

**MC.0356**

**Interviews of the Margaret MacVicar Memorial AMITA Oral History Project**

**Alina Szczesniak – Class of 1952**

(interviewed by Christine Rosakranse)

March 18, 2002

MIT Women's Oral History Project

Alumna: Alina Szczesniak

Interviewer: Christine Rosakranse

Date: March 18, 2002

Interviewer: We are going to begin with a little introduction into your life. You were born in Poland to two wonderful parents. If you could tell me a little about your early childhood

A. Szczesniak: Alright. As you said I was born in Warsaw, Poland. I was an only child. My father was a surveying engineer. He was the president of the Polish Association of Surveying Engineers and the vice-president of the International Federation of Surveyors. If I may digress for a moment, it so happens that on April 21-26 of this year (2002) there will be an International Congress of this Federation at which they are going to honor my father posthumously and bestow upon him the title of honorary president because were it not for the war he would have become the president. So, it will be another of the interesting and emotional moments in my life.

I: Where is this going to take place?

A.S: It is going to be in Washington D.C. This Federation has a custom that the Congress takes place in a country from which their president hails. So, now we have an American as a president. As I had said, my father was the vice-president before the war and, were it not for the war, he would have become the president and the congress would have been in Warsaw. The Polish surveying engineers are still hoping that maybe someday it will be in Warsaw.

Anyway, to go back to my story, my mother had just a general college education. She knew several languages, was a very pretty, vivacious lady, a good wife, a good mother, but no salable profession. Her brother was a chemical engineer and held the Polish patent to making synthetic rubber.

I: Which they still sell now in Poland?

A.S.: They sell it in Poland and they sell it in the United States. Its trade name is KER and from what I understand it's being imported here. It goes into making car tires.

As I mentioned, I was an only child. My childhood was quite happy. We spent winters in Warsaw and summers in the eastern part of Poland in the home of my maternal grandparents and that's where the war caught us. One morning we woke up at four o'clock and heard the sound of bombs falling on the nearby town, which was like maybe seven miles away. And then we heard the airplanes overhead and we heard the sound of machine guns. So, we knew that the war broke out and Germany had invaded Poland. The day was September 1, 1939. A few days later my father, who was in Warsaw, joined us and we didn't know what to do, but we stayed put. And then on September 16<sup>th</sup>, the Soviet army crossed the Polish border and invaded the country from the east. Poland was squeezed in a vice, Germans from the west and the Soviets from the east and then we knew that we could not stay where we were because the Soviets were known for arresting and killing landowners and even some wealthier peasants. So, we made our way to the nearby city, which was Vilnius. It's the capital of Lithuania now. We made our way to the city with a military unit, the airforce unit from the town that was bombed (which was Lida). They were told to evacuate. My father knew one of the officers there because my father for

many years was a career military officer. He retired with a rank of lieutenant colonel and he knew this major and with the military transport we made our way into Vilnius and from there my father contacted, I guess, the underground because arrangements were made for us to cross the border between Lithuania and Poland. At that time Poland was divided into two occupied areas: to the west, German occupied; to the east, Soviet occupied. And we needed to get back to Warsaw from the Soviet occupied area to the German occupied area and the underground arranged for us to cross the frontier. We had a guide who led us very early in the morning through that guarded frontier, but she knew when the German guards were crossing that particular point. We didn't have very warm clothing because the war caught us with our summer clothing on and it was already November. The snow was on the ground. On the other side of the frontier we were met by a farmer with a horse-drawn carriage and plenty of warm blankets. And then we got to the nearby city and we applied for an official permit to go to Warsaw by train. We were granted that permit by the German officials and my father said, "OK, we are going to stay overnight here in the safehouse and then we are going to go to Warsaw by train." My mother said, "No, no, no. We are not going to wait another hour. There is a train that leaves in fifteen minutes. Let's take that." and we did. Well after we left for Warsaw the following day the Gestapo came and was looking for us. They were going to arrest us.

So the timing was excellent. We got home and that was already 1940. We got back to Warsaw in January of 1940 and my father was arrested in July of 1940. The Gestapo came to our apartment at four o'clock in the morning. They searched the apartment. They arrested my father. They arrested our maid and her boyfriend. Mother and I were left behind, fortunately.

Why was my father arrested? Well, because he was a prominent Pole. He was a surveying engineer, president of the Polish Association of Surveying Engineers. He also taught one specific course at the Polytechnic Institute. And at that time the German occupying forces wanted to eliminate a lot of Poles who were leaders and who could continue being leaders in this war situation. Father was sent to Auschwitz in August in the first transport from Warsaw and there he began working as a surveying engineer. He was the head of the surveyors there. Then he was released from Auschwitz about a year later and the day after he came home he was rearrested and six months later he was executed in a mass execution.

Well, mother and I had to make do somehow. We did not have a steady income coming in and mother did not want to sell anything from the apartment. Her ambition was to have my father come home to the same kind of home that he left from, but after he was killed, and we got an official statement from the German officials, she started selling some of his clothing. His boots, for example, which the underground could use and things like that. And she started earning money by making soap in the kitchen and my uncle's friend from the Polytechnic Institute, where they both studied, lived in the next house and she was my mother's technical consultant. Whenever things were going wrong she would come and solve the problem. So, mother was making soap in a big cauldron in the kitchen and then she had a number of ladies who would come to the house, pick up the finished soap (laundry and toilet soap) and would go from house to house selling it. That was material evidence to my mother that having a husband, even one who could make a good living, was no insurance for continued financial support. She insisted that I acquire a salable skill, that I acquire the ability to stand on my own two feet. I was always leaning towards physical sciences. During the war we had no schools of higher education nor high schools, officially. These were closed by the German occupying forces, but became part of the underground system. So I did manage to finish High School and I also spent one year at the Polytechnic Institute of Warsaw studying Chemistry. We had no labs. We met in small

groups, maybe seven, eight, nine people. We met in private homes and the professor would come to our homes and teach us, give lectures. Many of these meetings took place at my mother's apartment, our home. At that time my role model was my uncle, who was a chemical engineer, and Marie Curie Sklodowska, the famous Polish scientist, twice Nobel Prize winner.

