, not in advance. I didn't know at that time that he sent me his own money for the trip. Then I reimbursed him afterwards, certainly, but he was so anxious that I would come.

TERRALL: So you went and worked there.

WEINBAUM: So I went in 1943, and worked until 1946—almost three years.

TERRALL: Did you move your family there with you?

WEINBAUM: Yes. They moved our furniture and all that. I was very lucky. I managed to get a nice apartment, which was very, very difficult then in Buffalo. I could tell you how these laboratories work, which is not too complimentary. Just one illustration. I really didn't have enough work there, you see. The head of the physics department used to work for the government, so he knew the ways, and was going to Washington very often to get new jobs. He wanted to hire as many people as possible, whether there was work or not. But it was very hard to get people to come to Buffalo. They had a number of pure mathematicians working in the structures department who didn't know how to solve engineering problems. There was one man, who was a very fine chess player, who was a science advisor in one of the main Curtiss-Wright plants that employed 20,000 people. He had a master's degree in physics, and his mathematics was very weak. Sometimes he had very simple problems, and he used to come and I would help him. Then a few other friends—one in the structures department, but mostly the head of the aerodynamics department, whom I became very friendly with—used to come to me and they would discuss with me their problems. In engineering problems, you have to get rid of all the things that are not very important, so I could be of help in these discussions. But my boss, if at any time he would come across and see anything like that, next thing, I would get a memo from him that I'm not supposed to work for other departments, there's too much work in our department. It didn't operate as one laboratory.

The laboratory was funded by either the army or the navy. So one day a general came to inspect the laboratory. We worked for a while in a real large room, where there were a lot of people working. On the walls there was something like a little shelf at the top, and he went up on his tiptoes and rubbed his finger along it to see if it was clean. And he said, "There is dust there! The laboratory has to be as clean as the boudoir of a kept woman." So that's what the army was interested in.

TERRALL: And this was during the war.

WEINBAUM: That was during the war. And what these companies did to people—already, the war with Japan was over, and Curtiss-Wright closed their factory, I think, in Louisville. But it was still the time when it was difficult to get good personnel. So the top engineers were moved to Buffalo. It was very hard to find a place to live. The only possibility was to buy a house, so all of them had to buy a place. And most of them, in the next few months that I was still in Buffalo, were laid off. So they brought these people on false pretenses.

To come back to some of your questions, you also wanted to know about the attitude of the faculty [after my hearing]. I found the faculty attitude in general very, very nice. I cannot remember the details of our social life, but I didn't find any change. I also had to have letters of recommendation. The people I went to see personally all gave them to me. But when the pressure obviously came afterwards, at least from one of them I got a letter that he will refuse to appear personally. Even Pauling said something to me in that respect, I think—that he wouldn't like to appear. And some others. [James] Bonner was one who said that, too. But some of the big shots I wrote to, I never heard from. One was [Theodore] von Kármán, and the other was [Wallace] Sterling—he was professor of history in Caltech in the thirties, then he was head of the Huntington Library, and eventually he became head of Stanford University. But at that time he was head of the library. I also had a couple of refusals from people who were my good friends, personal friends. But certainly it's very interesting, the psychology of people. [Kenneth] Thimann, for example, who was for a while professor at Caltech and then was the provost of Crown College of UC Santa Cruz. We were socially not too close, but friendly. I never received a reply from him. One day, after I had already sent in all these letters, the doorbell rang. Thimann came to visit. He wanted to know whether I was really guilty or not guilty. That irritated me. But I said, "Well, it doesn't matter anymore now, because these letters were sent out." He got so mad that it didn't matter to me whether he was going to write one. I didn't have anything against him because he didn't send me the letter; I presume that [with] some people—if they would ask me; nobody did—I might feel the same way. But, you know, *I* should have been the offended one. But otherwise, as I say, we didn't lose any friends.

SIDNEY WEINBAUM

SESSION 3

August 22, 1985

Begin Tape 3, Side 1

TERRALL: I didn't realize when we were talking last time that you were in Pauling's lab for that long a stretch. I wanted to ask you about the changes in the field and the lab over that time period, because during that time there had been a great deal of success with exactly what you were doing. I was wondering if you could talk a little bit about the situation in the lab, and how this kind of growth or expansion was reflected.

WEINBAUM: Well, I don't know that there was any difference in feeling or anything like that. But the approach sort of was widening. As I mentioned before, there were all kinds of devices to help this crystal-structure work. But crystal-structure work per se was discontinued very soon, because the work switched to studies of gases, which required a completely different kind of an experimental set-up.

