CHEMICAL HERITAGE FOUNDATION

DONNA J. NELSON

Transcript of Interview
Conducted by

Hilary Domush and Leah Webb-Halpern

at

University of Oklahoma
Norman, Oklahoma

on

21 and 22 July 2008

(With Subsequent Corrections and Additions)

Donna J. Nelson

CHEMICAL HERITAGE FOUNDATION
Oral History Program
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DONNA J. NELSON

Education

1974	B.S., University of Oklahoma, Chemistry
1980	Ph.D., University of Texas, Austin, Chemistry, with Michael J. S. Dewar

Professional Experience

Purdue University

1980-1983	Post-Doctorate, Chemistry, with Herbert C. Brown

University of Oklahoma

1983-1990	Assistant Professor, Chemistry
1989-1990	Provost's Faculty Administrative Fellow
1990-present	Associate Professor, Chemistry
2005-2007	Assistant to ACS President Ann Nalley
2008	Organic Division Chair, Chemistry
2008	Development Officer, Chemistry

Massachusetts Institute of Technology

2003-2004	Visiting Professor

Honors

1977-1979	Robert A. Welch Predoctoral Fellow
1980	Robert A. Welch Postdoctoral Fellow
1984	University of Oklahoma Junior Faculty Research Fellow
1985	ACS Petroleum Research Foundation Type G Award
1985	Research Corporation Cottrell Scholar Award
1985-1986	Oklahoma University Associates' Distinguished Lecturer
1994	The Iotan Member Spotlight
1995	Oklahoma University Sooners Football Team Honorary Faculty Coach
1999	Alpha Phi Omega Leader of the 20th Century
2001	Capitol Hill Briefing
2003	Woman of Achievement, *US Black Engineer and Information Technology Magazine*
2003-2004	Ford Foundation Fellowship
2003	Guggenheim Award
2004	Capitol Hill Briefing
2004	Capitol Hill Press Conference Speaker

2004	Woman of Courage Award, National Organization for Women
2004	SACNAS National Conference Keynote Speaker
2004-2005	Outstanding Professor, Oklahoma Educator's Leadership Academy
2005	Minority Health Professions Foundation Hall of Fame Inductee
2005	Twentieth Anniversary MIT Women's Studies Program Opening Speaker
2005	Fellow, American Association for the Advancement of Sciences
2004-2006	50 Making a Difference, Oklahoma City's *Journal Record*
2006	21 Leaders for the 21st Century, Women's eNews
2006	Research Featured on ACS Organic Division Calendar
2006	SACNAS Distinguished Scientist of the Year
2006-2009	NSF ADVANCE Leadership Award
2007	Fulbright Scholar
2008	Dow Chemical Company Advisory Board

ABSTRACT

Donna J. Nelson's oral history begins with a discussion of her childhood in Eufaula, Oklahoma—a small town with Native American influences that grew into a much larger town throughout her youth. Heavily influenced by her parents, Nelson was a motivated student who wanted to work with and help people as her step-father, the town's only physician, had done. Nelson entered the University of Oklahoma with the intentions of pursuing medicine and possibly majoring in math. After joining the chemistry department, Nelson was immediately confronted with the contrasts between female and male students; she excelled in the coursework but needed to work harder in the laboratory to maintain parity with the male students (the male students, Nelson believed, were used to the manual dexterity of lab work from experience working on cars). After graduating, Nelson spent a brief time working on MINDO/3 calculations at Auburn University for Philip B. Shevlin and S. David Worley. There Nelson decided that, for graduate school, she only wanted to work with Michael J. S. Dewar at the University of Texas, Austin who developed the methodology. Near the end of her time in Austin, Dewar helped Nelson secure a post-doctoral position with Herbert C. Brown at Purdue University, where she became Brown's first female post-doctorate. Nelson described her work and other experiences under Brown, which included giving birth to her son Christopher and returning to lab the following week. After detailing her early experiences as the first tenure-track female faculty member of the University of Oklahoma chemistry department, Nelson moved on to explaining the importance of listening to women's experiences in order to help develop true parity in the scientific community. Throughout the interview Nelson referenced what she learned as a member of a Women in Science group at Purdue, and also what she learned by seeking advice from colleagues, that is, that "the best path to follow is a well-educated decision; no one can tell you what to do or what is best for you, but their experiences can help you to shape your own decisions." Nelson continued the interview by explaining how a 2000 *C&E News* article, prompted her to conduct a survey of women and minorities in the top chemistry departments. She described the initial survey work that led to further surveys of other disciplines whose departments were ranked by the National Science Foundation. Her survey work and research have been quoted in such varied places as *Ms. Magazine* and Harvard University's chemistry department website. Since the survey work, much of Nelson's time has been spent researching issues surrounding women and minorities in chemistry and the sciences and working with Marye Anne Fox at University of California, San Diego, as well as with SACNAS.

INTERVIEWERS

Hilary Domush earned a B.S. in chemistry from Bates College in Lewiston, Maine in 2003. Since then she has completed a M.S. in chemistry and a M.A. in history of science both from the University of Wisconsin. Her graduate work in the history of science focused on early nineteenth-century chemistry in the city of Edinburgh, while her work in the chemistry was in a total synthesis laboratory. Hilary is currently Program Associate for Oral History at CHF, where she combines these two divergent academic paths. Her current work focuses on the Pew Biomedical Scholars and Women in Chemistry oral history projects. She also contributes to the podcast *Distillations* and the magazine *Chemical Heritage*.

Leah Webb-Halpern graduated from Smith College with a major in history and a minor in Latin American studies. Prior to joining Chemical Heritage Foundation as the oral history program assistant, she was a research assistant at the McNeil Center for Early American Studies. Leah has moved on from the CHF and is currently a Ph.D. student in the Department of History at the University of Wisconsin, Madison.

TABLE OF CONTENTS

INTERVIEWEE: **Donna Nelson**

INTERVIEWER: **Hilary Domush**
Leah Webb-Halpern

LOCATION: **University of Oklahoma**

DATE: **21 July 2008**

DOMUSH: So, I'm just going to start with a little introductory bit. Today is 21 July and we are in Norman, Oklahoma [at the] University of Oklahoma, with Dr. Donna Nelson. I'm Hilary Domush and with me is Leah Webb-Halpern. So, we are going to start the interview just asking about some things from your childhood. You grew up in…I know I heard you say it just now, but Eufaula [Oklahoma].

NELSON: Eufaula, yes. E-u-f-a-u-l-a.

DOMUSH: Okay. So, what was that like? Is it…is it far from where we are right now?

NELSON: No, actually not. You can just drive straight down Highway 9. It's about a hundred ten miles. And it's where I grew up. I was born in a little town about ten miles north named Checotah [Oklahoma]. And my parents were born in Eufaula. My grandparents were born in Eufaula. Some of my great grandparents were born in Eufaula, so we had a long history there. When I was growing up, it was a small town. And it still is. But when I say small, I mean, like, about four thousand people—very small. And then, you'll notice on the cover of the *Journal of Organic Chemistry* there is that calendar there where it says Eufaula on the Lake. And that had a big impact on Eufaula. It's a man-made lake. And it came…and we call it "came in." They dammed the North Canadian [River] and South Canadian River [which] intersect at Eufaula, and they dammed that river and created Lake Eufaula in around 1963 or 1964. And then Eufaula grew to be a whopping twelve thousand people which is what it is now.

DOMUSH: That's a huge, huge change.

NELSON: Yes, it is. And at the time that it was created it was the…it had the longest perimeter of any manmade lake in the world. So, it's still pretty big, you know. I think that it's been passed, but it was in the *Guinness World Records* [book] and things for a few years. So, it was a huge change. It was a huge change.

Eufaula was a Creek town…very important Creek town. It was sort of a […] I guess it would be the equivalent of a county seat, except within the Creek Nation. And I had Indian blood, but not any Creek Indian blood. It's Cherokee, Chickasaw, Choctaw, and a little Osage. It's a mix. But it had an impact on me growing up in that town. Because every one in the town was at least part Indian. That's the impression I had. I remember talking to school friends about this and we were ten, eleven, twelve [years old] at the time. We had no barriers to discussing these things among each other and we would just ask each other, "do you have Indian blood?" "Oh, yes." "How much?" And we found out gradually every kid in the town I think had some Indian blood. So, it was normal. We grew up in that normal atmosphere with…there were full-blood Indian teachers and coaches. As children I think compared to other towns perhaps, you know, we were maybe a little more adventurous, quite brave, courageous, perhaps quieter. And so, when I came here, which is where I came to get my Bachelor's Degree, it was a little bit of a shock. It was a little bit of a shock because we were all alike in Eufaula. And we came here and I kept wondering, wow, everyone is really different.

DOMUSH: Well, and the sheer number of people must have been [shocking].

NELSON: Yes. That, there were many changes, yes, and not that many people from Eufaula were here. So, there were a few boys who came. But I look back now and I didn't really think so much about myself as a female going to college. Within my family, it was always just accepted that I was going to college. My father…I was reared by my mother and stepfather. They were married when I was five. So, I would say that he had a big influence on my life. He was an M.D. His father had been an M.D. So, there was that scientific method in diagnosing illnesses and things that I think really did impact me. And my mother had been valedictorian in high school. Their names are Dr. John Howard Baker, Jr. and Dorotha Baker. Before Baker, it was Eckelkamp. And she had been Valedictorian in high school, but had never gone to one day of college. And that bothered her. And so I think that she was constantly telling me, "You're going to college. I want you to make something of yourself. I want you to have these opportunities. I want you to do this. I want you to do that. I want you to do everything." And so, I heard this constantly. And my stepfather was also very…I guess, you'd say liberated. He was very pro-women. And so, he never once said to me, "No, you can't do this." And so, I never had anything except…"you can do anything you want to do, and you're going to do it"…this sort of attitude. It was just push—a lot of push.

DOMUSH: So, did they…were they very closely monitoring things like your homework and making sure that you finished up on things like that?

NELSON: No. No. And that maybe part of the culture of Eufaula, also. We really weren't monitored. We were left to develop sort of, as we wanted to, pursue our own interests. Like I said, mother was constantly telling me "I want you to make something of yourself." But, I think

if I would have chosen to go into art, or law, or accounting, or water skiing, or whatever, it would have been okay. She just wanted me to go to college.

And what I was thinking…my plan was I saw my stepfather take over his father's [medical] practice there in Eufaula. And so, I was thinking well…you know, I admired him. He had a little office in our home—in the study—as well as the office downtown and so occasionally patients could come up there on the weekends, and at night, and the middle of the night. And so, I got to see that, and it influenced me, so I was thinking well, I'll be an M.D. I'll take over his practice, continue it, and that's what I planned to do. So, I think that's why I originally wound up in chemistry. And around my sophomore year maybe, or junior year, when I was, this will demonstrate how they didn't monitor me. I remarked at home, because I went home every couple of weekends, something about the premed requirements […] and daddy was sitting there watching television, and he turned and said, "What? What is that that you said?" And I said, "Well, I have to enter the premed program," or something—I don't even remember exactly what I said. And he said, "You're not planning on being a doctor are you?" And I said, "Well, yeah." And he said, "No, no, no. You don't want to be a doctor." And I said, "Well, why not?" He said, "Well, think about it." He said, "You're around sick people all the time." He said, "It's depressing. You start to think everybody's a hypochondriac." And he said, "You'll never have a life of your own. I mean think about how all these people." [laughter]

You know, I mean we'd be down…we would be going out to eat or whatever…and he was almost like a rock star because he was *the* doctor in the town. It's a small town. He was the only doctor at that time. We would be eating, and people would come up to him and start telling him about you know, "What do you think, doc? You know, I have this. What do you think it could be?" And we would be at a restaurant you know trying to eat. And he was the… he had the personality where he could not just tell them look, come and see me in my office, okay. He was an extremely kind person. He was a doctor personified. He is exactly what a doctor should be. And if we were driving out to dinner, and there was a car wreck along the way, because there's a four-lane that passes through Eufaula, and so there were car wrecks there occasionally, and we would be driving out to dinner and there was a car wreck…he felt that it was his obligation to pull over and stop and go back and tend to the people. And in some cases, he would wait with them until the ambulance arrived. And so, we—the family members—would be sitting in the car waiting on him. He felt like that was his obligation. He had taken the Hippocratic Oath, and he felt strongly about it.