Students in these schools were highly motivated because we knew that the war was going to end sooner or later and nobody was doubting that Germany will be conquered. So we all wanted to acquire education for the sake of our country. Patriotism was running high. Most young men were members of the underground. A lot of young women were trained as nurses and couriers and supporting services of that kind. Getting an education was very, very important. Education was free, but getting it was a bit dangerous because if caught we would be sent to either labor camps or concentration camps. We had no textbooks. It might be interesting to mention that my professor of inorganic chemistry was Marie Curie Sklodowska's assistant and her ability to teach and her ability to recall things and to organize things in her head was just tremendous. I remember we thought that maybe she memorizes the lectures because she had no notes. Being caught with notes on her would have been very dangerous and people were arrested just walking down the street you know. So one day we said to ourselves, "Well we are going to test her" and she came in and she started talking about nitrogen chemistry and we said "Ah, no, no. Dr. Dorabialska, we already talked about that last week and she said. "Oh, and what was I supposed to talk about this week?" So we said, sulfur chemistry, which is very complicated because sulfur is very similar to carbon in its chemical properties. She said "Oh OK," and like if she had an open text book in front of her she started talking about sulfur chemistry. So we did have very good teachers. They were paid by the Polish government in exile in England that was sending money to its representatives in Warsaw. These studies were free to us. And then came the uprising of Warsaw in August of 1944, i.e. the uprising of the entire city which took place over a year after the uprising of the ghetto in April of 1943. The entire city took up arms against the German occupiers hoping that the Soviet army which was approaching from the east and reached Vistula, that's the river on whose banks Warsaw was built, and was ready to enter Warsaw. The people of Warsaw wanted the Soviets to enter into Polish Warsaw rather than German Warsaw. Well, as history attests, the Soviets stopped on the right bank of the Vistula and stood there until the uprising was squashed by the Germans. A quarter of the population was killed. Eighty percent of the city was destroyed. Mother and I and our maid who still lived with us were thrown out of our apartment building which was set on fire by the Germans and were deported to a slave labor camp in Germany where we stayed until April 13<sup>th</sup> 1945 when we were liberated by the American 8<sup>th</sup> army. Now, I should also like to stress that we were not in a concentration camp, but in a slave labor camp and there is a big difference. In a concentration camp, people were kept there to make them die off as quickly as possible and they were killed right and left. They got very little food. They were mistreated in every possible way. In a slave labor camp, we were there to work and therefore we had to have a minimum of medical care and of food. We worked in what used to be a privately owned factory making furniture for the army and also metal pieces for German tanks. As I mentioned, on April 13<sup>th</sup>, we were liberated by the American army. My mother who spoke excellent German, French, Russian, Polish and pretty good English started working for the American army and through these contacts we were able to send a letter to my uncle who at that time was already in the United States. He was brought over from Europe by the US government to make synthetic rubber which at that time was a very important part of the technology needed for the war effort. He replied, sent us some money and an affidavit of support to Switzerland. Switzerland and Israel were two nearby places where

there were American Embassies. There were no American Embassies in Italy, none in Germany. So, we went to Switzerland where we had some friends. My father because of his involvement in the International Organization of Surveying Engineers had a lot of friends all over Europe. In those days the world was Europe. People very seldom traveled to the United States or Africa or Asia. He had some very good friends in Switzerland. They helped us to get a Swiss visa and we went from Germany to Italy and then to Switzerland, stayed at these people's house for about three months until we were able to arrange for our passage to the United States. That showed me how important it is to have a) friends and b) friends all over the world. Exactly a year later on April 13<sup>th</sup> 1946 I came to the United States.

I spent the first three days in the United States on Ellis Island which was very scary. My mother was let go and I was taken to Ellis Island under escort and put in the Coast Guard hospital in a wing for people with TB and I couldn't understand what was happening. I knew some English, but I was not really fluent in English. I was scared because the medical records that we had to bring with us, that were filled out by a Swiss doctor, were identical for my mother and I. Later on I learned that at that time they were placing under observation on Ellis Island all young people coming from German slave labor camps because several cases of open TB were discovered. So, I was there from Friday to Wednesday. Friday, Saturday, Sunday there were no doctors there. Everybody was taking weekends off. A nurse came up to me and said, "Here is a spittoon. When you feel like coughing and spitting, use that spittoon." I said, "I don't cough and I have nothing to spit out." She said, "Well, just in case." Well anyway it turned out that they wanted to test my lungs for TB, etc. So on Monday I was taken to the x-ray lab and a gentleman took the x-ray of my lungs. The following day they called me back to the x-ray unit that something was wrong with the picture. So, I was really worried. Well, it turned out that the technician was a Polish Jew from Warsaw and when he was developing the film and looked at my records he learned that I was born and raised in Warsaw. He wanted to know whether his house in the ghetto was still standing!

I: Almost gave you a heart attack.

A.S.: He certainly almost did. Instead of just walking over to where I was and talking to me, he had me brought over to him under the pretext of having to retake the x-ray. Well, anyway, to make the long story short, the following day I saw the doctor. Everything was fine. He wished me good luck and he asked me what my plans were. I said "I want to study" and he said, "What do you want to study?" I said, "I want to study chemistry."

I was very fortunate in having gotten a special scholarship to go to Bryn Mawr.