While the Crellin laboratory was being built, for a year or two or three, we were in the new astrophysics building [Henry M. Robinson Laboratory of Astrophysics] that had been built but there was no money for people to work there. A lot of the mathematicians were there too. Mentioning the mathematicians, I'd like to tell you a little anecdote. There was sort of a lecture room there, and all the models of the molecules were set up there. Pauling had developed a very good way of making these structures. Occasionally somebody wanted to see these models, and I would go and show them. One day a man came and wanted to see these things. I certainly was willing to spend ten or fifteen minutes with him, and I went there. He seemed interested, and then he got mad and said, "God says it isn't so!" And he more or less pushed me to the blackboard. He was standing so that I could not escape. He went to the board and started to write some words from the Bible and then add up letters and subtract letters in order to prove what is God's word. I don't know what it was supposed to be. And I don't know what would have happened to me, but the door was open, and Morgan Ward, the mathematician, passed by, and he realized right away that I was in trouble. He came in and said, "Oh, I have something

very important to talk to you about." That saved my life. I don't know what that man would have done to me. [Laughter]

TERRALL: Who was this man?

WEINBAUM: I don't know, just somebody who came. I don't know what credentials he had, but if somebody wanted to see the models or the building or whatever it was—

TERRALL: So was your group working closely with the people who were doing the experiments?

WEINBAUM: Yes. For one thing, because in the past I had worked as a draftsman, I plotted a lot of curves for people. As a matter of fact, I probably knew more people in Caltech than anybody else because of my two years as an undergraduate there, when I knew the engineering people. Also I was already acquainted, say, with Millikan, because I took Millikan's course, I took Epstein's course.

So coming back to these Pauling days, I think there were probably more people involved as time went on, because when it came to the studies of gases, using the diffusion method, crystal structure was completely passé. As far as application of quantum mechanics, there was also one young fellow, a physicist, who got his degree working in Pauling's lab, trying to apply it to a more complicated molecule. I think I mentioned that before.

TERRALL: But you continued doing the same kinds of applications of quantum mechanics?

WEINBAUM: With Pauling, yes, because these calculations took a very long time. And also, anything that came up that involved mathematics in Pauling's work, I usually got ahold of it. When I came back in '49 to work with Pauling, for example, he was already trying to find the actual structure of DNA, which people in England later got. So he derived an equation, and the solution obtained by the fellow who was working on the problem didn't fit Pauling's ideas at all. And so I reworked these things. Unfortunately, whoever it was that did it before— There are some equations that have two solutions; it's like second-degree algebra. And he got one, and never looked for the other, and the other one was the correct one—the one that had the physical application.

TERRALL: This was when Pauling was working on amino-acid structure?

WEINBAUM: I never participated in the direct work on amino acids because that was experimental work. But as I say, it was a very congenial crowd. And, as a matter of fact, when I was in difficulties, James Sturdivant and Verner Schomaker, and then there was another fellow who even wanted to be one of my correspondents when I was in prison, sort of keeping me bolstered up. He would send me some puzzles and things like that. They took turns in driving us to court; I didn't have a car, you see. And usually, in the morning, somebody would drive us and stay until noon and then drive back. And somebody else would come and stay in the afternoon and bring us back later. So it was a very congenial thing. And as long as we are on that, the thing I wanted to add was that Professor [Earnest] Watson took care of all these technical matters, so I didn't have to bother at all about any arrangements. And when he took me to see the lawyer—it was the institute lawyer who represented me—the thing I wanted to mention is that he brought with him an unsolicited affidavit from Mr. Barrett.

TERRALL: Ned [Edward C.] Barrett?

WEINBAUM: Yes. He was the controller. And he must have been a very old man, for he was controller when I first came to Caltech. He gave me an excellent letter. I didn't even remember about his existence anymore after all those years. So what I wanted to mention is that I had his support. I visited somebody in the English department—George MacMinn—and he was also very much in sympathy with me.

Coming back to the laboratory: I think that because of the positive confirmation that Pauling was getting in the study of the structure of the chemical bond, then there was probably more money available. It was a very bad time for money, you know. But the thing was that, anyway, the financial support was not stopped. And more and more people were working on it, including some people who were research fellows. It was the institute that was paying their salaries, I believe.

TERRALL: Now, throughout this period, you kept your appointment as a research fellow?

WEINBAUM: Yes. So I was there with Pauling from '29 to '41.

TERRALL: I take it that you were happy with this job.

WEINBAUM: Yes. Because I was happy with being in Caltech and in touch with science. I considered myself exceedingly lucky that I got into a situation like that. And I was interested in what I was doing.

TERRALL: Did you consider at all looking for another kind of a job? I mean, either a faculty job or moving?

WEINBAUM: Actually before the war, I was not looking for other jobs. I was sort of attached to Caltech; I felt at home. As I say, I knew personally probably 80 percent of the people there. I didn't know some of the young people who were coming in. But remember that I came to Caltech when the faculty was comparatively young. Even after '29, the additions were few. So I was aging with them. Now, certainly, when I look at the names of the present faculty, they don't mean anything to me.