But also to some extent he gave up his life because of that. If he got a phone call at 2:00 a.m. and a woman was having her baby…you know which we all knew she was going to have…he would get up, get in the car, and drive out to help her. He just didn't tell people no. So, he was a wonderful person. So, but he told me, he said, "You'll never, never have a life of your own." He said, "Think about it. You want to be around people who are happy. You want to be around people who aren't sick all the time. You know, you want to be around people where you'll be able to tell them no, if you have to where you'll be able to have more autonomy in your life." And so, I went away and I thought, "Wow, what do I want to do? Students are wonderful. I want to be around students for the rest of my life." And so, at that point, with a lot of thought, I decided I want to be a professor. And that's the change that took place in my life.

And at that point, I had so much chemistry it was going to be the easiest thing for me to graduate in. [laughter] And it wasn't really until I entered graduate school that I realized I especially loved organic chemistry. So, that's when I made the decision to be an organic chemist.

DOMUSH: Prior to that though, when you were growing up and you would think about going to college and maybe I want to be an account, maybe I want to be a lawyer, maybe I want to be a doctor because it seemed so appealing, did you have any interest in science.

NELSON: Oh, absolutely, absolutely. Even then…you know, you hear all this advice…take all the science courses you can. You know, I did that. And in, and I was just so lucky that Eufaula High School was a wonderful high school. And they cared so much about students. They were wonderful to us. They had the chemistry, and biology, and even physics…for a town that small. We had the largest graduating high school class. I think we had fifty in my graduating class. And I even had physics. I had calculus there in that little town. It was an amazing school. I look back on it now, and I just took it all for granted. But, they cared enough about us to have all these things.

And at that time, I was going to be a math major. I was going to be a math major and then be an M.D. And I particularly enjoyed math. I had won some statewide contests even, in math as a high school student. And I still have the little medals…you know, it meant so much to me to win those. And so, I was…when I got here I realized that math was just too abstract for me. If you'll think about it, you know there's math which is very abstract and being an M.D. which is very people-oriented. So, really, I guess, chemistry was, sort of, a happy medium in there. And like, I said I had more courses in it. So, I went ahead and got my BS in chemistry.

And I might want to [add] you notice my name Donna Nelson. It's not Baker. I was not adopted by my stepfather. My mother and her first husband…his name is Donald Nelson, and I was actually named after him, Donna Nelson. And, but they were divorced when I was about four. And I still see him. I just saw him last weekend, you know. But, my mother and stepfather have passed away.

WEBB-HALPERN: Before we move on, you mentioned that your mother's [name]. It sounded like you said her maiden name was Eckelkamp.

NELSON: Yes.

WEBB-HALPERN: So, did she not take your father's name then, is that her birth name?

NELSON: Her maiden name was Eckelkamp.

WEBB-HALPERN: That's her maiden name.

NELSON: So, she was Dorotha Eckelkamp, then Dorotha Nelson, then Dorotha Baker.

WEBB-HALPERN: Okay. And you said that being in a town with a high population of people with Native American heritage had an influence on you. Did you remember? Do you remember knowing any of your Native American relatives?

NELSON: Oh, you mean full-blood Native American. No, the full-blood Native Americans in my family per se were before my grandparents. So, when I named all those different tribes, they were pretty far back, you know like at the great grandparent level. And so, I got it from all different sides. And so, within my own family, the culture wasn't practiced. But, it was…I look back now, and I see how it really was. Like I was saying, this idea of leaving a person, sort of, to make their own choices…I had great autonomy even as a student…I mean, what courses I took [and] my direction in life. One thing I can remember, I mean mother never asked to see my grade card from school or any of my homework or anything like this. And by the time I was taking calculus and physics and all that, I had, sort of, passed the point at which they would understand what I was doing anyway. But, when I would come home she would have known that I was studying for a test, I guess. And she would ask me, "How did you do?" And in high school, we would exchange papers and grade them. And I would say, "Well, I made a 99 [percent]." And she said, "What did you miss?" Oh, I mean, it was expected you better make 100 [percent]. You make 99 [percent] you're in trouble. And I can remember math. In math, in particular at the end of each nine weeks period, you add up the averages and she'd say, "What was your average?" And I would say, "Well, I had 99.6 [percent], but it rounded up to 100 [percent]." And she would say, "Okay." [laughter] So, but it was verbal, you know. She didn't ask to check me. She believed what I told her, I guess. I think it was all good, now. And it didn't bother me because I wanted to do well.

DOMUSH: So, at the end of high school, you're getting ready to come to the University of Oklahoma and you started taking all these chemistry classes. What was it like when you started in these chemistry classes?

NELSON: They were huge.

DOMUSH: Very different, then.

NELSON: They were huge, yeah. In general, well, I can remember the thoughts that I had at that time, are probably much the same as thoughts that the students have nowadays. The comments that I hear them saying that the classes are so huge that they're not comfortable asking a question.

DOMUSH: How many people was it? Do you remember?

NELSON: Well, in general chemistry, I mean, it filled an auditorium. It seemed like thousands. I'm sure it was just hundreds. I mean it was too many for me to count. The room was darkened and the professor was up on a stage. And you know I don't remember exactly which room it was on campus anymore, but it was probably just a few hundred students. And I can remember not asking a single question during the entire semester. [laughter] It was intimidating. So, when students make this remark to me now…I very much remember and identify with what they're saying. And so, I intentionally try to set up a very casual atmosphere in my classes. And I'll even try to joke and tell them things like there's no dumb question. And sometimes I'll even, sort of, act silly to make them loosen up and get so that they can ask questions. And I try to encourage it…sometimes even by doing things like taking pieces of candy and when they ask a question I throw them a piece of candy, things like this. Because I think it's very important, and I remember those feelings.

DOMUSH: What were the lab classes like? Was it the…you said you really grew to love organic chemistry, was it the course, or the lab where you worked?

NELSON: It was the courses [and] not really the labs that much. The lab…I really do think at that time the men had a definite advantage in the labs. Now, I'll tell you why. Growing up I dated men who had cars. I had a car also, but I did not go out, and crawl under the car, and work on it. The men I dated did. And they were very comfortable with disassembling the entire engine, putting it back together, and sometimes if a man—boy—I was dating was doing that I would go sit and watch him. I was interested in watching but not doing that. [laughter] I'm still not. But, the boys that did this I think gained a big advantage in using, knowing more about equipment and things. And I learned a lot just watching and listening to the discussions and you know seeing. I think it helped give confidence that if a person built it and it needs to be repaired, you can usually repair it. The only problem is sometimes you may disassemble it and you can't get it back together. But I think that it was the classroom portion that I enjoyed more, not necessarily the lab. Remember, I started out a math major.

WEBB-HALPERN: Okay. Do you remember any professors who were significant to you in your undergraduate career? I mean you mentioned significant mentors at graduate school or in your post-doc. But, for undergrad…

NELSON: As an undergraduate there was one here—Norm [Norman] Fogel. And I think he's…I still see him around every now and then.

WEBB-HALPERN: Oh, really.

NELSON: He has long ago retired. But I did a little bit of research with him. His first name—full name—is Norman. And we didn't publish it, but I just remember doing this with him and him being very supportive. And then there was a professor in physics, [Ron] Kantowski, I don't remember his first name. No, that's going to be wrong. Yes, it is Kantowski. That's right. It's been a long time. And when I came back here as a professor he was still over in physics teaching. And so, I dropped by and talked with him. And he created the atmosphere in the physics class that made the students unafraid to ask questions. And so, I modeled some of that teaching style, acting silly. And saying if you're going to write something on the board, say that you're going to write the word "favorite" or something. You know just saying, "Now, how do you spell favorite?" You know something like this, just to, sort of, make the students not intimidated and willing to answer questions. And you start out with some simple questions like that and it, sort of, breaks the ice. And I thought that he had one of the best teaching styles I'd ever seen.

DOMUSH: When you started in lab working with Norm Fogel, did he approach you or did you approach him about doing some research in his lab?

NELSON: I think I must have approached him. I had had him for P-Chem. I'm pretty sure. He was a physical…no he was an inorganic chemist. But he taught P-Chem during the summer then. I may be getting some of this mixed up. But I was in his class and that's how I got to know him. And then I, sort of, liked him, and so…I think, that at that time it was a requirement that we do some research as an undergraduate.

DOMUSH: How was that compared to the laboratory courses where you said you felt like the men that were in your classes had an advantage because they were used to taking things apart.

NELSON: Yeah. I think that for me, I think that holds true just generally, in chemistry labs, you know this idea of…for the equipment, anyway. Now, more women cook. And so, if you'll think about it this idea, add the solid, then the liquid, and you know mix, wait this amount of time, then put it in the oven, let it bake, you know. All of that I do think that women are very comfortable with that aspect of it. But, when it comes to the equipment, and a lot of it is equipment-oriented and especially the larger equipment, I think there the men have some

advantages. And I think perhaps in lab…or at least I did. I think it's changing now, you know as we have more women racecar drivers and all of this. I think that is changing. But at that time, I wasn't so used to going in and working with the equipment then. That may have changed. Women…I don't see that so much anymore. But, you were asking me about how it was with me and that's…I remember sometimes just identifying the tools. I can remember looking at the tools and thinking that's the wrench and this is pliers, those are needle-nose [pliers], and just being able…and seeing like the rubber hammer. And all these you know just the different pieces of tools…some of it I had never used. I had seen my boyfriends use them. And then some of the other women, you know, they had never used it or seen it used, because they didn't go sit with their boyfriend while he worked on the car, see. So, I think that if you extrapolate that the men having actually used it, they would be more comfortable with it, wire cutters, wire strippers, and all of these things.

DOMUSH: So, did you need to use things like this…wire strippers.

NELSON: Yes, and we still do. Yes, we absolutely still do. I have them down there in my lab now, yeah, in order to repair equipment. Sometimes we have to repair magnetic stirrers, you know, [if] the wiring messes up you have to repair stuff, absolutely. It's an important part of chemistry.

DOMUSH: I have a Master's Degree in chemistry, in an organic lab. And I never used wire strippers, but perhaps there were many men in my lab that took them upon themselves.

NELSON: Or, you know…also, organic chemistry is very broad. If you have an important piece of equipment, and it has a problem in the middle of the night, and your reaction's going to go bad, and you need to repair that piece of equipment, then you need to repair the piece of equipment. And one of the first things that I learned, anyway, was to be able to maintain a piece of equipment. I mean…when I first started doing research I was doing vacuum line work…so, this is gas-phase chemistry. And I had to learn how to blow glass because I had to be able to repair that vacuum line if it…you, know sometimes vacuum…I don't know if you know what I'm talking about but it's a glass vacuum line with a stop-cock, etc. And you pull a vacuum on it, and you have to move the gas—condensed gases—into one flask, let them warm up or sometimes thermalize them by heating in an oil bath. And then go back and remove them using a liquid nitrogen slush or whatever. And if your vacuum line gets a crack in it, and you have your product stored in a temporary flask that might leak, you have to repair the vacuum line before you can move it into the permanent storage. And so, you have to learn to blow glass enough at least to be able to seal the vacuum line even if it's with a really crappy seal. You had to be able to seal the vacuum line to get your product secure.