I: How was that arranged?

A.S.: My uncle at that time was living in Philadelphia, but came to New York to greet us and to find a place for us to stay. Later on he moved to the New York area. He took me to the Kosciuszko Foundation, a Polish organization dealing with student support, student exchange, cultural exchange, things like that. The head of this organization could not help me and I didn't know much about the American schooling system. My uncle took me to a Polish caf called White Eagle, I believe, for a cup of coffee. We were sitting there kind of morose looking and an artist whom my uncle knew came over and said, "Well what's the matter with you people. You look like ghosts." And so I told her what the problem was, that I am looking for ways of getting

some financial support and getting into a good school here. I had no idea about the difference between a college and a university. As I said I had no knowledge of the American school system. She said, "Ah, wait a minute. I know a young lady who several years ago received some financial aid from some international organization. She married an Italian doctor and they are packing to go back to Italy. Why don't you go and see her as soon as possible? Maybe she can be of help." I did just that.

She was a very nice young Polish woman with a month-old child and she told me that she got her financial aid from the Institute of International Education. The following day I went there and I met with Ms. Ruth Hubbard. I will never forget her name. She was a lovely lady, what we used to call a spinster in those days, unmarried. She was a Bryn Mawr graduate and she said, "Our job is to bring foreign students to the United States and find places for them at American colleges as well as scholarships, but you are not in Europe. We don't have to bring you over. So, you are not eligible" and then she looked at me and said, "On the other hand, Alina, you are already here. So, you make things easier for us, right? I'll see what I can do." Then I went up to Cornell and took a summer session there because, as I had mentioned before, when I was studying at the Polytechnic Institute in Warsaw we were very lucky to attend lectures, but we had no laboratory facilities. So, I decided to take a summer session and to get some lab experience.

When I was at Cornell I got notification that Bryn Mawr College is giving me a scholarship. I said to my roommate, "What is this college? It is probably some peculiar college that nobody wants to go to and that's why they are giving me the scholarship." Well, little did I know that it is one of the top American colleges for women. So, I accepted the scholarship, but unfortunately it didn't give me support for room and board. I had to raise that money myself. The scholarship only covered tuition. The Institute of International Education and Bryn Mawr College leant me some money. All these loans I repaid after graduation. My mother and uncle lived in New York and Bryn Mawr is suburban Philadelphia. It's only about an hour and a half train ride.

When I got to Bryn Mawr, I didn't have any proof of my schooling in Poland. First of all, we never got an official paper saying that we graduated from high school. And even if we did, it would have been lost during the uprising. We just left our apartment with a small suitcase. So, they took my word for it, what courses I took, what courses I should be given credit for. At that time, I knew French very well. At the age of five my mother started me on French lessons and I also knew German reasonably well. So, I took advanced placement tests in French and German and got credit for that. I started at Bryn Mawr as a junior. And the dean trusted me, but she was watching me how well I'm going to do in my chemistry courses. I also had to take English Composition, Economics and some Mickey Mouse courses in addition to my chemistry courses. I did quite well the first year. My average was 88-89 something like that and - remember - I still had to learn English. There was a professor in the department who was a Polish Jew from Katowice, professor Berliner, who said to me "Well, look if you cannot find an English word on your test just put down the Polish word and I'll look it up in the dictionary." He knew some Polish. I never did because I was studying in English so I took the test in English. Then in the beginning of my senior year I got a piece of paper from Poland saying, yes, I did graduate from high school. I gave it to the dean, but she didn't even look at it. She just put it in her desk drawer.

I graduated magna cum laude in 1948 and very quickly realized that I really did not want to be a chemist. I could not stand the smell in the labs. I did not like all these reactions

involving heat. To this day when I cook, I prefer cooking without heat. I love making desserts and just mixing things together.

When I was at Cornell I was introduced to nutrition and food science because Cornell at that time (and to this day) had a very famous school of nutrition. So, after I graduated from Bryn Mawr I considered going for an advanced degree in a food related area. My mother insisted that I get a doctorate. Just like many other students I wanted to take a break after my bachelor's degree and before going on for an advanced degree. And my mother said, "No, once you stop, you get used to a different type of life, it will be difficult for you to get back." My mother was a very wise woman. I was given the opportunity to get fellowships at several universities, but for many reasons I selected MIT. First of all, I come from an engineering background as I have already told you. My father was an engineer. My uncle was an engineer. Secondly, it was close to New York where my mother and my uncle and his family lived and thirdly, when I had applied to the undergraduate school before I was admitted to Bryn Mawr MIT did not accept me. So I said "OK you didn't accept me two years ago you are going to accept me now" and they did. I started in the Department of Food Technology.

Let me go back for a while to Bryn Mawr because one of the things I think you want me to talk about is what I owe MIT. Now, I like to preface that by talking a little about what I owe Bryn Mawr. Bryn Mawr, now in retrospect, I realize was very helpful in my making the transition from the war torn Europe to the American way of life. It was not without problems because I started at Bryn Mawr as a junior. By that time the friendships, the cliques, etc. have already been formed and I was not part of any of them, but I did make some friends. And Bryn Mawr forced me to take some courses outside the chemistry field, which I resented at that time because I wanted to take all the required chemistry courses and get out and start earning a living. In retrospect, again, they were very helpful. One of these courses was English composition and another, which was a non-credit course, was Public Speaking. We also had a professor who was working specifically with foreign students on diction and accent and his last name was Professor Thon. So every time he would meet me walking across the campus and I would say "hello Professor Thon," he knew if I had been practicing my th's. There were some other courses like swimming, etc. which I resented and I am really not using them, but English Composition and Public Speaking came in very handy later on.

I: Did you take those both years?