TERRALL: Was your family happy in Pasadena?

WEINBAUM: Yes. My wife had some very good friends. So we were happy in that respect. And probably, too, because I had a family, I didn't go to work evenings like the rest of the people who were trying to get a thesis done. I was lucky that the type of work that I was doing didn't require that. As a matter of fact, my paper was published in the first issue of the *Journal of Chemical Physics*. It was a new magazine, and my paper made the first issue of it. Also, the mathematical training that I got while working on these problems was what enabled me afterward to do the work in the Jet Propulsion Laboratory. I could publish a few papers because if there was a problem that could be solved by the old analytical methods, I was able to do it.

TERRALL: Now, how did it happen then, after the war, that you came back to JPL?

WEINBAUM: Certainly Buffalo was not the place that I was going to stay. What happened was that after a while, we were able to find a nice apartment there. It was a two-story building. The landlady lived at the bottom, and the top apartment was fixed for his son, who had just gotten

married. The son had been drafted, and the wife of the son went to live with her parents. Then, when the war was coming to an end, they wanted the apartment for the son, he was coming back. You couldn't evict people in those days. But if it was a military man coming back, you could. So we had a notice that we'll have to vacate, and it was impossible to find any other place to live. Also there was a question of what was going to happen to the laboratory. And it was enough to live in Buffalo for almost three years. Actually, it was [H. S.] Tsien who was responsible for my getting the Jet Propulsion Laboratory job; because Duwez—is he still alive?

TERRALL: He just died this [past] year [December 31, 1984].

WEINBAUM: He [Duwez] was the head of the materials section at JPL, and he was looking for a mathematician. Also, he was a very fine cellist. So on one of his trips to Washington, he interviewed me.

TERRALL: Did you know him before?

WEINBAUM: No. But he stopped and interviewed me, and I got the job.

TERRALL: Had you known Tsien before?

WEINBAUM: Yes, very well; we were friends. But I also, at that time, even wrote to the military establishment in White Sands. The head of personnel there turned out to be a former Caltech PhD in biology who knew me. So he was interested. But certainly, I didn't particularly care to go to White Sands. And when I came back to Caltech, someone in mechanical engineering told me that they were expecting a grant, and they knew I was looking for something. It was normal for me to try to get back to Caltech in some way. Probably the other job would have been much better, because it would have been on the campus, and Jet Propulsion Laboratory was different. But I was not unhappy at the Jet Propulsion Laboratory.

TERRALL: Was it a permanent job? Did it have some prospect of security?

WEINBAUM: The job was a permanent job. And I was there from '46 to '49.

TERRALL: Did you have to get clearance to get this job originally?

WEINBAUM: Well, this is the whole thing. I think I have mentioned that I expected, on account of these rumors that had been circulated in the past, that I wouldn't be cleared for it. But I had no trouble at all.

TERRALL: So you did have to be cleared at that point.

WEINBAUM: Yes. During the war, I even spent two weeks at the Wright Field in Dayton, Ohio. There they recheck these things, but nothing happened.

TERRALL: Did they interview you about this at all?

WEINBAUM: No. But this is the question: Why was I the victim at that particular time? And why was it I, and not somebody else? Things were happening in the east, all the arrests of spies and so on. And I think the FBI here felt that it should show some activity—so they went through their records. Some of the people were already too important, like Frank Malina. But here was a man like myself, who was, first of all, Jewish and second, he still had his mother and sister in Russia. And I knew that something was brewing, because even some of these lawyers remembered that the so-called perjury things have a three-year statute of limitations. Suddenly I got a telephone call from JPL from the office, that they are sending me another application to fill out.

TERRALL: This was in '49.

WEINBAUM: That was in '49, just very shortly before the trouble began. In other words, they wanted to have a new application. And when I asked why, they just got mad on the phone. So I did it, but I found it very strange.

TERRALL: So had you filled out something similar to this in '46, when you first came to JPL?

WEINBAUM: You see, it was three years old.

TERRALL: Had they asked you these questions in ’46?

WEINBAUM: Yes, the same things. You see, you had to show all the organizations that you used to belong to. The thing is that in general it was just like the university in Berkeley, the loyalty oath. Political things were not supposed to be asked. But they selected me as somebody that maybe pressure could be put on. Like I said, I had an offer: If I just name names, everything will be smoothed out.

TERRALL: So it was with this new form that you filled out that they were able to accuse you of perjury.

WEINBAUM: Yes. But they had to formulate the things in many different ways, because the prosecuting attorney said that they didn’t quite know what they would be able to prove. It had been tested legally only once before. So it was all a purely legal kind of thing. And you see, as I’ve mentioned before, I never got any parole, because they again asked me to cooperate. It is really amazing.