DOMUSH: So, was that something that you learned even in undergrad?

NELSON: No.

DOMUSH: Techniques like that?

NELSON: No, because working with gases—in my opinion—is about ten times harder than working with solids. And so, when I went to work for Herb [Herbert C.] Brown where we were working with air sensitive compounds […] having done vacuum line chemistry, it made it easier because at least those were liquids, see. Even though they were air sensitive, and it took a lot of intricate manipulations, most people going from liquid-phase chemistry to air sensitive liquid-phase chemistry, you're moving up to a higher degree of handling capability. For me, I was moving down and it was just like a relief. [laughter] Oh, thank God. Now I can see my products. I can actually see them. Whereas in gas-phase chemistry you know, you look at the vessel and, you know…I wonder if they're in there. You can't see anything until you run a GC [gas chromatograph] of it or something. It's something that I didn't enjoy that much. To this day I still avoid using gas-phase reactants if I can.

DOMUSH: So, then what was…this experience that you had in lab with Norm Fogel and then the experience with the physics professor Kantowski…you said he was just a great professor.

NELSON: He was good at teaching. He interested students. The interaction between the students and him was very good in class. And I think that really helps the students learn. If they feel that they can ask a question, it increases the learning capability because then they, sometimes if you can't ask a key question you don't understand the rest of the class. [laughter] So, I think it's very important for the students to be able to feel that they can ask a question…just interrupt the professor, "Hey, wait a minute. Can I ask this before you go on?" And in a class of two to four hundred, sometimes they don't feel that comfortable. Now, this physics class in particular that I took with him was about two hundred students…yeah, one to two hundred. It wasn't like what we have in organic chemistry. But it was easily over a hundred. And I might mention I was the only female in the entire class…really. And I sat up front just because I wanted to be able to see his face and hear him better, etc. But, I just thought he was…he was capable of developing a good repertoire with a large class. And a lot of times, professors don't have that. A lot of times, professors are irritated by being interrupted. And I just keep those things in mind as I teach.

Norm Fogel was a wonderful person, still is. I still enjoy him, whenever I talk with him. But, I don't think that he really inspired me into going into graduate school, not really. What inspired me into going into graduate school…I sat out for about maybe six months. And, I guess mother's talks you know, "I want you to make something of yourself" and…in my opinion at that time a Bachelor's Degree in chemistry wasn't really worth a lot. It was not going

to take me as far as I wanted to go in life. And so, I did a lot of thinking at that time…you know, what do I want to do? And I couldn't really decide. And I think that it's hard for me to even remember. But I think that I finally decided, well, I'll just try graduate school. And so, I tried that and enjoyed it. And I can remember there weren't all that many women in graduate school, but taking organic chemistry and really just loving it, in particular the physical organic part, where it was a little more mathematical.

This part about sorting out the differences between electronic effects versus steric effects, and that has stayed with me the rest of my life. Hammond Plots and isotope effects, all of those things, I'm still very much interested in all of that. And applying them now to our studies on the functionalization of single walled carbon nanotubes [SWNT] —you know, the poster that we just took down that was behind me. So, we're still applying all of that. I mean it was a lifelong infatuation that I developed right there at the beginning of graduate school. [laughter] And I really became interested in that.

Now, what I had done is I had moved to Georgia because a friend of mine was living out there. So, I had moved out there. I was dating him. And I went to Auburn University, and I was…the person that I took those courses with was Phil [Philip B.] Shevlin, and I think he's retired now, but he's still emeritus there. And he's still quite active. And he's the one that did the gas-phase chemistry. So, he trained me, and I am very grateful to him for that because he must…he had the patience of a saint. And he was a wonderful teacher, had a relationship with the students much like Kantowski had. And there was a professor there named Dave [S. David] Worley—W-o-r-l-e-y—who had gotten…I think he got his Ph.D. with Michael [J. S.] Dewar there. And he set up Dewar's MINDO/3 [Modified Intermediate Neglect of Differential Orbital Overlap] Program on the computer there at Auburn University. And Phil Shevlin, who I was doing some research with, started talking about this new computer program that they had just gotten set up. So, I started using that and really enjoyed it. And I can remember talking with Dave Worley, and I remember him saying to me, "Well, you know if you really enjoy doing these computer calculations this much, you ought to go work with Michael Dewar. I'll write a letter of recommendation for you if you want." And I said, "Yeah, that'd be wonderful." And then that's how I got to UT [University of Texas at] Austin.

DOMUSH: So, did you apply to other places or did you just write to Michael Dewar.

NELSON: It was the weirdest…the weirdest…I mean, you probably hear a lot of different stories. But for me…now, I realize I was a twit. I really was. [laughter] I heard about Michael Dewar…so many stories from Dave Worley. And Dave Worley said, "He's the only true genius I've ever known." I've heard a lot of people make that statement now, even by people that we would regard as geniuses. He really was. And so, I…and this will show you how determined I was. I sent him a letter and didn't hear anything. And Dave Worley said, "Well, if his desk is anything like I remember, his desk could be, it's probably buried on his desk." Because his desk just had papers on it like that deep. And whether he gets back to you or not, you'll never

know it and he may not have even read your letter. And so, I thought "Oh, this is awful." So, I got in my car and drove to the University of Texas at Austin. [laughter]

DOMUSH: Wow.

NELSON: Yeah. I did. And I learned in the years later, that was extremely risky, because when classes were not in session he was usually in England or away on speaking engagements. You know, he's very popular. So, I got there, and I can remember standing in the hall outside his office. I had driven all that way, and I remember standing and looking at his door and seeing "Michael Dewar" on the outside of the door. And I just stood there, and I thought that's his office. And I could not get up the courage to go in. I remember standing there and looking at the name on his door and suddenly the door burst open, and this man ran out, and ran down the hallway. And I remembered seeing his picture. And I said, "That's Michael Dewar." And I watched him run all the way. It was in the Experimental Sciences Building which was this long building. It's like half a block long down there at UT Austin. And I remember standing there watching him run all the way down the hallway, and then he disappeared into a room. And I thought I wonder where he went? He'd gone to the men's room. [laughter]

And I stood there thinking, I wonder if he's going to come back because I didn't know it was the men's room. And I thought I wonder if he's going to come back? And pretty soon, he started coming back. And he said, "Hi," and went into his office. And I could hear a little conversation. And then I thought I should go on in. And so, I went in and his secretary was there, I think, and I told his secretary that I was there to come and see him to see if I could work with him because I was going to graduate school at University of Texas at Austin. She said, "Well, he's here." And I knew he was. So, she said, "Why don't you go on in?" So, I went in, and I remember looking at his desk and it was buried in papers, just like Dave Worley had said. I mean papers just like this, I mean just all over the desk. And so, he asked me to sit down, so I did. And I told him who I was and he said, "Oh, yes, I remember your letter. Yes, it's here somewhere." And he…believe it or not he actually fished it out. Yeah, he found it. The man is a genius, he really was. And I also remember hearing stories later about how sometimes when he was gone his secretary would come in and, sort of, clean up his desk. And he would be furious, because then he couldn't find anything. So, he had, sort of, a filing system with his desk. So, his secretaries learned …don't ever touch his desk while he's gone. So, it looked like a mess to us, but he actually had some elaborate system. I mean, he was able to pull it out with less than thirty seconds. And so, I told him that I'd been doing all these calculations and that I would just love to come and work with him. And he said, "Oh, I'd be delighted to work with you." And I was just so thrilled that you cannot imagine how thrilled I was. And I had not even applied to UT Austin at the time. I had applied to no place. And so, I had it in my mind that I really want to work with him, it's *him*.

And so then, I applied to UT Austin and was accepted, and went there and in just a couple of months and started working with him. I think I started in the summer and then my formal enrollment started in the fall, as is typical. And I had a TA [position] in the fall. And I

don't think I was paid that summer. I remember being there at least part of the summer because it really helped me get started being there and learning how to use the computer facilities and learning where things were, you know learning where the bathrooms were and things like this—you know, all the important stuff.

DOMUSH: Did you have any reservations? I mean, obviously that story is amazing and you were so excited about Michael Dewar.

NELSON: Oh, you have no idea. You have no idea.

DOMUSH: But did you have any reservations? I mean, you come from Oklahoma. And you were the only girl in this…you were the only female in this huge physics class. You knew that there weren't very many females in chemistry.

NELSON: Yes.

DOMUSH: Did you have any reservations about picking this field.

NELSON: Nope, not at all. My parents had always told me you can do anything you want to do. They didn't ever have this goal that I'd be president. They were not political at all and I am still not either. But, no, I had no reservations at all. I might mention also…this is, sort of, going back in time and a lot of times people don't believe it, but I still actually have the photos to prove this. I mean, I was a cheerleader, and a majorette, and a featured twirler and in the Glee Club, and in the stage band, and first chair saxophone in the regular band. I mean, I had done all these things and made straight A's in high school, taking all the calculus and all this. I think I made one B in one nine-week session and it was in—if you can believe it—typing. [laughter]

DOMUSH: Oh.

NELSON: Yeah. And so, I was not valedictorian. But, I had done pretty well. I mean, I was confident, and I went to work with Michael Dewar, and I absolutely loved him. He was wonderful. He was absolutely wonderful. I'll have to dig out. I meant to pull out one of his reprints for you. But this was a reprint from an article back in 1971 and it was on something

like…women in chemistry [in] the American scene. He was writing about women in chemistry even back then.[1]

DOMUSH: Wow.

NELSON: He wrote it. It was his own article and I have a reprint of it here somewhere, yeah. And he was very much in tune and…if you read the article, in there, it actually says that women in chemistry are treated quite badly in the US. [laughter] Yeah. So, he was from England, as you know, originally. And so, this is something that he was sensitive to and aware of. And he was wonderful to me. He was absolutely wonderful to me. I worshipped him. So, I mean you know, if I had a student who thought about me the way that I thought about him, I would have liked that student, too. So, I thought he walked on water. He was wonderful. It was one of those positions where every single day you're constantly thinking "I'm so lucky to be here"…every day, you know, every day. And even now I look back, and I think I was so lucky to work with him.

DOMUSH: What was the lab group like?

NELSON: Oh, it was a mix. It was a huge mix. I think most of the group were Caucasian…interesting that I would start with that first, isn't it. But, and I would say about 25 to 30 percent [were] from England because he still pulled from England. We had one person, I think he was from Japan, one from Mexico, but most the people were from the US. And the people from the US were about half men [and] half women. So, when I was there he had two other women. One of them was, sort of, coming and going. She had a job and was doing research also—working on her Ph.D. simultaneously. And, he was great. He also, had, sort of, a split group in that he had a theoretical group and an experimental group. And I was in both, because I did the calculations and I also did some gas-phase chemistry. He had me investigating a particular pet project of his that was the reaction of butadiene with *cis*-dideuteroethylene. It was one which was going to test a prediction in MINDO/3, which, I think, had predicted that the reaction was a biradical. Although when you put substituents on it, it's predicted to go concerted—you know, the Woodward-Hoffman rules. But if you just go to the bare molecules with no substituents, it's supposed to go biradical. And so, he wanted me to run the reaction with *cis*-dideuteroethylene And so, I had that background doing gas-phase chemistry, and I was able to do it. And so, indeed we did see some *trans*-dideuterocyclohexene, which indicated that it was…there was at least some diradical mechanism there. So, he discussed that. We didn't publish it, but he did discuss it a lot in his presentations. So, I mean he was thrilled about that. And I think that was the only experimental chemistry that I did while I was there. And the rest of it was computational.