A.S.: No, no, no. English Composition was the course required of all freshman and so was Economics, but I had to make them up in my junior year. So Bryn Mawr gave me these more "intellectual assets." Whereas, what MIT gave me was technical training and a profession. And the two were combined in my career. Maybe not at the very beginning, but at some point in time I needed to do a lot of presentations at meetings, chairing committees, etc. where public speaking was very, very important. And at General Foods, where I worked, at some point they brought in a consultant to teach us public speaking. We all had to stand up in front of a camera and deliver a short speech that she would later critique. When my turn came she said, "Get out of here, you don't need me," which was quite a compliment.

Going back to my early days at MIT, I was given a fellowship which paid for my tuition and my professor, Professor Robert Harris, Professor of Nutrition, put me on the staff as a research assistant so that I would be paying only half of the normal tuition and getting a stipend of, I believe, a hundred dollars a month for living expenses. That really was not much, but

everything was quite cheap in those days. There was no dormitory for women so I had to rent a room in a house on Clinton Street in Cambridge. I was paying 20 dollars a month rental for the room and then of course I had to eat and there were no kitchen privileges there. So, all three meals had to be taken outside. In my second year I got engaged so the weekends were on my fianc . In '49 I got married and we moved to Dorchester and had a small apartment there.

I studied in the Department of Food Technology which was staffed by pioneers in the area of food technology, Professor Proctor, Professor Goldblith, who died just a few months ago, and several others were early food technologists and founders of the Institute of Food Technology. Professor Proctor, Bernard Proctor, the head of the department, was one of the presidents of the Institute. The department broke off from the department of biology and was very much public health oriented in addition to a strong position in nutrition and food processing. I did not do my undergraduate work at MIT so I was lacking some undergraduate courses such as calculus and thermodynamics. I had to make them up. I had thermodynamics in Poland and the professor said "OK, you don't have to repeat the course, but you have to take the final exam" which I did not appreciate at all. In the final analysis there were several of us in the department who were in the same boat and we were lucky to convince the dean that in food science we really didn't need thermodynamics. So we were excused, but I did have to take exams in two foreign languages. In those days, the students, especially the graduate students, were required to know some foreign languages so they could read the literature in those languages. I took German and French, just as at Bryn Mawr and passed these exams. The professor of French told me to take out a French technical book out of the library, read it, and then get back to him. So, I took the book out, but I didn't have time to read it. When I went in for my test he asked me whether I read it. I said, "No sir, I didn't have time." So he said, "OK, open the book on page 120 and tell me what it says." I read the paragraph to him and he said now tell me what it says. And I did and he looked at me and said, "What language are you speaking, Alina?" I said, "Well, English I think." He said, "No, you are speaking French." See, the way we were taught languages in Europe, we were never allowed to translate. I was telling him in my own French words what the paragraph said. I didn't translate. And to this day I really don't know how to translate. I should also like to tell you that I used a French-English dictionary to learn English. I didn't have a Polish-English dictionary and with my very good knowledge of French at that time acquiring the basic English was quite easy because so many English words are actual French words: demolition, abolition, abomination, all ending in tion are from French. My thesis professor was Professor Harris and my thesis subject was governed by the fellowship that I received which was sponsored by Proctor and Gamble. They were interested in studying percutaneous absorption of detergents. Percutaneous absorption means absorption through the intact skin; just "skin" is cutaneous, but percutaneous means "intact skin." I was doing my experiments on rats, emersing rats in the water solution of these detergents and the detergents would be tagged with radioactive carbon and then I was measuring the amount of radioactivity in the exhaled CO<sub>2</sub>. We started this work by testing water, whether water penetrates through the skin and I was buying a lot of heavy water. In the course of my four years of research the price of heavy water went down fifty percent, probably because I was putting such a great demand on the market. We were emersing rats in this heavy water and then I had to anesthetize the rat, cut him open, and take blood from the pumping heart and then analyze that blood for its content of heavy water, deuterium water. So, that was the beginning and we published one paper with Professor Harris. It was a note in the well-known journal Nature. It presented our proof that water penetrates through the skin. Of course it was rat skin, not human skin, but I couldn't afford to sacrifice my human subjects and

draw blood from their pumping heart. Horses have a skin very similar to the human skin, but they are awfully big and I couldn't afford to buy so much heavy water. So, we had to use rats, which are different from human skin in that they have no sweat pores, but sweat pores would be another point of entry for the water. Then I wrote my thesis and I defended it and I took oral exams and written exams. It was a small department and one of the questions which is often asked of me is was I discriminated against because I was a woman? Well, yes and no. The Department of Food Technology, or Food Science as it was called later, had several women. As a rule in other university's the Department of Food Science always attracts quite a number of women. The graduate group was only, I'm guessing now, six or eight people strong and two of us were women. The professors have admitted to me later on that they were watching me very carefully, especially after I got married, but I promised my mother that we would not have a family until after I graduate. Apparently there was a woman ahead of me who was going for her Ph.D. and then she married a Ph.D. student and she quit. When they asked her why, she said, "Well, I already got my Ph.D." So they were watching me and I knew I can't afford to quit. My husband had a law degree from the University of Warsaw which meant he had no profession in this country. You can't practice law here except in Louisiana when you have a law degree from a European university, because in the United States the law is based on custom law except for Louisiana which uses Napoleon's code like the European countries.