TERRALL: So in ’49 they took away the clearance that you already had?

WEINBAUM: First, they took the clearance only to top secret [classification].

TERRALL: Did you appeal that decision?

WEINBAUM: Well, I didn’t appeal, because I didn’t care if I didn’t have that. For example, the reports that I wrote, I asked for them to be declassified, and they appeared afterwards in the *Journal of Applied Physics*. I felt that something was brewing, but I never expected it to come to this kind of thing.

TERRALL: When was the point at which they actually talked to you about this?

WEINBAUM: The first thing I knew, I was called by whoever was the head of the laboratory [Louis Dunn]—Malina was gone already—that the FBI wanted to see me. So I went to see the

FBI. I think I talked only to one man there, and that's the man who was afterwards on the phone to me, and told me, "We'll be after you"—I don't remember the exact words. Then they again called me in.

TERRALL: Were they asking you about this form that you had filled out?

WEINBAUM: The main thing that they were asking me was to name the people with whom I had been associated. And remember, this is '49, and they were going back to the late thirties. The second time I was called in, I was taken to someone of higher authority. It was like you read in detective stories, when the interrogator is the one who is going heavy on you and another man is trying to defend you a little bit. So my regular man was nice to me, and the big shot, he was a big heavy man, was laying down the law to me. He finally started to say, "All these foreigners that come to this country, they get the best out of it and then they sell the country out," or something of that sort. I got up and told them that I didn't come there to be insulted and shall not see them anymore. And it was after that that he was calling me on the phone, telling me that they would be after me. And when they saw that I didn't go along, they obviously decided that I was the proper person for them to start a court case here. It was unfortunate that they didn't have any real spying case or something of that sort here, and I became the victim of it, because, as I mentioned before, even the prosecuting attorney did not attack me personally in any way, except trying to prove that I was guilty of perjury. And as I said, by that time, there were six counts, and he himself admitted that there were two groups—four were in one group and two were in another.

TERRALL: So it was after the hearing in '49 that you lost your job.

WEINBAUM: And the institute appealed my case to the military board.

TERRALL: Whose decision was that?

WEINBAUM: That's when [Caltech president Lee A.] DuBridge asked me to get another job—I was trying to persuade him that in the prevailing atmosphere, it didn't make any sense for me to appeal.

TERRALL: So it was the institute that wanted to appeal it?

WEINBAUM: They said if I don't appeal, I cannot work in Caltech anymore. This is where the trouble comes with Caltech. They could not make a decision of their own. They were under pressure. So the charge of perjury came from my testimony before the military board. Because I denied the charges before the military board. Professor Watson was a witness for me, and also Verner Schomaker.

TERRALL: This was at the appeal hearing?

WEINBAUM: At the hearing. The hearing was before a colonel, who was traveling through the country with a secretary. They both appeared for the technical aspect of it at my trial. One of the things I was asked about at the hearing was, Had I, at a certain date in Los Angeles, seen such-and-such a woman—some name that didn't mean anything to me. First, we went through my history, where I had been. And that was one of the years that I was in Buffalo, and it was established that I never came from Buffalo to Los Angeles in these years. And so I called attention to that and said, "I was never in Los Angeles that year, so how could I see anybody, not only this person?" So that was dropped. Then, when the hearing was over, the attorney that represented me from Caltech said, "Dr. Weinbaum will be willing to answer"—he didn't ask me whether I would be willing—"would be willing to answer any other questions that you still would like to ask." And so the colonel says, "Yes. Did you see, in such-and-such year, such-and-such person in Los Angeles?" So there was always a lot of incorrect information—that's putting it mildly—about me. And the only thing that personally worried me in all that time, there were two or three things that came up that couldn't be known about me personally except [by] very close friends. And I was wondering, whose hand I was still shaking who—

TERRALL: Who was talking to the FBI.

WEINBAUM: It's like the case of Oppenheimer and Chevalier that we told you about, how he commiserated with Chevalier when Chevalier didn't know yet that Oppenheimer was the cause of all his troubles. Up to today, I do not know who the person was. But obviously there was one.

TERRALL: At that hearing—that was the military appeal board hearing—they turned down the appeal, clearly.

WEINBAUM: They turned down the appeal.

TERRALL: And it was after that that you lost your job, then?

WEINBAUM: Well, no. I was arrested in May or June or something like that, but the Caltech appointment ran until the first of July.

TERRALL: But that was the job that you had back on campus.