[1] Michael J. S. Dewar, *The American Chemical Scene in 1972: Fifth Inaugural Lecture, Delivered 17 May 1972 at the University of Sheffield* (Sheffield, United Kingdom: University of Sheffield, 1966).

DOMUSH: And when did you begin to work with Herbert Brown?

NELSON: I left Dewar's group and went straight to Herb Brown's group. I got my Ph.D…I actually finished up in 1979, but I think the degree was formally awarded in 1980. So, yeah, you can see that up there, I guess. Yeah. And then…I got in Herb Brown's group. I think I actually arrived in late January or early February the next year. And he had just won the Nobel Prize. I mean just won it; in December he had been there and picked up the medal. And so then, I joined the next January. But, I have to say that the way that I came to work with him, also has a story behind it.

I had heard some of Michael Dewar's graduate students [say] that when it came time for them to try to post-doc or move on…one in particular who I thought was wonderful—I'm not going to say who, but I was really good friends with him—and he told me that he had told Michael Dewar that he wanted to do a post-doc, and Michael Dewar said, "Oh, I think that's great. Why don't you just write to some places, write to some people, and ask them if you can do a post-doc?" And remember…you know I look back now, and I was quite willing to put out a lot of effort to go and talk to people. But I was not very good at asking people for favors, which I felt like I was going to be doing if I just wrote to somebody—you know, wrote to a stranger. I mean when I went in and talked with Michael Dewar I sat down and I told him all about my background. You know, I'd already been using his programs. I would not need any training. But it was not something I felt comfortable doing, just writing away to people to ask them for post-doc positions.

So, I thought well, I won't post-doc. I'm just going to take a job. And there was a company there named [Texas Test Facility]…I think, in McGregor [Texas] that was right around Austin. I seem to think they were a little north. And so, I thought I'm going to go up there. I don't remember how. I know they had an opening and were interviewing. So, I went up there. And I told them what all I'd done. I'd done this gas-phase work. I'd done these calculations. When I got back a couple of days later, Professor Dewar came in and said, "Did you go on a job interview?" I hadn't told him. I said, "Yeah. How did you know?" He said, "Well, these people called me, and they couldn't believe that you had done all of these things that you were telling them about. And they asked me did she really do this?" And he said that he told them, "Yes, that she did." And so, I did get an offer by the way. But he said, "Don't you want to do a post-doc position?" And I said, "Well, yeah, I'd really love to, but I didn't really feel comfortable just writing." He said, "Oh, well, I'll help you." And I thought, that's really strange, you know, because I had been hearing people say that he wouldn't help. So, I didn't ask. And here he was telling me he would help me. And so, I said that'd be wonderful. And he said, "Why don't you make a list of people that you'd be interested in?"

So, I made my list. And it was about twenty names. So, I went in, and I said if you want me to write a rough draft or something. He said, "I'm not going to write them. I'm going to call them." So, he said, "Just sit out there because I may have a question, that they may ask me

a question I don't know the answer to." I don't know what it would be, but he asked me to, so I did. And I could hear him talking about me out there. And it was so embarrassing because he was very, very flattering. And one by one, he went down that list. And it was, he took quite a bit of an afternoon as I recall, to call those people. And they kept telling him "no." No. Nope. Not interested. Not interested. And he came back, and he had called every single person on the list except for one, Herb Brown. And he said, "Why don't you bring me another list tomorrow, and we'll start again?" He said, "These people don't have any openings." And at the end of it all, he told me, he said, "This is horrible." He said, "If you were a man, I would not have all these problems." But, when he handed me back the list, I said, "Well, what about Herb Brown?" He said, "I don't know if I want you to work with him or not." And I didn't ask [why] you know I just said, "Yes, sir." So, I just went away and I got my second list…so, another twenty people. So, I went back the next day and he started calling again. There was one person on that list who said, "Well, tell her to send me her vitae." And so, one person, so, I said, "What about Herb Brown?" And he said, "Okay, I'll call him." So, he called him and this was going on, like, in June or July of 1979. And so, Herb Brown said, "Well, okay. Tell her to send me her vitae."

So, I did. I sent both of them. In my letter to Herb Brown, I had [said] and as well as [to] the other person, I said, "I'm going to the ACS [American Chemical Society] Meeting in Hawaii to present my work. And so if you happen to be at that meeting, I could come and talk with you," just like I had done with Michael Dewar. See, I mean, there I was again. And I didn't know it at that time, but Herb Brown went to every ACS Meeting, every one, always went. And so, he just said, "Sure, I'll meet you at the ACS Meeting." And the other person just wrote back and said, "Not interested." So, here it was, I had one chance…one chance. And of course it was before it was ever announced that he had won the Nobel Prize, see. And so, I went and met Herb Brown and his wife.

DOMUSH: In Hawaii.

NELSON: In Hawaii. He took his wife everyplace. When you saw one, you saw the other. And so, he said, "Well, just come up to my hotel room, and I can talk with you there." And I said, "Okay." And so, we went out on the balcony, and he talked with me. And I remember telling him what I had done, and I had read a little bit, but I hadn't done anything that's really organoboranes. But I had done the gas-phase chemistry. And originally, the boron hydride [work] was gas-phase chemistry. And I remember him asking me the question, well, you do know that I've never had any female post-docs before. And he said, "I've had a female graduate student, but never any female post-docs at any point." And I said, "Yes, I know." And he said, "What do you think about that?" And I said, "I don't care." [laughter] I didn't. I just wanted a job with him, so badly you know I don't care. I didn't care about any of it. I just wanted this chance. And he also…I didn't ask, but he explained to me why he had not had any women, and he said because they always get married and they retire. He said, "They get married and then they don't continue their careers." And I was dating a man at the time, and I didn't say anything.

And so, when I arrived at West Lafayette [Indiana], I can't remember if it was late January or early February. But, I went in and I had gotten married in December, see…at the end of December. And my husband—Christopher [Brammer]'s father—was going with me to Purdue [University]. And we had talked, and he's an electrical engineer. And he had said that he would follow me up there. And I said, "Well, what will you do?" And he said, "Purdue is an engineering school." He said, "There'll be a position for me. It'll be easy for me to find a job. You're the one we're going to have to take care of." And it was just like he said. We got up there, and they fought over him. And he had certain background, and he had even had a top secret clearance. And he had worked on…I don't know what all it was…radar, sort of, …being able to model radar. And so, we went up there in that Laboratory for Applications of Remote Sensing. They just almost died because they needed someone with his expertise. So, they actually, they and the Department of Chemistry, he had had a lot of NMR [nuclear magnetic resonance] expertise. I mean, he could repair NMRs.

DOMUSH: Oh, wow

NELSON: He could repair anything. And they actually got into a bidding war over his salary. I mean, it was exactly as he said. It is…I watched that, and it was just disgusting, you know really. And so, he got a job with no trouble, up there. But when I went in to talk with Herb Brown, he said, "I understand you've gotten married." And I said, "Yes." And he said, "How does that change things?" And I said, "It doesn't." And he said, "What does your husband say?" And I said, "He's happy." And he said, "What does your husband think about you continuing to work here?" And I said, "He wants me to." And he was, sort of, taken aback. And he said, "He's a very reasonable person." [laughter] And so you know, I mean things went along. It was very smooth. There were no problems. My husband never caused any troubles. Occasionally he would even come in and repair some of the magnetic stirrers. In Herb Brown's lab, some of the equipment was ancient. He really believed in repairing things and pinching every penny, make that grant dollar go as far as it can. Some of that has stayed with me now, also. But I think being thrifty is a very good thing.

So, that part of it worked out great. And it turned out Herb Brown was also wonderful. I can remember when I was working with Michael Dewar thinking there can't possibly be anybody better to work for than Michael Dewar. And then when I got up there working with Herb Brown, I remembered realizing I was wrong. Herb Brown is better. I just loved him. I absolutely adored him. He was so well organized. Now, Michael Dewar…I'm not trying to take anything away from him. He was a genius, absolutely, a sheer genius, extremely creative. Sometimes…remember the desk…you know sometimes creative people are a little haphazard and you have to have faith in them. But if he's not there, you can't find anything [on the desk]. Herb Brown was exceedingly well organized. And so, I went from Michael Dewar where you learned to be exceedingly creative to Herb Brown where you learned to be exceedingly well organized. One was a leading theoretician. The other was a leading experimentalist. So, a lot of times when I would tell people I worked for Michael Dewar, now I'm with Herb Brown, they

would say, "Wow, that's a switch. How did you make that transition?" You know, which one do you like better? And really, I think I liked them about the same as people, except that additional little organization made it easier to function because you know what you were doing, what was expected of you. It was jut a little easier to figure things out, because it was as it was told and people, sort of, knew what they were supposed to do. As far as the group sharing…we all understood we were supposed to share. He had sixteen or eighteen post-docs working with him. And for example, we had one balance that we all shared…pinch every penny. And we did and we got along because of the organizational skills that we all had to develop. So, it was great.

DOMUSH: And you said that when you started you were his first female post-doc. Did he have female post-docs subsequent to you joining the lab?

NELSON: Yes. He, while I was there he hired a second one. And Christopher, my son, was born while I was a post-doc there. I joined Herb Brown's group in January or February of 1980. Christopher was born 21 January 1982. So, you can see the timing there. Now, the other woman came…she was actually a wife of a current post-doc, and she came and joined. And then she also, had a baby while she was there. Yeah, not at the same time, but like the next year. And I think he hired other women after that, because…and this is another entire story on its own. I remember when I was pregnant, we had…all of us post-docs were extremely active. I mean, I can remember being there [and] walking in at 2:00 a.m. thinking, well, nobody's going to be here now. I mean, I had forgotten something, and I was reading something at home, or something, and walked in…post-docs there walked in and out constantly. I mean there was one post-doc who just completely reversed his hours. So, he would have more NMR time. So, he would come in around 5:00 p.m. and leave around 7:00 in the morning. There was always somebody there. And so, we had really long hours. And one of the things I was really concerned about is when someone left to go home, like to visit family or something, other people would take their glassware. And so, Herb Brown had put…he had had people put locks on the lab benches, so that if you took a vacation your lab bench could be locked up, so your glassware wasn't all taken while you were gone. [laughter] I am dead serious. Because a lot of it was specialized. And so, I can remember thinking well, I don't want to ask him to lock my lab bench up, because I'm not going to be gone that long. It's not going to take me that long to have that baby. [laughter] But, you know they're going to think that I'm going to be gone a long time, so they're going to be in there after my glassware. And I can remember telling everybody, "I'm not going to be gone that long. Don't take my glassware." I'm dead serious.

And so, Thursday morning my water broke. And I had been at work the previous day. I mean I worked right up, until that day. And I remember thinking, okay, I need to go in and tell everybody I'm going to the hospital. So, I did. Now, you get some towels and put them in your pants and go in, you know. I can remember walking around going in and telling the people, "Okay, I'm going to the hospital now. Don't take my glassware." [laughter] You know, if there's anything for me, you know you can leave the note on my desk. I'll be back in next week. And when, it was…let me backtrack for just a minute.