In a way, I was perhaps favored by some graduate students. I remember at one point we all had to take Advanced Biochemistry and rather than each one of us doing his or her thing in the lab we decided to band together, the four or five of us who had to take that course, and we worked after hours in a cold room. I'm kind of sensitive to cold so what happened is First of all they called me "mother," and treated me like I was their mother and had these four sons. They made me put on a hat and gloves and a warm coat and I was in charge of making sure that all the samples were being tracked down, properly labeled, etc. They were doing the heavy work and I was just taking notes and keeping records of all the data. One of them, who lived not too far away from where we lived, used to give me a ride in his car (he was one of the few graduate students who had a car) at like two o'clock in the morning, drop me in front of the apartment house where we lived and quickly take off before my husband would open the window and yell at him, why is he bringing his wife home so late. We became like one big family.

Now, there were some who did not enjoy having a woman around, especially one who could hold her own as far as grades were concerned and I would be hearing gossip like "Oh, Alina, you probably won't get your degree because your professor is feuding with Professor Proctor (the head of the department) and Proctor is known for failing the students who work for Professor Harris" and so on and so forth. Of course, that was not very pleasant to hear. The subject of my thesis research was really not food science. So, we had to work on water and later on some fatty acids to have some justification why this work was being done in the Department of Food Science, but that was what allowed me to study there because of the money I was getting. I didn't have much to do with Professor Proctor and I was very afraid of him. I should also tell you that I was a very, very shy child. When I was seven or eight years old, I was too shy to walk into a store to buy a notebook. My mother had to go with me. One day she refused and insisted that I was old enough to do it by myself. Well, I went into hysterics in front of the store. Life has taught me to overcome my shyness, but at MIT I was still new to the technical world. I was still new to the country. I was still new to the marriage. So, I wasn't as secure as I tend to be now because now I know who I am. Before, I was still like an embryo trying to develop into something.

During my oral exam, because in those days for the doctorate degree we had like eight hours of a written test and then maybe three hours of an oral exam, Professor Proctor, the head of the department, was the head examining professor and as I said before, I was very afraid of him. At one point he asked me "Would you like to give me the formula for the calculation of the thermal death-time for bacteria?" This subject was covered in our written test and our professor, Professor Nickerson, who was an expert in this field told me that he is not going to ask me this question and since nobody else knows anything about this field I should not review it and I didn't. The equation was called the Stumbo-Ball Equation. When I was asked that question, I said, "Sir, I don't remember the equation, but I will be very happy to derive it for you" and I walked over to the blackboard and started deriving it. He stopped me and said, "Alina, you are not answering my question. I said, "You asked me whether I would like to give you the Stumbo-Ball Equation for the calculation blah blah blah." He said, "Yes, but you are not answering my question." So I said, "Would you please repeat the question?" He said, "Would you like to give me the Stumbo-Ball Formula for the calculation of thermal death-time blah blah blah?" I said, "Well, I am going to give it to you in a few minutes if you'll just be patient with me." He said, "No, you are not answering my question." Well, by that time I was shaking like a leaf and he noticed that he really got me upset. I said in desperation, "Well, what kind of an answer do you expect from me?" And he said, "Yes or no." Meaning yes, I would like to or no, I would not. I thought I would faint. So, he kind of started in a lighter tone to ask some rather easy questions and then a half-hour later he said, "Do you know what time it is, Alina?" I looked at my watch and said, "Yes, sir, I do know." He said, "What is it?" So, we parted friends. After the test I was walking down the hall back to my lab and he met me in the hall and said, "Well, how do you think you did?" And I said, "Well, I probably did OK, but I didn't know the answers to several questions" and he said, and this stuck with me for the rest of my life, "Alina, never be ashamed to say 'I don't know' in answer to a question, but you should say 'If it is important I'll look it up and I'll let you know'" and that was some very, very good advice.

So, I graduated from MIT. I think I was the only woman getting a doctorate at that graduation or maybe one of the few. My mother, who was there, of course, felt that I was the only one, but you can check the records. It was 1952 and I was the first one from that group of graduate students in the department who studied together to get out. The rest of them got out a year later. I was looking for a job and my husband at that time was working for Radio Free Europe which meant New York. So, I got a job with General Foods. The laboratories were based in Hoboken at that time. We were renting space from the Maxwell House Plant in Hoboken. We were called Central Laboratories and I started as an associate technologist. I worked on cake mixes, angel food cakes, devil's food cakes. I started going to the Institute of Food Technologists meetings. And just to give you another laugh, the women in the lab were required to wear white uniforms and men had khaki uniforms. Our uniforms were like nurses' uniforms, you know buttoned up dresses or coats. We had a room where we would change and leave our street clothes. At the first Institute of Food Technologists meeting that I attended in New York, my boss introduced me to the laboratory director whose name was Dr. Axel Olson, and said, "Well, Axel, you do remember Alina, don't you?" And Doctor Olson looked at me and said, "Yes, but I didn't recognize her with her dress on." I was the laughing stock of the laboratory for the next week. Of course, I was dressed very nicely and I had a nice hat on with a feather. I thought I looked very elegant. Well, anyway, I was not too happy with the boss I had at that time. I got pregnant, had my son, took a leave of absence, and went back to work in three months in another group. I was the breadwinner in the family. I was fortunate to have good care

for my son. We didn't have to take him to a daycare center. I had a woman who would come in the morning and then leave in the evening after she cooked our dinner. And then the laboratories were moved to Tarrytown and at that time, if not a year earlier, our technical management considered the idea that the General Foods Central Lab should do exploratory basic work in several identified areas. One of them was flavors from reaction products. Another one was dough technology, and a third one was texture. At that time I was involved in research on gelling systems, trying to come up with substitutes for gelatin that would allow the gel to be kept at room temperature for longer periods of time without melting the way gelatin does. We are talking about texture properties there. So maybe that was the reason why I got that assignment or maybe people felt that it is a difficult area and I always ended up with difficult assignments.