WEINBAUM: On campus, at that time. But that's when I was trying hard to get different jobs. Pauling was telling me, "Don't worry. It will all be settled." One job that was open was a laboratory of a very big oil company. They had a laboratory someplace around San Gabriel. It turned out that what they were interested in was something that probably I was the only person who was familiar with, because they were interested in oil seeping through sand and things like that. I think I mentioned that I had worked on hydrogen going through porous materials; this was exactly the same problem. And so they were quite excited there in the laboratory. And then I got a letter, I don't remember how it was worded, but I understood why I didn't get the job.

TERRALL: So when you were actually arrested, that came as a surprise to you.

WEINBAUM: Yes. But at the same time, I was more or less prepared for a thing like that. But one doesn't think about these things; one hopes that it won't happen. And certainly, right away, where we lived, the owner wanted us to move out. They were quite religious people. And among our friends there was a Catholic woman, an old friend of ours, whose sister was even a nun. So she went and visited the owners of the house and told them that we were really good people and things like that. But eventually, certainly, my wife and daughter had to move out of that place. So, as I say, there were so many personal problems during that time.

After my arrest, I had no emotional problems connected with it, because I think, especially during the Depression time and with my wife being sick and so much pressure, once I

was relieved of all these pressures, I relaxed completely, and obviously I could adjust. I had lived through all kinds of different circumstances in my life even before that. I found that I could adjust myself very well to the life in prison. I don't know if I mentioned to you that the inmates even elected me as their representative for six months. So I came out of prison ready to become emotionally stabilized, and I did. And I can talk about these things. And also, somehow I tried to fit things that happened to me into the life of the country in the particular time, and also find out why I react emotionally in one way or another. One lives a long life. I was telling my wife this morning, Well, how could I expect, as a teenager in a small city in Russia, that I would have all these events in my life? I met so many outstanding people, all these future Nobel Prize winners, and knowing so many outstanding scientists, and having dinner with Rachmaninoff. And also, having entertained, together with somebody else—because I knew Russian—the world chess champion on his visit here, besides beating him when he gave a simultaneous exhibition. All these things. If somebody had told me when I was a teenager that I would be in the United States, even— So I cannot complain. Also, I have a nice life now. Just looking at my wife, I can spend hours looking at my wife.

MRS. WEINBAUM: Yes, it's a simple life, but a very rich one.

TERRALL: I'm sure at the time, in 1950, you didn't imagine looking ahead to this kind of an old age, either.

WEINBAUM: Oh, no. First of all, I never expected to live that long, because I was supposed to have a bad heart and all kinds of things. Certainly I didn't expect I would have such a peaceful and pleasant life and so many friends.

TERRALL: Well, just to go back to the trial for a few minutes, you said that you didn't know during that hearing who it was that was talking to the FBI. But, in fact, during the trial, there were these people who testified against you.

WEINBAUM: Yes. But none of these people could have known some little details. The only possibility would have been [Frank] Oppenheimer. But even he didn't know. Because they

pertained to little things, that I would talk [about] only to some people that I continually see, not just casual acquaintances or somebody I work with.

TERRALL: In the trial, the major portion of the case really rested on this testimony, right? There was Albrecht and—

WEINBAUM: [Frank] Oppenheimer.

TERRALL: Yes. And [Jacob] Dubnoff. What is your interpretation of why these people talked? Do you see it as just being pressure from the FBI?

WEINBAUM: Well, as I told you, I knew that Dubnoff was a Communist, and Oppenheimer. And many others I was friendly with in those days. But the charge was worded that I had been a member. The other charge was that I got some people to join. And the third was that I abetted the Party or something. Well, the third one may have been right, from what I have said, that I worked with some of these people. But you see, the whole thing was not that. They didn't give a damn; they just wanted to have a case, put the FBI on the map. And also they thought I would crack, you see—like Dubnoff, for example. The day before Dubnoff's testimony, it appeared in the newspaper that he refuses to testify, and the next day he was the first witness! And it was also characteristic—they had a couple for some reason, from Alhambra, some business people, who claimed that someone and a Chinese person came to see them to get them into the Party, and that they joined the Party that way. So they brought both of these people as witnesses. I had to stand up, and they couldn't identify me as the person who came. But that's one of the things that was brought up against Tsien, too. They figured out that Tsien was the Chinese who did that.

TERRALL: But was there a personal motive on the part of, let's say, Albrecht, against you?

WEINBAUM: No. I don't think so. I told you that the thing about him was that he had a very weak character. When I thought about my earlier connections—because I shared an office with Albrecht and knew his character, I thought that he may appear as a witness. But none of these people claimed that I had been a Party member. That's what I think I said: If I was, then they perjured themselves.

TERRALL: That is what he said, isn't it?