There was some question about how am I going to tell Dr. Brown? So, I kept thinking he'll notice. So, but I was wearing this labcoat, which was a little big. And I was thinking I don't want people to notice very soon, because I want things to go on just as normal. I want to be treated completely normally. Well, some of the people noticed. Herb Brown didn't. And so, finally I decided it was December, and I thought I need to tell him because he might want to do something or just out of respect for him, I need to tell him. So, I put it in a memo—I typed it—and left it in his office. I can't remember if it was a Friday or whatever, but I left it maybe early Thursday. And it was a real short memo. You know it just said, "I wanted to let you know that I'm pregnant. And I'm scheduled to have my baby in January and I'm going to take off a week." And so, normally, he got right back to you. [snaps fingers] He's very well organized. Didn't hear from him…I thought, oh. So, I think it was the next day. I think it was Friday, I heard that…you know, "Come in and talk with him," so I did. And I noticed, here would be the door, and here was his chair, and then here was where I needed to sit. So, I walked around in front of his chair. And I noticed as I walked around his eyes followed my waistline, you know. And he said, "You're pregnant." And I said, "Yes." And he said, "I hadn't noticed." And I didn't say anything. And he said, "I thought you were putting on a little weight, but I didn't realize you were pregnant." And he said, "I got your memo yesterday. And I didn't talk to you yesterday because I wanted to go home and talk to my wife about it." And he said, "This is ridiculous. You can't possibly take off just a week." And I said, "No, that's what I want to do." And he said, "No." He said, "You can't do this in just a week." And we had a bit of an argument. I said, "No, that's what I want to do. I said I don't want to take off," and it was so strange. Here I had been hearing from him "when women get married they always retire. They have to take off and go off, go home and take care of the children and all." And here I was saying, "I'm going to take off a week." And he was saying, "No, you can't do this." And so then he said, "Look go down to the benefits office," because we disagreed. And I wasn't giving in. And he said, "Go down to the benefits office and find out what your benefits are." He said, "You have benefits. You can take them. Find out what your benefits are." So, I said, "Okay." And remember this was 1980s…Purdue University 1982…okay, end of 1981, because it would have been December.

So, I went down to the benefits office and I went in and I said, "I'm pregnant." And she said, "Yeah, I know. I can tell." All women knew, you know. [laughter] And I said, "Dr. Brown told me to come and find out what my benefits are." And she said, "Well, you can take off six months." And I guess my face went into this hysterical ooh—a panic. And she said, "Honey, you don't have to take all of it." She said, "Most women don't." And I said, "I don't want to take any of it." And she said, "Well, look. You're going to have to take some of it because if you take one day you're going to have to take leave." And she said, "You're going to have to take off at least one day to go have your baby." And I said, "Yeah." So, she pulled out the two forms. And one was a half page thing where you write your name, social…like, ten blanks. The other one was about a sixteen page form. And I said, "I don't have time to fill this out." She said, "This one's good for up to two weeks. And this one is good for up to six months." And I said, "I'll take the one that's good for up to two weeks." And she said, "What if you have complications?" She said, "You need to fill out this one because it's good for up to six months. It's just in case." I said, "I'll fill out this one that's good for up to two weeks. And

if I have complications, my husband will come back and get this form, and bring it to me, and I will fill it out, and then you can extend it." And so she said, "Okay." So, I fill out the one that was good for two weeks. So, then the day my water broke I went in, you know, told everybody I'm going to the hospital today.

DOMUSH: Don't take my glassware.

NELSON: Don't take my…yes, don't take anything out of my bench. And so, I finally made it to the hospital around 2:00 p.m. My doctor almost killed me because, if you walk around after your water's broken, the umbilical cord could loop around the baby's neck. I would not recommend anybody do this. And they do have babies get strangled on the way out. And so, my baby was born at 8:00 p.m. Okay. So, I don't know what happened. I had been thinking all along…because I was really…that was one thing I was a little worried about. My mother had always told me it's really hard. I mean, she had problems with me. I was an only child. So, I kept thinking…I had read if you just relax, it really helps. So, I had been thinking for months…relax. When I get in there I'm just going to relax. I'm going to relax. When I get in there I'm going to relax, relax, relax.

So, I went in there and they…my husband was with me, and they kept coming in and saying, "Is she asleep, again? Wake her up. She's not supposed to be sleeping like this." And I just wanted to sleep…so, I kept going to sleep. I guess it was self-hypnosis or something. [laughter] And I don't know if that's what made it just be six hours, but I mean it was just like nothing. I never had to take any painkillers. I never had any problems. Finally, at the very end they gave me some local shots. And they kept saying, "We've never seen anything like this. What's wrong with her?" And so then, right, and I could hear them talking and they'd say, "Is she sick?" And I'd say, "I'm not sick. I'm just sleepy." And so, then I'm going to continue sleeping. So, then after Christopher was born I felt wonderful. I felt wonderful. I mean I weighed so much less. I felt like, I could just, I had all the energy in the world. It was so easy to get up and walk around. I mean I didn't weigh anything. I felt so light on my feet. And so, I remember within, like, just two and a half hours, I got up and went down the hall to the bathroom. And they came running after me saying, "You can't do this. You can't get up. You can't walk in the hallway. Did you notice the little potty in your room? You're supposed to use the bathroom there." I said, "No." I said, "I feel good." And they said, "Well, look, for us. You're going to get us in trouble. Just stay in your room and use the potty there, okay." And they said, "And don't tell the doctor." I said, "Okay." So, I mean I had no problems. So, on Monday, I went back half days. And that next week I took off half days and my husband took off half days. And I started working half days back on Monday. And he was born on Thursday.

DOMUSH: Wow.

NELSON: And so, Herb Brown went around saying, "I guess women have been lying to me all these years about how hard it is to have a baby, because I saw Donna back Monday after she had her baby on Thursday." And so, he told everybody this. He told everybody. And by the time, I was hearing this story years later he had exaggerated. She had her baby on Thursday and she came back on Friday. [laughter] But that's not true. That's not true. I waited until Monday.

DOMUSH: So, was your husband staying home with Christopher when you were at work?

NELSON: Half days, yeah. I took off half days and he took off half days. So, I stayed home in the morning, and then he stayed home in the afternoon. And then the earliest that they would take…there was a daycare center on the same block where they took very tiny babies. And the earliest they would take Christopher was at the age of eight days. So, we started taking him when he was eight days old. And it caused a big stir because they said, "He's the first baby we ever saw with his umbilical cord still attached." Really. And there was a woman in the…I'm going to tell you all this because if young women see this [video], I think it's important. I make a point of including this because I think it's important…in my talks to young women…because it's extremely important for them to hear this. There in the chemistry department was a female, not a professor…but well, I guess she was a professor…not tenure track. And she knew I was pregnant. She was an old woman. And she…when she heard me say that I was going to only take off a week, she started in on me. She said, "You're a bad mother. You're going to be a bad mother. You can't do this." She said, "It will be horrible for your child. Your son will hate you when he gets older." She said, "You will have a completely alienated relationship, and its going to," and oh, she kept telling me all these things that were going to happen. And I just said, "Well, thank you for telling me."

And I just went ahead and did what I wanted, which I think is extremely important. You have to figure out what you want and then do it. And I do think it's extremely important to collect advice from a lot of different people. I normally tell people if you've got an important decision to make, talk to at least a dozen different people, and get all the advice. And usually, you'll see the advice, sort of, falling in one area. And there'll be a few outliers and then, whatever it is that is most often recommended is probably a good piece of advice. But you may look at it and decide, I don't want to take that advice either. I want to do this thing over here, which is just right for me. And that the most important thing is to decide what *you* want to do and then do it. And that's what I did. I decided what I wanted to do, which was have my baby go to daycare starting at eight days old, have my baby on Thursday, start back in work on Monday. And I'm not saying other women should do that. But if they decide it's what they want to do, that's what they should do. And that's an example of where I did not take other people's advice. And I'm very happy. And you can see, I mean my son is…

DOMUSH: Turned out well.

NELSON: …here. We have a wonderful relationship. I think one of the most important things is for mother to be happy. You know, if mother is happy, she's going to love her baby. You know if mother is sitting at home and has given up her career and is very unhappy, she may resent the baby. And I'm not saying "will", but "could." So, I think it's extremely important to do what you want. And I don't think that a woman needs to give up her career to have a family. I don't think that that's true at all.

DOMUSH: The other female post-doc that you said came shortly after you and also had a baby, did she take off a similarly short amount of time? Did she follow your lead or did you guys discuss this.

NELSON: I think it was short. But I don't think it was like mine…we didn't really discuss it. She was from India. And when you're around people from other cultures like that, you learn to respect their other culture. And so, it would have been the last thought in my mind to try to tell her what to do. And I very strongly believe that people need to do what they want. And so, I really do not, like, collar people and say you need to do this. But, I have been asked so many times to tell these stories. People have contacted me and written newspaper and magazine articles about this. And I've been asked to go speak to groups of women. And there have been instances in which I would be asked to go talk about my single wall carbon nanotube chemistry and the young women, post-docs and graduate students in the department would absolutely demand "We are taking her to lunch alone. No men allowed. You're not coming. We want to talk to her." And so then, when we would get out to lunch, this is what they would ask about. They wouldn't want to ask about chemistry, and they would tell me so. And I would say to them, "You know you don't have to ask me. You can talk to your secretaries. You know the secretaries are women, and a lot of them have children, and you can talk to them…to ask them what it feels like when you're water breaks. You don't have to just ask me." And they told me that they're not comfortable asking those questions around their department because when some of the men would hear that they were asking these questions the men would come up and say, "Oh, [are] you going to drop out?" So, they wanted to take me to lunch so they could ask me in private.

DOMUSH: Privacy.

NELSON: And, yes, exactly. And then no one would know, they're asking. And so I would tell them all these stories. And so that's why I'm voluntarily giving those to you now because I think women need to feel that they can do what they want, if they don't know of another person doing it before. Sometimes you have to break new ground to make yourself happy. And I would say go for it. I would say go for it. I would say don't restrict yourself and try not to let other people run your personal life, especially. So, that's what I did and I don't regret a minute of it.

DOMUSH: Well, I think on that note, let's take a short break.

NELSON: Okay.

[END OF AUDIO FILE 1.1]

DOMUSH: Okay. We had just finished talking about your experience with going back to work so soon, bringing Christopher to daycare when he was eight days old, and how this was a decision that you had made. You were very happy with that decision.

NELSON: Yeah.

DOMUSH: And you said you didn't talk with the other woman…the other female post-doc in your lab.

NELSON: No, not really. I mean, I do remember her telling me that she was pregnant. But, and we talked. I mean, we were very close. But I didn't give her advice or anything like this.

DOMUSH: Were there other female post-docs in the department maybe

NELSON: In the department. In the department.

DOMUSH: Or other women in the sciences, in the building that you knew of maybe that you talked to.

NELSON: There was, I think there was a female professor there. I think Minou Bina was already there. But she was in biochemistry. So, you know and biochemistry really is different than, what I was doing. What I do is more physical organic…you know, even possibly material science. But, there was a group there, WISE—Women in Science and Engineering. I don't know if it's still there or not, but Purdue had women's activities. They still do. They've been pretty progressive, at least in my opinion. And, luckily, post-docs were considered faculty at Purdue. They're not always. But, I was and…this Women in Science and Engineering [group] it was really just for faculty, but they invited me because I was a post-doc.

DOMUSH: I'm sorry. I'm worried this is running out of batteries. So, I'm going to pause it for a second and replace the batteries.

NELSON: Okay.