"Give it to Alina. She'll solve the problem." OK. So, I got this piece of paper from my boss on which there was a blurb saying that I should be working on texture, not very specific. I wrote back a little note "It doesn't make sense" and sent it back to him. Within an hour, it was back on my desk with a very curt answer from him "Go ahead and make sense" and that is what I've been trying to do for over thirty years.

I approached the problem logically. I suppose this is perhaps something that, partially, MIT gave me, but partially was in my genes because I was always a very logical person and to this day I like to know where I am, where I am going to, and how I am going to get there. When I drive, I must have a map in front of me. How am I going to get from New York to Washington and which exit do I take, otherwise I feel very insecure. So, I came up with this roadmap, opening report, what we should do in the area of texture. I said first we have to find out whether texture is important because I just couldn't accept the fact that I may be working on something for several years which will turn out not to be important. We did a lot of consumer studies through a hired consultant specialist in social studies, psychology and consumer testing to find out what texture means to people from the consumer standpoint, sensory standpoint, whether it is important, what are the factors that affect it and so on and so forth. Then, once I convinced myself and the people around me and the people above me that texture is important, the next step was to define it and start developing tests, both sensory and instrumental to describe it in a quantitative and qualitative way. We needed that definition because people had been working on texture for a number of years, as a matter of fact since the late 1800's, primarily in the area of red meat, some selected vegetables like peas, but these researchers did not communicate with one another. People working on meat knew nothing about what people working on dough texture were doing and, as a result, everybody had their own definition of texture. Now working for General Foods, I was looking at food in general. Cake mixes and meat and vegetables and gelatin, it was all food, it was one big umbrella. So, we had to come up with a general definition of texture and we did. We also defined texture as a sensory property. A number of physical chemists and rheologists were working on texture, but they were actually working on physical properties of food which then people experience as a sensory set of parameters when they are handling the food or eating it. Then I collected a large number of sensory words which people used to describe texture. This was all in the literature. It just had to be dug up and collated. Then I looked at the common threads in these words and divided these words into several categories, mechanical properties, geometrical properties, and others related to water and fat content. And then I looked for physical, rheological counterparts for these words. At MIT I was exposed to a new system of describing flavor, called the flavor profiling, which was developed at Arthur D. Little, a consulting firm located in Cambridge. The MIT group had a good contact with this consulting firm and, as part of our training, we had to take a course in sensory

evaluation which included this flavor profiling. Now flavor, just like texture, is not one thing. It's the basic flavors like sweet and sour and bitter and acid. It is also aromatic notes and woody notes and flowery notes and so on and so forth. And it suddenly dawned on me "Well texture is not one thing. Texture is a number of different notes. Foods can be chewy and hard and crisp and mealy and gooey. So, why not apply to texture the same principle of profiling developed for flavor." And that principle is based on identifying these notes, their intensity, and their order of appearance. So, I came up with what is called Texture Profiling and, to this day, this system is being used throughout the world by sensory evaluation people. It is taught in schools and it is called The General Foods Texture Profiling or Doctor Szczesniak's Texture Profiling. And, when I presented some of this work at one of the Institute of Food Technologist meetings, a lady from New Zealand came up to me and said, "You know, your work is like a breath of fresh air in this very confusing field." And perhaps it was. We had this texture profiling technique applied to sensory and we also applied it to instrumental measurements. And while I was a student there, Professor Proctor and his students developed an instrument called the Tenderometer. It was called the MIT Tenderometer. It was an instrument which simulated the chewing motion of the human mouth. It had dentures and first it was used on peas. That is why it was called the Tenderometer, but it could also be used for other products and was developed together with a research minded dentist who was part of the department at that time and as I said, it simulated the chewing motion of the human mouth. So, when I was going to be assigned to work on texture, I said I need a universal instrument to measure texture of different foods. There were many instruments on the market but they were used for bread or peas or meat. They were cutting devices, shredding devices, mincing devices. I needed something more universal and also something which would give me this profiling system, or which would give me a way to quantify several parameters because texture is not one thing. I did not want to measure texture. I wanted to measure textural parameters. So, I went back to my alma mater, oh, before I say that, I also went back to MIT and talked to Professor Proctor, but this time we were not separated by five feet. We were separated maybe by one foot. I was growing up to his level and at that time I had a boss who was very understanding and when I would come to him and say "Look, nobody understands me here. I have nobody to talk to. I am doing what I consider some pioneering work, but I have nobody to bounce my ideas off." And he took me by my hand and said "Look Alina, look through that window. See this world out there? Don't tell me there is nobody out there who doesn't understand you. Go, travel. Meet people. Make a list of people who work in your field or similar fields. Go, meet these people. Get together with them." One of the people I wanted to talk about what I was trying to accomplish and how I was approaching it was Professor Proctor because he did do, as I said before, some work on texture that included the development of this instrument with his graduate students. I talked to him about this classification of textural characteristics that I had and he was very impressed and he liked it and he convinced me (or gave me more assurance I should say) that I am on the right track. And I went to the University of California, spoke to Professor Rosemary Pengborn, a key person in sensory evaluation. I went to England and was very privileged to meet the Dean of Food Rheology, Doctor Scott Blair. I stayed at his cottage in Oxford several times and we bounced our ideas back and forth. So, when I got to the point where I needed an instrument, I said, "Well, why don't I go to MIT and ask somebody to make me one?" because it was not commercially available. And, of course, we gave money to the department and they built an instrument for me. The original instrument had dentures, but we decided we didn't want the dentures because, first of all, this instrument looked very funny. You saw those dentures, like an artificial mouth,

coming together and chewing. And, it was difficult to balance the food on the occlusal surfaces of the teeth. The instrument didn't have a tongue that would push the food back under the teeth. So, we just had a plate and a plunger and then we also modified the way this chewing arm was moving. This part of the instrument was called an articulator and it was something very similar to what the dentists use to study forces of mastication.