WEINBAUM: No. He gave a technical reason for my not being a member—that I didn't want to join because I was thinking about going to Russia. And one thing that was right is that when I got my degree and when my salary was cut so much, and my wife wanted very much to go and visit her parents and so on, I was trying to get a job for a year in Russia. It was already maybe a couple of years after I got my degree. Anyway, I got a letter of recommendation from Pauling that I sent to Russia, and I think I even got a letter of recommendation from Millikan—I don't remember. It was all completely above board. Pauling was very sympathetic to the idea. So Albrecht said that the reason I did not become a member was that I contemplated that trip and the Party wouldn't allow Party people to go to Russia, something like that. But what I say is this: If I were, one way or the other, then they lied. If I was, then they knew that—they had to know—then by going all around but not naming it they are the ones who perjured themselves. But this is also quite true—that whether I belonged or not was not the problem. Because if I had started cooperating with the FBI, I wouldn't have lived to the age I am now. As I said in the parole hearings, "Why should I involve people, good people, in the kind of troubles like mine?" And the whole thing didn't hold any water, because the year was 1950, and all that went back to the late thirties. So what sense was there? One woman they did bring up—by the way, that nice old chiffonier there was a present from this lady. **[Tape ends]**

Begin Tape 3, Side 2

WEINBAUM: She was a former Communist Party member. She was the wife of [Rudolph] Schindler, the famous architect. Her name [Pauline Gibling] came up, that she visited our house and stayed for a long time; they saw her car parked outside. Certainly she did. We were very friendly with her. I don't remember now, what was the origin of our meeting. Speaking about the people I knew: [Richard] Neutra, you know the famous architect? Well, his wife played the cello and sang. They were friends of some distant relative of mine, and I have accompanied her a number of times. Actually, they lived for a while in a house that Schindler built. The only time I visited the Neutras was in that house, before I even knew of Mrs. Schindler's existence. So, they said, didn't I know that she was a Russian agent? You know, imagining that woman to be an agent was like—I don't know. So it is very, very funny.

TERRALL: Well, it's true that maybe the point wasn't whether you had been a member or not. But in fact that was what they had to prove, in order to get this conviction.

WEINBAUM: So you see, the way the things were worded, even if I wasn't a member, they put the word "abetted, " because it covers the situation that I was certainly working with them. So, if that's a bad thing, in that way, that was true.

TERRALL: In order to convict you of perjury, they had to prove that you had been a member of the Party, though.

WEINBAUM: But it was not only this thing but also these two other things. In the atmosphere of those days here, there was very little question about being convicted. I may have mentioned that one of the women on the jury was crying when they came out. And one of the reserve men came up to shake hands with me after that. So that shows you the atmosphere in which this thing happened. And I think, again, nothing personal was raised; it was just a purely technical thing. So why didn't they do that in '39 or '40 or '41, whenever the first time this thing came up? If I was such a "danger" and so on. The only explanation is that at that time the climate was such that if you don't have a case of some sort— These are the sort of things I didn't think of at that time. Looking back, I look at these things in that way.

TERRALL: So, what kind of a defense could you have, then? Did you call witnesses in your favor?

WEINBAUM: No. But that was an interesting thing. My lawyer wanted to read the letters that had been submitted to the military board. And the district attorney got up and objected strenuously to that, saying, "Let these people appear here as witnesses." However, in his speech, he had quoted some things from the military hearings. So the judge—very reluctantly, I must say—said that he had to allow this. And so my lawyer read some of the selected letters. One was from a man by the name of Miller. He was some kind of a technical electronic man in the Seismological Laboratory; he was a chess player who played years before on my team and so on. During the war, he built up a factory and made a lot of money. I wanted to have a letter from someone working for the military, and I asked him for the recommendation letter. And he said

in his letter that the worst that he could think of me was that maybe I voted for Roosevelt. [Laughter]

MRS. WEINBAUM: You see, [Sen. Joseph R.] McCarthy at that time went roughshod over everybody. Until he hit the military themselves, and then they put him out of commission.

WEINBAUM: Frank Oppenheimer did very foolish things. You know, he had a hearing before a congressional committee—it was a committee of Congress, not necessarily the McCarthy [sub]committee. When I got into difficulties, a friend who was a lawyer got me a copy of these hearings, and Oppenheimer obviously didn't have a very good lawyer, or the lawyer was mostly trying to protect [Robert] Oppenheimer. When they asked Frank about a number of people in Berkeley, he claimed every time that they were not Communists—that he knew that they were not in the Party. But when the names of Malina and Tsien and myself, and so on, came up, then he refused to answer. By this, you see, he singled us out. Well, because somehow nothing about his brother had yet come up in Caltech, maybe it was on account of that. But it was such a foolish thing to say. He could have said, "I don't know whether they were or not," or something like that; he didn't have to say, positively, that they were not. But when [about] some people, you say you know definitely, and the others you refuse to testify [about]— So he sold himself lock, stock, and barrel by this kind of thing. But those were very strange times.