[END OF AUDIO FILE 1.2]

NELSON: Oh, about the Women in Science and Engineering.

DOMUSH: Yes.

NELSON: Yes. At Purdue, I was considered a post-doc. And so, post-docs were considered faculty, I mean. And so, this Women in Science and Engineering group was meeting. And every time a new female faculty member came, they would invite…if she was in science or engineering, they would invite her to start attending the lunch meetings. And these meetings would be maybe ten [women]. But not everybody came every time, but we would always meet on the same day. I can't remember if it was every other week or what, but anyway. I started attending because I knew by that time that I wanted to be a faculty member. And they were all faculty, and they would talk about things that faculty members experienced and in particular what women faculty were experiencing.

And up until that time…up until I went to Purdue, I was absolutely determined I was never going to have children. I mean it was fixed in my mind. And even my husband and I had discussed it. We weren't going to have kids. And so, have you ever thought about, you know, if you can think back and there's a conversation you have with someone that changes your life…you know, like Dave Worley saying to me, "If you really like these calculations, you should go work with Michael Dewar. I'll send him a letter." Things like that. At one of these luncheons, one of the women came in and she was very sad, and very quiet, and just not real talkative. And somebody…these women had known each other for years. I hadn't known them that long. I probably wouldn't have noticed anything. But one of them said to her, "You're very quiet today, what's wrong? Is anything wrong?" She said, "Well, my husband and I just had a conversation, and we had decided years ago that we weren't going to have any children and so we haven't had children. And we realize now that it's too late to have children. And we realize that we're facing growing old alone." And I just remember thinking, oh, my God. You know, this really sounds gruesome. You know, I don't think I want to grow old alone. And that just really impacted me. And the women had this conversation about "Oh, I'm so glad I have my two kids. Yes, I just don't know what I would do without mine." You know, and I'm sitting there listening to all this, and I just listened. And so, that really impacted me. And I went home

and talked with Gary—that's Christopher's father. And I think that is the point, where it really changed my mind about . . . maybe, maybe I should have at least one child because I don't want to grow old alone. And that was a very important conversation, even though I just listened, I didn't really speak. There aren't a lot of conversations like that where just a few words from one person impacted my life so much, but that did. And I can't remember now, what was the rest of your question?

DOMUSH: Unfortunately, because of the battery issue, I can't remember either. But, hearing more about the Women in Science and Engineering program…I mean, anything else that you have to say about it. It certainly sounds like they had a lot to say.

NELSON: Well, it really helped me. I mean, they told me things like how to apply…what to expect on a job interview. It was really very, very valuable. And one of the things, that…I'm, sort of, a cautious person. My nature is to be, sort of, cautious and take risks only that are well reasoned. But, yeah, I do take risks, but they're always well-reasoned. And when I worked…you know, when I was living at home I had a wonderful support system. I felt very good when I was living with, not living, working with Michael Dewar. He was great. I enjoyed working with him. I didn't feel like I impacted any problems and the same thing when I was working with Herb Brown. But yet, still you kept hearing about all these women that were dropping out. I noticed when I went to UT Austin there were a lot of women that were in my entering class and yet, by the time I got my Ph.D., there were only two of us who graduated. All the others had dropped out.

So, you're going along and you could see these women disappearing. They just seemed to disappear. It was, that was the scariest part of it for me, is this just disappearing. I would go back, I would have a friend named Betty, for example who I took classes with, got to know her, we worked on some homework together in class. She worked for a different person…a different major professor. One day I would think, oh, I haven't seen Betty in a while. I'm going to drop by and see how she's doing. I would go to her desk. It was cleaned out. I'd say, "Where's Betty?" Oh, she left. Where'd she go? Nobody knows. Never heard from Betty again, never saw Betty. It was just like they just disappeared even if they were a good friend, they just disappeared. And it was just really strange.

And so, I started really listening to women when they would talk about their experiences, talk about the things that led up to them leaving, talk about things that made it hard to persist, talk about the barriers. And I especially listened when they were talking about what they did in response, how they overcame them, how they sidestepped them, how they outfoxed people who seemed to be setting traps or whatever. You know, sometimes it would be intentional, sometimes it wasn't. It doesn't really matter. If it makes you drop out…you know it doesn't really matter that much. And so, you have to, sort of, develop a repertoire of how to deal with these things when they're coming up because if you don't know and then suddenly you're facing something and maybe you have two days to respond or maybe you have to respond on the spot. You have to be ready. And so, even though I hadn't experienced anything

bad, I had a wonderful relationship with Michael Dewar, as you know. I mean, making all those phone calls for me. And Herb Brown was every bit as supportive. Herb Brown was Jewish. He talked with me occasionally. I think he had special conversations with me in which, he drew parallels to his experiences as a Jew and my experiences as a female. And he would tell me you're experiencing this; it looks a lot like what I experienced over here. And in private conversations about these things, things that I don't think he talked about with other people. And I had a great relationship with him.

But nevertheless, when I saw opportunities to go talk to these women and hear what they were talking about, I would think, well, you know just in case…very cautious. Just in case I ever encounter something like that, I'm going to go listen to these women. I'm going to go hear what they have to say. I'm going to ask them, "How did they know? How did you know this was happening? What were the signs? What did you do?" And ask for details, so that I would know how to address those things if it ever came up for me. And similarly, at American Chemical Society meetings for example, they have these [ACS] Women Chemists Committee luncheons. They've been having that for thirty years or more. I can remember going when I was, I think, a graduate student. And the meetings were tiny, like maybe fifty [women]. You know now there are nearly five hundred in a room. But they were small back then and I can remember going and listening to the women talk about their experiences then. And I think if you really listen and try to use them as learning experiences, thinking, well, you know just in case I ever encounter any of this stuff, it would be nice to know what to do, just in case. And that's what I did. And I think it really helped me later on, really helped me.

DOMUSH: Was there anything similar [to] the WISE Program that was at Purdue…was there anything similar at Texas?

NELSON: I never saw it. I was never a faculty member at Texas, but I don't think that there was. That would just be my guess. Now, I might mention, you've heard of Marye Anne Fox.

DOMUSH: Um-hmm.

NELSON: Okay. She was at UT Austin. She was a brand new faculty member, while I was a brand new graduate student. And I requested her to be on my dissertation committee and she was. So, she and I go way back, also. And Marye Anne Fox was…I think she had her baby—one of her children—during my first year there. I think. And so, there was another, I couldn't remember seeing her speak. You know, give a talk about her research. You know, professors talk to incoming graduate students. And I think it was at that meeting that I saw her speak while she was pregnant. I saw her speaking while she was pregnant, though I just remember it. It's going back a long way. But there's a role model for you. You know when you see this sort of thing…not just like taking off and disappearing just because you're pregnant. I mean, it's a normal thing.

DOMUSH: So, after Christopher was in daycare at eight days old, did you keep the rest of your hours pretty much the same at work or did you start working less.

NELSON: Oh, I went back to…hours in Herb Brown's lab were long. Not because he was a taskmaster, just because if you didn't really, really, really enjoy your chemistry and have this desire to work long hours, you didn't go. And so, it's not like a light bulb, at least it wasn't for me, where I just flipped the switch and then started up back on these long hours. For me, I, sort of, built up to it. And to some extent looking back on it now, I think I went too fast. And I'll tell you why. Because, when a woman has her baby, there are certain hormones that cause her joints…joint material to soften so that her pelvis can spread in order to have her baby. And they haven't quite firmed up yet. It takes a while for them to firm up. And so, if you get up on your feet walking around too soon, it can cause problems with your joints later. They wear out too fast because they're softer. And so, when I talk to women about this, and you can see the ones that are really saying, "Yeah, I'm going to do the same thing." I tell them, well, when you go back to work, sit down. Don't stand on your feet all that much. Be a little bit more caring about your joints and things like this, because there are some things, where it doesn't matter how strong you are or what your will is or what you want to do, you have to remember there are these possible unseen consequences there. And so, I do mention that. But still, I think women should do what they want. They should make their own decisions.

WEBB-HALPERN: How did your mother and stepfather feel about you having your baby?

NELSON: Having my baby? [laughter]

WEBB-HALPERN: You mentioned in one article that you wrote that your mother had told you "don't have kids."[2]

NELSON: That's right.

WEBB-HALPERN: Too much trouble.

NELSON: That's absolutely right. And I would say to her, "Thanks a lot, Mom." I was an only child…thanks a lot. She had a lot of medical problems when I was born. She wasn't like

[2] Donna Nelson, "Been There; Done That! Why Students Need Professors' Perspective on Family Issues," *AAAS Science Nextwave* (9 January 2004).

large enough, and she had a lot of tearing and everything. I mean, so much so that they were, they had to operate on her at that moment. And they just, sort of, left me over on the table. And my father told me that he actually said that "Our baby didn't make it, did she?" They thought I was dead. Yeah, just like they were trying to work on Mother so much. And the doctor said, "No, she's okay," and walked over there. And I was just like completely silent. And so, she had a lot of problems. And you know I joke and say, "Thanks a lot, Mom." But, I think that really influenced her, because she had a lot of problems and did not want any more children after that. So, it was, there was some physical problem there. But, because of her saying all that, I mean, I was a very obedient child. She told me don't ever have kids. I said, "Okay." I mean, I was obedient. And when she would say that, "to never have children, they're a lot of problems," I didn't really know what she was talking about, because I did everything she said.

DOMUSH: Did they express any concern at all about you having a child and…you know, becoming something like your mom always [wanted].

NELSON: Oh, she was…no, she didn't think that was going to hold me back. By the time, I got my Ph.D. that was enough. She quit saying, "Donna, I want you to make something of yourself." I mean, when I got my Ph.D., she was satisfied. I remember when I called home and told them. I was calling home to say, "I got a faculty position, and I'm going to be University of Oklahoma. Can you believe it? It's so close, you know." And so, that was my point. When I called home, and I told Daddy; he answered the phone and I told him. And he said, "Just a minute, I want you to tell your mother." And as he handed her the phone, you know he took it down away from his head, and I heard him hand to her, and he said, "See, I told you she's never going to get out of school." [laughter] He was a joker. He was. He was hilarious.

DOMUSH: Did you try and come back to Oklahoma then when you were looking at faculty positions?

NELSON: It was, it was an additional benefit, because it was close to my home. I loved Oklahoma. I was extremely comfortable with Oklahomans. My husband was from Gainesville [Texas], which is just across the border in Texas, just down I-35. And so, his parents on the other hand were thrilled. "Oh, my God, this is so wonderful. You're going to be so close to home." It was a different response. They weren't joking. But, Daddy was always joking. He was funny. He was, you know.

WEBB-HALPERN: So, they were happy with your career choice then.

NELSON: Yeah, I think so. Yeah.

DOMUSH: Well, I was just going to say, unless Leah has something else to add, this seems like a very natural breaking point for the day. And tomorrow we could start up with talking about how you got started here at Oklahoma, and then go on to some of the more, kind of, abstract concepts about women in chemistry and things like that.

NELSON: Okay.

DOMUSH: That's good with you.

NELSON: Yeah.

WEBB-HALPERN: Yeah.

DOMUSH: Sounds good, great. Thank you very much.

NELSON: Oh, my pleasure.

[END OF AUDIO FILE 1.3]

[END OF INTERVIEW]

INTERVIEWEE: **Donna Nelson**

INTERVIEWER: **Hilary Domush**
Leah Webb-Halpern

LOCATION: **Norman, Oklahoma**

DATE: **22 July 2008**

DOMUSH: So, today is 22 July, and we are doing the second part of the interview with Donna Nelson. Again, I'm Hilary Domush, and with me is Leah Webb-Halpern. Is the video all setup?