I: Did the tenderometer test the tension of the food?

A.S.: Well the word "tenderometer" comes from the word 'tender.' The instrument tested the tenderness of peas as their overall resistance to the applied force. So, we took over this instrument from MIT and we modified it a little bit. Our greatest contribution was to learn how to interpret the recorded force-distance or force-time curves. From these records we quantified hardness or firmness or softness. Because in my classification soft, firm, and hard are points on the scale. That's the resistance to the applied force or the deformation under a given force. Then we quantified cohesiveness by having more than one chew, usually two chews or more. Then we quantified springiness or elasticity, gumminess, crispness, and things like that. And that system, called the TPA, is used to this day. The instrument that we had, we called it the Texturometer, was not available commercially and that was one big drawback. So, one of the research directors at General Foods made arrangements with a Japanese firm in Japan to make these instruments. It was called the General Foods Texturometer and we gave proper credit to MIT as having made the first prototype. The Japanese firm was selling these instruments in the United States but they could not get a good technical representative and service company to service these instruments. And then there was the question of money exchange, so they did not sell too many instruments here in the United States, but they did in Japan. I don't know whether it is still true today, but several years ago this instrument was an official instrument for measuring texture of Japanese rice for exporters and importers. It was an interesting instrument, some people call it Mr. Chewer. It was described in popular literature and technical literature.

Today the area of instrumental texture testing is a bona fide part of food science. There is a company here in Scarsdale, by the name of Texture Technology, that sells a similar instrument except that its motion is not like this, but like a stamping machine up and down. They put out a bulletin. This very popular instrument is called TA.XT2. I understand it sold upwards of three-thousand instruments all over the world and many people in production use it. In contrast to research, these people would be interested in testing for just one parameter, for example crispness. And, it's a known fact that crisp foods are highly valued for their texture. The whole testing procedure can be simplified and special probes to puncture or cut or crush the product can be employed instead of a full profile that would consider a number of various characteristics. Just one characteristic can be quantified. The man who started this firm, Boine Johnson, is a very good salesman. One thing that he does, for example, is he sponsors attendance at technical meetings for students who present papers based on the work in which this instrument was used as a testing machine.

I: Did they create a database for different foodstuffs?

A.S.: Most of it is done by industrial firms and is proprietary information. As a result of my visits to different universities, I developed a network, but in those days we did not consider making friends in our field of research or in our field of interest, a network. This is a new word.

So, in a way I pioneered in the field of networking. And, since we were a small group interested in texture as a subject in itself rather as part of commodity work even though we didn't ignore those people, we found a great need to communicate with one another and not only limit our contacts to the yearly visits. I was encouraged (and this included Professor Proctor of MIT) to publish the work that I was doing and I was very lucky in that that work represented basic fundamental knowledge rather than product oriented work so I was allowed by my technical supervisors and also by our legal department to publish this work. The four basic papers that laid the foundation for my work on texture were presented at a meeting of the Institute of Food Technologists in Miami in 1962 and published in the Journal of Food Science in 1963. They are considered to be classic papers. And, since we had four papers in this particular issue of the Journal some people call it "the Szczesniak Issue."

I: When you were writing these articles did you feel their significance? Did you know that they would be as important as they are?

A.S.: I felt they would be important, but I had no basis to realize that they would have such worldwide implications. These papers generated a tremendous number of requests for reprints. I stopped counting at 800. I am still getting requests for these papers because they are not available in many libraries, going back to '63. That's way before you were born, right? I was getting requests from all over the world, Australia, and Africa and New Zealand and you name it.

Well, a number of years later I was approached by a publishing firm in the Netherlands to consider editing and starting a journal of texture studies. The initial individual who was approached with this request was Dr. Scott Blair, who by that time was a good friend of mine. He was approaching retirement and said no, he does not want to do it. His name was very well established in the field as the food rheologist. Rheology being the study of flow and that's the physical basis for texture measurements. He did not want to start a new venture at this point in his life, but he said "If Dr. Szczesniak in the United States and Dr. Sherman in England would agree to be co-editors, he, Dr. Scott Blair, would give us whatever help is needed and whatever he could contribute in terms of lending his name and his expertise." And that's what happened. And this journal is in its thirty-second year of publication now. I stood at its helm as the editor-in-chief for the United States and Australia, and Phillip Sherman was the editor-in-chief for England, the rest of Europe, and Japan. I stood at its helm for ten years which was a very satisfying job, but very time consuming and, in contrast to Professor Sherman who left Proctor and Gamble and became a professor at the University of London, I continued with my industrial job and of course I could not have the job of being an international journal editor as part of my job description. General Foods did not prohibit me doing it. They had supplied secretarial help, and, of course, they paid for postage stamps, and telephone calls, but I had to run my group and do my research and contribute to the bottom line on the financial statement so after ten years of this work, most of which was done at home, I decided new energy, new blood needed to be brought in and professor Malcolm Bourne at Cornell University (the Geneva, NY campus), my very dear friend, took over and he's been at it for 22 years. Now he is ready to retire.