TERRALL: For the military board hearing, Caltech hired the lawyer, right?

WEINBAUM: Caltech had a law firm that represented them. I think the lawyer's name was Johnson or something like that. I saw him at my trial a couple of times.

TERRALL: But at your trial, you had to raise the money for a lawyer?

WEINBAUM: In my trial I had a sort of a left-wing lawyer, because they wouldn't charge me anything. That was the first case here of that sort here, and so they were willing to do it. I had to pay for some of the expenses. I didn't know, for example, that in these political cases, especially in those days, that they tried to get the list of the prospective jury members and find out their background, because they have the right to eliminate a few potential jury members. And some

other technical expenses. That lawyer also was quite active in the ACLU. As a matter of fact, there was some kind of an affair for him a couple of years ago. I hadn't seen him for years and years.

TERRALL: Was this Ben Margolis?

WEINBAUM: Margolis, yes. He's pretty well known here. I found him a very pleasant person, too. And I've seen him a few times after that. But then, for many years, I didn't. And then there was some kind of big ACLU affair. He was the guest of honor at that, and we attended this affair. I presume he is still alive.

TERRALL: Did you see the trial as kind of a foregone conclusion, the outcome of it?

WEINBAUM: Yes. My lawyer warned me that there was little chance. By the way, the judge was very complimentary to my lawyer for the way he conducted the trial. Because there were no histrionics of any sort; it was just all on a very legal basis. He's very good, Margolis, in that respect. The district attorney called for ten years, because he grouped the counts into two different bunches. But the judge said that they are all based just on one thing, so the maximum was five years, and he gave me only four. So even the judge, who was no great liberal, I can tell you— I think I told you the story of the marshal who told me that he was sure that I would get a suspended sentence. So the judge said, "You know, I didn't even give him the maximum. And I had to give him four years, because he's going to get parole after a short time, and I want to make sure that he is not going to leave this country and give his services to our enemies. By that time, science already will develop further." In other words, my knowledge would be already obsolete. And, again, there was that offer—that if I go and tell about people, I could get a suspended sentence. But my scientific career was finished anyway, you see. And besides that, I would have to be called to testify against everybody under the sun, whether I knew them or didn't know them.

You know, people now really cannot realize what those days were like.

TERRALL: I know for myself, just reading the newspaper clippings—even though I know something about the period—it's shocking.

WEINBAUM: I didn't read everything. The things that I read about myself were actual things that happened in the court, sort of a summary without too much detail. And also, one or two articles in the beginning that told about me in general, that were nice and favorable. There was nothing prejudicial in any way. But seeing that headline in the newspapers—that Weinbaum faces forty years in prison—that wasn't very pleasant. No, those were not very pleasant days. A few telephone calls, some abusive. A letter when I was in prison, waiting to be sentenced, was very, very abusive.

I don't know if I mentioned to you that when you get to prison—I won't tell you all the disagreeable details—but by the time you get through admission, the prison is already dark. And so they take you and give you a pillow or something like that, and push you into a two- or four-man cell. And I had to lie on the floor with my head to the toilet. And when I woke up in the morning, and still the breakfast wasn't brought and so on, there was a trusty, one of the prisoners who had obviously been there for a long time. You see, some of us were only transients, because we were federal and that was a county prison. And he came over, and he said, "Oh, I have the two most famous prisoners in my place." Who was the other one? It was a man who tried to blow up a plane because his wife deserted him or something like that, and she was on that plane; he put some kind of a bomb there, and it was discovered before it blew up. I talked to that man quite a bit, but he was not quite there. You see, what "fame" is; for the trusty, we were both famous. Or as one of the better-educated guards in prison, officers they called them, told me—I was there when Mickey Cohen was there. You know who Mickey Cohen was?

MRS. WEINBAUM: The underworld character.

WEINBAUM: The underworld king. This guard said, "You know, all these people who are here, when they come out, what they will be boasting about? They will say, 'I knew Mickey Cohen, and I knew Dr. Weinbaum.'" [Laughter] So I had very good company. I could tell you so many stories about prison, and all of them interesting.

TERRALL: Obviously you had a lot of time to think about everything while you were there. What did you think about the future?

WEINBAUM: I was postponing the future. I even decided that my daughter has to take care of my wife, that I cannot do anything about it, that my responsibilities for the family had ended, and not on the account of anything wrong that I had done. And my nails started to grow, before, I chewed them. Not that there were not some disagreeable things that would happen, but I had to learn to handle these things. And there were not too many personal things that I had trouble with, either with the inmates or the prison.

TERRALL: Your daughter was grown up by then.