WEBB-HALPERN: We're recording.

DOMUSH: Great.

NELSON: Great.

DOMUSH: So, yesterday we finished up and we were just beginning to talk about when you came to the University of Oklahoma as a PI [principal investigator]. And we were hoping that you could start by talking a little bit, about how as a young female PI, with a young child, you created some, sort of, balance between your work life and your home life. And you had talked about how you did that during your post-doc.

NELSON: Yes. I get asked about that a lot. You know I'm invited out to talk to a lot of student groups, and that's one of the things that they invariably ask about, and I'm interviewed about that. So, you know, I've thought a lot about exactly the sorts of things that…I don't mean just for this interview, I mean previously. You know, what messages did I want to send? Christopher's out there taking a photo of us doing this also. I hope that's okay.

DOMUSH: No, it's great.

NELSON: And, I was the first tenure track female hired in this department…ever, in the entire history of the department. And there was a non-tenure track woman here when I came, and I'm going to have difficulty thinking of her name, Mary Jane Heeg. And she left after I was here about a year. So, she was here about a total of two years. And so, I came in tenure track. And

you know you come up [for tenure] during your sixth year. So, Christopher was—oh, let's see—a little over a year old. I was supposed to start in August of 1983 and I actually came early. Again, just as I was doing with Michael Dewar. I was supposed to start in August and I went a little bit early, because if you go down early it helps you get started. And so, I came a little bit early, again, to help me get started. And it was really great. That gave me some time to set my lab up and everything. And so, I must have arrived in April or May, I think. And so, Christopher…his birthday is in January, so he was a tiny baby. And I put the refrigerator in my office, so that I could have formula and baby food. And just about a little past where you are sitting I had a playpen—you know, a collapsible playpen—and I put it there whenever he was here. But, he went to daycare. But then you know occasionally babies have a fever or something, and you have to go get them. And so, when I had to go get him, I brought him down here, and he was in the playpen. And then I would spend weekends down here and some evenings.

And one of the things that his father and I decided when he was born was that we were going to put him in daycare. But if we were going to put him in daycare, we were never going to leave him with a sitter in the evenings or on weekends. We were not going to do this, where you leave your child with a daycare center all day and then a babysitter all night and then a relative over the weekend or something, and your child does not know who you are. So, this was just a rule that, something that we both felt very strongly about. So, we both completely agreed. And we never did. There may have been a couple of exceptions. When I went to American Chemical Society meetings later on, and Gary was away…his father was away at some other meeting…and I didn't want to take Christopher because he was just so little. And it so happened that I had a female graduate student at that time who was just an angel. She was so sweet. And I asked her if she would be willing to take care of Christopher. And she said, "Sure." And I said, "I'll pay you." And she said, "Okay, that'll be great." And I said, "I'm going to pay you a hundred dollars a day." Now, that was a lot of money back then, because this was in the early 1980s. But, there's one string attached, I want you to treat him exactly as if he were your own child. And so, they spoiled him rotten. [laughter] She said her husband was so happy. She said, "If you ever need anyone to sit with Christopher again, just let us know." And so, they did things like they took him to McDonald's every night. And he came in, he wanted to sleep with them, in between them in bed, and they let him. You know all this. It was a riot. But that worked out well. So, you know there are special ways that you can handle things like that, so that it's not a problem. I mean he never complained. Christopher never complained about anything. And I might just mention, I found this and dug this up. And I'm going to give you a copy of this. This is something that Christopher drew. You'll see that it says at age six. [The drawing reads: "When I get big I want to be a *chemist*, because *I want to be like my mom*."]

WEBB-HALPERN: Oh, wow.

DOMUSH: Wow.

NELSON: Yeah, he spent so much time down here, when he wanted a toy I handed him molecular models…you know, one of those molecular modeling kits to play with. And so, I jokingly say, "Poor kid he was doomed you know at the beginning." He was saying the other kids at daycare would say, "I want to be a policeman. I want to be a fireman." And Christopher would say, "I want to be a chemist." And the other kids would say, "What's a chemist?" [laughter] So, it all worked out great.

DOMUSH: Was your department supportive of…you know, when Christopher had a fever and you did need to bring him in here and play in the playpen?

NELSON: I didn't even ask. It was just what I needed to do. And I felt like what goes on in my office is my own turf. You know I moved in the refrigerator. Fortunately, I mean this was a pretty nice sized office, and I was able to make those adaptations. I think it would be different if you were a graduate student. See, being a faculty member, I did have autonomy over my own office. And sometimes people say well, the lab is dangerous. Well, he wasn't in the lab. He was down here in my office. And so, no one ever mentioned anything. They just ignored it. I mean, it was as if it didn't, nothing was going on. And so, I think some of the students noticed. And I think some of the ways that I handled things were new. For example, if a female student came up and said…I mean, a student that was in my class said…not email, but called me and said, "My baby's sick, so, I'm going to miss class" or "My baby's sick. What do I do?" And I would tell them, "Well, you know if your baby's crying you have to go outside. But if your baby is quiet and sleeping, just sit in the back of the room, lay him on a blanket and no problem." And that was really totally new. It was totally new.

This was in the early 1980s and sometimes if the baby was loud, they would sit just outside the door, and the baby would be like just around the corner, laying on the blanket. And so you couldn't see the baby, but the person, the mother would be sitting there in the doorway taking notes, effectively attending class. And I really did believe in this…where there's a will, there's a way. If you want to solve the problem, I think that you can. You just have to, sort of, get creative and find out what parameters you have to work within, and then normally there's a way to make do with it.

DOMUSH: Did you have a sense at the time that what you were doing might have been seen as, kind of, radical? You know, telling a young mother who was your student that, "Yes, it's perfectly fine for you to bring your baby to class as long as they're not crying." You know, was there any concern that you had that maybe…

NELSON: I didn't have a concern. I mean I look back now and I realize maybe I was…but, I mean, to me it just seemed, sort of, inhumane to tell people no. I mean…well, I didn't feel like there was another choice. Maybe some of this…I'm going back to the influence from my

stepfather. This thinking of people, trying to see other people, empathize [and] you know, caring. So, I think some of that is in there. You know, going a little out of your way to help others. That's one reason also, you'll notice some of these things I'm very open about talking about my personal life. I was not like that originally. This was very difficult for me to develop. I was very private and kept most of my private things close. And I still do. But, there were appeals made to me. Initially, when people would ask me to talk about things like childbirth, you know when…all of that I considered extremely private. And I said, "I just don't think I can. I mean, this is very, very private." And they said, "Well, you see, other women are needing models, and there's not that many women who are doing research who have had children. So, we really need you to talk about this." And so, when I thought about it that way, I realized I should do this. This is something I should do. I need to just get over this and get so that I can talk about this. And, I mean, I was asked by organizations like SACNAS [Society for the Advancement of Chicanos and Native Americans in Science] to do this. And it was really hard. I mean I would be sitting there trying so hard to be pleasant and really, I was churning inside as I was talking about all these intimate things. But as you can see, I got over it.

WEBB-HALPERN: Well, we're very happy that you did.

DOMUSH: Did you have…before groups like SACNAS and things were asking you in very public settings, and of course, we're asking you in a very public setting to talk about these things, did students come and ask you for advice like this in a much more informal setting?

NELSON: They would ask me for advice in their lives. But, they rarely would ask me for intimate details, until later. I mean, I was actually asked, "What does it feel like when your water breaks?" And I just, you know…yeah, you know. But they would rarely ask questions like that. Normally they would come in and say, "I've got this decision I'm having to make, and what do you think I would do?" And when I'm asked a question like that I usually will try to get a few more details, and then I will tell them, if I've ever done it, I will tell them what I did. And I'll tell them what I saw other people do. And I'll tell them to ask a lot more people for advice, suggestions. And because if you have a wide range of ideas then you get to pick the one that suits you best.

WEBB-HALPERN: Can you talk about your tenure track process? And if you've seen any changes as you've been here in the tenure track process that's made things easier for women?

NELSON: Oh, boy. The tenure track process on the books in this department is much like it is anyplace else. The department didn't really change all that much because we had up until just two years ago the exact same department chair [Glenn Dryhurst] as was in place the year before I came. He was department chair for twenty-five years.

DOMUSH: Wow.

NELSON: Yeah. And that is another story all in it's self. So, he didn't change much. Things remained very much the same. I had my battles which I fought here in the department. And it turned out…remember I said yesterday that I was very cautious and that when I would hear women talking about the things they were going through, I would go and listen to hear examples of what sorts of things could happen and how you respond. And the other [thing] hearing those stories did…another thing that I didn't even foresee and that is when I first experienced discrimination. Well, when I very first did, I thought "This is my imagination." I mean, I had never…I didn't recognize it, I think. And it took years for me to really convince myself this really is [discrimination]. And I think what really convinced me is when people would come by my office and warn me. When you have an independent party coming by and warning you about things, then you know. And so, because I heard so many other women talk about it and how they dealt with it. When it became obvious to me that I was experiencing it and going to [continue to experience it], I realized my attitude was just, sort of, well, I've seen other women experiencing this, and it's my turn. And you don't go through…you know, you can just, sort of, accept it. It's my turn. This is normal for the female. And you don't get so upset, I think. And it becomes easier to accept it and you don't go through all of this…"What's wrong with me? What's wrong with me?" You realize "Well, I'm just like all the other women, and it's my turn now," and it's really sad. It's really sad.

WEBB-HALPERN: And how did you fix it?

NELSON: You have to try to analyze it. You have to…you know, it's very easy to get angry. And I think it's human. And it's very frustrating. But, it's really best if you can face it intellectually and learn. When I'm out speaking to women and minorities I tell them [to] stay very close to your mentors and role models. And this, I really think, this is an extremely important piece of advice. If you are Black stay very close to your Black mentors and role models. If you're female, stay very close. Because if you start experiencing problems you'll need somebody to talk to, and you'll need those people to be very close. And you'll need to have a friend, a close friend where you can call them up and say, you know "This is happening. Have you ever experienced this? Do you know of anyone who has ever experienced this?" You know, brainstorm with them. And so, you have to approach it intellectually.

When I first started, which was back in 1983, there were far fewer women [in chemistry]. And not that many women with children who were in tenure track positions, who were involved in research, who were doing, say, organic chemistry. And I think even, each discipline has its own sort of nuances…you know, slightly different approaches to things, and even with chemistry, organic is a little different from inorganic, is a little different from analytic, etc. And so, if you have a mentor or role model who is very close to your particular area—the closer it is, the better—that I still believe that you need to get a lot of ideas. And so, I

recommend to students [to] stay very close to your mentors and role models. Make a point of making friends, talk to them. Ask them, would it be all right if I call you up if I start to experience anything?

And now there's formal procedures. I mean, it's built-in, like at SACNAS. I mean this is expected and openly discussed. Back then, I did it myself. I was, like I said, I was cautious. And I think if I hadn't, sort of, hedged my bets, then I probably wouldn't have been able to recognize it. I probably wouldn't have had the solutions to be able to sidestep a lot of the things that were presented to me and to be able to stand up to them, just stand up to it. It, sort of, crushes your ego if you just have to just, sort of, completely give up or start saying that people are wonderful, when they're really not, and everybody knows that they're really not. It, sort of, breeds corruption. So, I'm happy with the way that worked out for me. I can sleep at night. I don't feel that I've had to be corrupt in anything, unkind to anybody. You know, I have a clear conscience in all of these things. And I feel good about that.