The group of people interested in studying texture as a subject in itself began to grow and even the Society of Rheology took cognizance of us and we organized several symposia on texture within its meetings, got the attention of engineers and physical chemists. Within the meetings of the Institute of Food Technologists, which take place in May or June each year, we organized several symposia. This all lead to the recognition of texture as a sub-discipline of food

science. I became known within the Institute of Food Technologists. As I mentioned earlier in our discussion, my training in public speaking at Bryn Mawr became very handy. I was asked to present papers, not only on specific pieces of my research, but also on the general meaning of texture, on the philosophy or the need for some specific further research steps. I was asked by IFT sections to come and deliver lectures. One of the very prestigious lectures sponsored by the Chicago section of IFT, the Tanner Memorial Lecture, became part of my resume. I was invited to deliver that lecture which is a great honor, but above all I should say that I became the first and so far the only woman among sixty men to receive this most coveted award granted by the IFT to its members, the Nicholas Appert Medal. This is like a, more or less, Nobel Prize in our field. Thanks to the network that I started developing in the fifties and thanks to my technical publications on the various aspects of texture, I became quite well known, both in the United States and abroad. One of the funny stories that was related to me dealt with the visit to Japan of our vice-president in charge of research Mr. Al Clausi, whom I knew quite well personally, and as a matter of fact that story was related to me by him. When he went to Japan for the first time, and was visiting some laboratories, people said, "Ah, Mr. Clausi, you're from General Foods. Do you work for Dr. Szczesniak?" He got a kick out of it and so did I.

The work I did at General Foods on texture was of probably greater fundamental importance than most projects other people worked on and the reason for that was that, in addition to my assignment on texture, I was always given some product development or product improvement projects. So, my group was able to show some important accomplishments on a short term basis. We had to write monthly reports and quarterly reports and then behind that smoke screen or bulwark, whatever you want to call it, behind this curtain I was able to hide and do some fundamental work. I felt kind of compelled to tell the rest of the world what we were doing from the more fundamental standpoint. I felt it's my obligation to my chosen field, to my profession, to be a mentor, a teacher and at the same time I was hoping that other people would build on the fundamental foundation that I and my group were creating for texture.

I did not realize at that time that I was also acting as a trailblazer for women. My mother was always telling me that being a woman has advantages and disadvantages and I always felt that men and women are different. I never wanted equality. When at meetings, my boss would say "Alina is one of the boys." I would say, "No, I don't want to be one of the boys." He said, "Why not?" I said, "well, that is not a compliment. Look, let us go back to the Bible which is the history book for all of us. In the Bible, it says that God created Adam, right? Right. First human that God created was Adam. Then God looked at Adam and said 'Oh, my goodness, what did I do?' and very quickly he created Eve and a second addition is always improved." So we were laughing at it, but I have to admit that during the work hours, with some exceptions, I was treated as an equal colleague at work, but whenever we had off campus meetings, and we had quite a few of them, we would go away to a resort or once we went to Canada, I remember, and we had conferences then and we had dinner and after dinner we would sit at the bar or we had music and we danced and I have to admit that after five my male friends behaved the way a man should behave towards a woman, you know, helped me at the table and helped me get my coat and things like that. My mother was always telling me that a smart woman would play her cards right and that one of the advantages that a woman has is that in a fight with a man; most men will not hit below the belt because every man had a mother and many men have daughters. I had some bosses who, in a way, treated me as their daughter. Of course, you have to be careful not to overdo it, not to take advantage of it. I mentioned a little earlier that I was a trailblazer. I didn't realize that at that time. I also didn't realize that I was a mentor and a role model. I had

several women working in my group and some men and part of my job was to develop these people properly and teach them the laboratory techniques we were using and logical thinking. It was to their advantage. It was also to my advantage because I ended up with a better group. But I didn't realize the little things that I was teaching them, the logical thinking which to me was obvious. To this day I am getting letters, usually Christmas cards, from the gals thanking me for what I have taught them. I also get comments from people outside the company, either written or oral, thanking me for what I have taught them in my publications. When that started happening I said to myself, "Oh, oh, I better be very careful what I put down in writing." Because people were quoting my verbatim, you know, and every sentence and every word counts when you are thrown into a situation where people hang on ever word that you have written and they take it as a Bible. So, I suddenly became a great authority. For many years I had a great desire to learn, learn from others, like from the networking people I was associating with, or learn from my own work and then suddenly I got to the point where I had to be a teacher. I resented that for a while because I was still taking. I was not ready to start giving yet. Now I have come to except that and in a way I feel it is my duty to be a role model and that brings me to what happened last Friday which was March 15, 2002.

I was invited by Kraft Technical Research to be special guest at their annual banquet at Hotel Drake in Chicago. It's a banquet at which Kraft Foods employees, which include some former General Foods people who are still with the company. I don't know whether I said that before or not, but General Foods was taken over by Phillip Morris and then Kraft was taken over by Phillip Morris, and Kraft merged with General Foods. So, the General Foods name is no longer in existence. It's Kraft and the General Foods people either retired or went to other companies or became part of the Kraft organization. So, I was invited to this Kraft banquet which is held annually for people who have received patents that particular year and for some people who, the company feels, should be honored as leaders, leaders in the technical field or leaders in the managerial line of work. And I was invited as a special guest. I didn't know what to expect, but I decided to go and it was a fabulous evening. It was perhaps one of the happiest days of my life. I was honored for my technical work, for being a trailblazer, and for being a role model. And it is mostly women who have begun to consider me a role model and who played a very important role in having me invited to this affair and in organizing it. Most of the committee that organized the banquet were very capable women, very logical, very well organized. I was seated at the table with the vice-president of research, John Ruff, whom I've known for years and he gave a very nice synopsis of my accomplishments and my work and I got a special plaque. Now, I have to find space on my walls, where to put that plaque. It was a very, very enjoyable meeting and one of the most enjoyable things was to be in the company of 400 happy people, happy because they themselves were getting their awards, at least half of them were, the other half were spouses. Also people who had a sense of purpose and enthusiasm for the work that they do, young people, healthy people. Because it might be of interest, a lot of my friends are getting to the point where their age begins to catch up with them. So, from that standpoint it was also a very enjoyable evening.

I: I'm glad you enjoyed your evening. Thank you for your story and thank you for agreeing to be interviewed.

A.S.: Thank you.