WEINBAUM: Yes. Caltech was not accepting women yet in those days. But she had a part-time job in Professor Frits Went's laboratory. These were also people that we knew, though not as closely as other people. They had just built that laboratory—I don't think it exists anymore—that was on San Pasqual Street, for some of the work that Went was doing. So she had to register for graduate work in UCLA. But the research she was going to do in connection with Went's laboratory. She was lucky enough, a year after that, to get a much better fellowship at Berkeley. And that's where she got her doctor's degree.

TERRALL: So that was while you were in prison.

WEINBAUM: Yes. She also got married while I was in prison, just before I left prison.

TERRALL: What about in terms of what you thought you would do professionally after you got out?

WEINBAUM: Well, professionally, that was the question: So what was I going to do? Well, I think I have mentioned that I had a friend whom I met through chess who became a lawyer, and eventually had a factory of girls' dresses. And so I was promised that when I get back, he is going to find a place for me. That was in Los Angeles. And I did pretty well with him. And if he had remained in business, I would be probably still working for him. So I was with him from '53 to either '59 or '60, when he liquidated the business. And I still occasionally see him. So I knew that I might be able to work for him. Also, the prison tries to find jobs for the people who leave. And the man who does that thought that he had a job for me at the university in Berkeley,

taking care of a supply department, where you go if you need an instrument or something—not selling, but just giving them to use for a certain time. But when I went there, nobody knew anything about it. Interestingly enough, this man later on, on a visit to Los Angeles, called me up and wanted to see me. He had some kind of troubles of his own, and he was very much upset that the job he had for me didn't work out. He even wanted to invite me for dinner!

So it's interesting how you find these human traits. Or when I was refused parole, a man who was serving twenty-five years for being involved in a very famous robbery of a truck that was going to Lockheed with the payroll—things were paid in cash in those days. He was working in the officers' dining room. And so when I was denied parole, I already had a cell in the place where individual cells were—there were only about eighty of them—and he also was lodged in there. I noticed that there was a little package on my bed. When I went in, it was a very nice ham sandwich, the kind we didn't get, and a note was attached, "You may have no standing with the parole board, but you have a standing with me." [Laughter] The reason for that was that I didn't succumb to the FBI. And I was never again interviewed by them while in prison. I knew a man there— I may have mentioned to you that there was a millionaire there at that time? He was the owner of some kind of a truck factory in San Francisco or something like that. He was there on tax evasion. They claimed that he didn't pay taxes; he was found guilty of owing the government about half a million dollars in taxes. He was sentenced to a year and a half or two years. They would come every two weeks and try to tell him that they'd let him out if he would pay half of that. He said, "I already stayed in here a long time; I might as well rest for a while longer." [Laughter]

I didn't tell the story about the Jewish fellow. A new man who comes to prison usually is put, first of all, to fill the coffee cups during the meals and things like that, before they're assigned to any definite job. I see this middle-aged Jewish fellow walking the aisles at mealtimes and doing that job. I had a friend, a lifer, that I was always eating meals with. And I looked at that newcomer and I said, "Look, he seems so forlorn, so lost, almost as if he was ready to cry." My friend said, "He? Don't you know who he is? He is Abe the Trigger, from Murder, Inc." [Laughter] All my sympathies were going out to this fellow, and he was Abe the Trigger.

MRS. WEINBAUM: And he can laugh about it now. This is wonderful!

TERRALL: Before we end, why don't you tell me the story of how you met your wife.

WEINBAUM: Well, in the chess club, where I went after coming out of prison, I met a fellow who claimed he knew me years ago. And he was active in a very old organization for Jewish workers. They had a club in City Terrace. They were having chess playing there and so on. And he was very anxious for me to join this chess group. And so I became friendly with him and with some of the other fellows there. Pretty soon I found out that this fellow liked to talk about whom he knew.

MRS. WEINBAUM: Name-dropping.

WEINBAUM: Yes. And so I became an important man for him, because I was a PhD. Well, he happened to be working during Christmastime, and he got a free turkey. What could he do with that? He knew a couple, so he arranged for a party in their house. Now, at that time he had a distant cousin that was a published author. He even gave me a book of his to read. The man was visiting here, so he was sort of the guest of honor. But he had to show off before his cousin, so automatically I was invited. And Betty used to be an extremely good-looking woman—now she's just good-looking. And she was also an ornament that he wanted to show. So that's how I met the ornament. [Laughter]

MRS. WEINBAUM: So that's how we met, at a Christmas party. Of course, I didn't know that he was going to be there, and surely he didn't know that I was going to be there.

WEINBAUM: I didn't know about her existence. But Betty's mother was dying of cancer, and months passed by before I got a telephone call inviting me to a party at her house.

MRS. WEINBAUM: Yes. I used to live in the Valley. And then I invited a few people.

TERRALL: So this was about 1957, '58?

WEINBAUM: I met Betty in '56.

MRS. WEINBAUM: So we've been together nigh on thirty years.