DOMUSH: Were you able to contact your mentors—Dewar and H. C. Brown? Were you able to talk to them about any of these things even though as you said a couple of minutes ago, it's obviously, easier to talk to someone that may have had the same experience? And they're men…so, they would not have had the same experience.

NELSON: I felt like…no, those people were my science mentors. You're going to have mentors in your science and you're also…members of underrepresented groups…you're going to have two different types of mentors—two sets of mentors. You're going to have the people who do the same sort of science that you do, and you'll contact them with science questions, and those are people like Dewar and Brown. And again, let me stress this is just my opinion. Other people have other ways of operating.

DOMUSH: This is your interview.

NELSON: I know. I know. But, you know…so, there may be a woman or minority out there that says this is really crazy. I'm not comfortable with this. And if so, you know they should develop their own way. But, this is the way I handled it. I see myself having two sets of mentors. One is your mentors that do research in your area…sort of, people that you'd talk to for advice about, what temperature did you use when you ran that particular reaction? And do you think I should use a different solvent? You know, questions like this—purely chemical questions. And then there's other mentors. They may not do the same sort of science that you do. But if they do…the closer their science is to yours the better, because they understand how the department operates and how the different rules operate. And the second set of mentors will be people who are perhaps your same gender…your same race. Although now, after watching this and, sort of, studying it…I think that although discrimination against women and discrimination against minorities may be done for different reasons, I think that a lot of times it

follows the same mechanisms. And so, a lot of times if a Black male student is wanting to ask a question, he could pose it to a White female professor and she may have experienced the exact same sort of politics, or whatever the barrier is, and may have very good advice on how to sidestep it.

WEBB-HALPERN: Could I just ask about…you've mentioned these kinds of experiences you said or mechanisms…just in case somebody doesn't know what you're talking about, what barriers might be up there for women or minorities? Could you talk about examples if not what you experienced, of what people might experience?

NELSON: Yeah. There's going to be different barriers at different levels. You know students will experience it differently than post-docs and they will experience it differently than faculty. If you're a graduate student or a post-doc, you can avoid these barriers by simply getting the right major professor. And I was just lucky. I was oblivious. I happened to pick Michael Dewar and Herb Brown and they were absolutely saints. It doesn't always work out that way. And so, if you're a student and you're working with someone who is biased they may literally believe that—like Larry [Lawrence H.] Summers—they may literally believe that, you know, you're just not…you don't work as hard, or you're just not as bright, or not as dedicated, or whatever. And it may turn out that no matter how hard you work or how many hours you put in they'll always see you with those eyes. And so, you can wind up just knocking yourself out and never making any headway and you'd never change their mind, see.

And so, I've known young women who do just finally give up in frustration. You can, in particular you can see these things when, if it's a graduate student you can see it when they're giving seminars, the way the questions are posed at the end of the seminar versus the way they're posed to a male. The questions might be phrased in a much more condescending fashion, the female student might be told…the graduate student might be told, "Well, you need to go back and review undergraduate organic chemistry again." You know, where as if it's a male student and he's explained the same particular lack of knowledge he might be told, "Well, that's normal that you wouldn't know that. I really wouldn't expect you to." [laughter] So, you can see this difference. And I have seen it. And so, it's sad when you see something like that.

As a faculty member, I think a lot of it's about resources, really. After watching it for so long and giving so many talks at different places, you start to see a pattern. And I really think a lot of it is about resources. I think, and if you ask me five years from now I might have changed my answer, but this is where my opinion is now. And it's just been fairly recently this finally dawned on me. Because so much of our discussions about this…and this is becoming extremely important nationally. So much of it is, sort of, why is this happening with so much attention being given to this…so much money being poured into it. It's obvious that this [discrimination] is not where the politicians want our country to go. The people at the very top do not want women and minorities to be excluded. So, why are these things happening? And I think a lot of it is about resources. And if you'll think about what we see nationally…

DOMUSH: I'm sorry. I need to pause for one second.

[END OF AUDIO FILE 2.1]

NELSON: Oh, I should have oiled this chair. [squeak]

DOMUSH: So, just before we took a break for a second, you were talking about women faculty members and resources that are available to them or not available to them.

NELSON: Yeah. The resources, yeah. And I haven't discussed this an awful lot, so I won't have my ideas as well formulated. So, this may sound kind of garbled. [I] hope not. Yeah, if you'll think about it, right now we have fewer students going into science. And so, we have…the number of graduate students is, sort of, declining, and so graduate students are getting scarcer. Graduate students…if you'll think about it, they're an important resource. They do a lot of the work for you to be able to get your publications. So, they're a resource for the professor. Funding from…and here I'm talking about especially from the department, within the department…funding for let's say seed funding. And do you know what I mean by seed funding—for grants, you get a tiny amount to be able to do some preliminary experiments then you can submit a grant proposal for a larger amount. So, seed funding […] within the university where you need the chairman's letter of recommendation to get that funding. Or, lab space. Or a smaller teaching assignment, like teaching a graduate level class of ten students where you get contact with graduate students—potential coworkers—as opposed to an undergraduate class two hundred-fifty to four hundred students. [Or] teaching assistants to help you teach those large classes. It is murder teaching a class of three hundred fifty students with no TAs. I've done it. I've done it many times. It's very hard. All of your time becomes consumed with office hours for the students. Time…anything that consumes your time is depleting that resource. And it can be…even being asked to answer certain things and having to write long letters in answer to questions that people pose. And so, it's possible…there's a lot of ways, different ways that your resources can be depleted. And there are ways in which those resources can be strengthened.

So, the department chair has a lot of power because the department chair could give a person a huge teaching assignment repeatedly, no resources, no seed money, attach a letter to every single request within the university for seed money saying don't give her the money. [The department chair] could let other faculty know that it's okay for them to tell students not to work with her, tell other faculty let's don't really include her in conversations, take away her lab space, give her no TAs to do large class teaching. And then, for someone that he likes, give them no teaching load…completely. Not just reduced teaching but the only thing they would have to be in charge of would be like a seminar, where someone would come in from outside and speak once every two weeks. And a teaching assistant to help them do this, handle that

seminar course, and funding from within the department, seed money to help them start, and all sorts of letters of support, and being included in all sorts of discussions and having students steered toward them to do research with them. And you can see that the two really are not competing on equal ground. It is not an equal competition at all. And that's the sort of influence [over faculty] that the department chair has.

DOMUSH: So, the department chair…you had the same department chair your whole time here until…I think you said it was two years ago.

NELSON: Yeah. It was about two years ago.

DOMUSH: And now is the department chair on a rotating schedule.

NELSON: We don't know. It hasn't been decided. The previous department chair, I believe, came in, in 1982. It was either 1981 or 1982. I arrived in 1983. When I interviewed here he was in place already. And he stepped down something like two years ago. So, he was department chair at least twenty-five years. I think that, my own opinion is that, it's much better to have a department chair be in office a shorter time period. When I've talked with people at other universities where they have, sort of, a rotating chair, where the chair will be in office say four, six, [or] eight years, something like this…and what they tell me is that it almost guarantees fairness because when a person is in office, they know that they can't get too much out of control because they're going to be out of office shortly. And whoever then steps in office might have an opportunity to retaliate. So, they, sort of, do a lot of self-regulation and introspection. And so, they exercise a lot of self-control. So, I think those are good ideas. I think that sounds like a very reasonable thing to do to me.

WEBB-HALPERN: I think now would be a good time to talk about your National Level Surveys.[3] We were wondering if you could just talk about how you came about doing those.

NELSON: A number of things happened—some of them slowly and some of them rapidly—to come together to bring that about. For one thing, you'll have to go back in time, sort of. I guess this was around the end of 1980… no, I'm sorry, maybe 2000. I guess around the end of 2000. The year 2000, I saw an article in *C&E News*.[4] They do this every year where they look at the number of women in each chemistry department, in the top fifty chemistry departments and publish it. So, I tore that page out of *C&E News*, or copied it. I can't remember. And I taped it

[3] Donna J. Nelson, *A National Analysis of Minorities in Science and Engineering Faculties at Research Universities*, 2007

[4] Janice R. Long, "Women Chemists Still Rare in Academia," *Chemical & Engineering News* 78 (39) (2000): 56-57.

on the outside of my office door. So, I had some undergraduates doing research with me, some were women and some were minorities. And I had maybe four working with me at the time. And they were walking in and out of the door. And they saw that and stopped and read it. And one of them asked me, why [did I post it]? They asked me about it, and then I explained to them how it was done. And they said, "Well, if this person was surveying and getting in touch with every single department chair and asking about the head count for women, why didn't they ask about the head count for minorities at the same time?" And I said, "Well, I can't be certain, but you know I've been to a lot of ACS meetings…which is true. I started [going] in 1976 or 1977. And I had noticed this, because I'm a quarter Native American, so I just, sort of, paid attention to this, and there are almost never minority faculty, and you just don't see them. So, you can see the list. Like, for women [faculty per department] it would be like four, three, one, two, zero, occasionally. And I said, "Instead of four, three, one, two, that would be zero, zero, zero, one, zero, zero, zero, zero, zero, one," you know a bunch of zeros with a few ones sprinkled in. And I said, "It probably wouldn't be all that interesting." And so, then I went home that night and I started feeling so bad. I just felt so bad. And I realized, this is not the reason not to do this survey. This is the reason to do the survey.

And so, I thought, you know, do I want to get involved in something like that? I mean, first of all, by that time I was really convinced there's a problem. I knew there was a national problem…you know, a problem in this department, as well as nationally. And I had not been extremely vocal up until that point. And so, I had to…I thought I'm going to experience retaliation, you know, if I get involved in something like this. And then I thought, you know, what the heck? I mean, what else can they do to me now? So, I went back and I told the students if you want to do this sort of a survey I will supervise you to do it. And so, I said there's one thing I've got to do first though. I called the person who did that survey and talked with them. And I asked, "Are you planning on doing a similar survey on minorities?" And she said, "No." And I said, "Why not?" And she said, "Well, we, sort of, looked at it. We thought it would be zero, zero, zero, zero, one, zero, zero, zero, one." She said, "We thought it wouldn't be that interesting." And so I said, "Well, I've got some students here and a couple of them are minorities and they would like to this. So, would you mind if we did this survey on minorities, just sort of accompanying yours?" And she said, "No, that'd be fine." And so, I went back to the students and I said, "It's a go. It's okay to do this." But, I felt like we needed to sort of clear it because she was doing this. And so, then we started. The first survey we actually did it by mail—stamped mail. Yeah. We mailed out the typed letters to every department chair. And so, that's how it got started. Then we started getting responses back.

DOMUSH: What was the response like within your department?

NELSON: They had no idea I was doing it. They had no idea I was doing it. Yeah. I mean you know they're pretty much, we have a lot of autonomy about the research that we do. And this was something that the students were wanting to do, so they were perfectly happy and very interested. And it's really heartening to see the young students who come in…the way I think about it is and I've talked with some of them…so, I do believe this is true. In high school they

really have a lot of this, sort of, drilled into them about discrimination is wrong. Women are equal. People of all races are equal. Thou shalt not discriminate. And so, when you talk to the undergraduates about this, their reaction is just "Yeah, so, okay. What? Yeah, um-hmm. I understand." I mean it's just normal. It's not a big thing for them. It only becomes a big thing if you get up higher you see it. So, that to me seems very encouraging because these young kids are going to grow up to be older faculty.

WEBB-HALPERN: Right. Before we go on to talk about what the surveys entailed, I was wondering if you could just, you said by this point, by 2000 you were aware there was a problem. Can you talk about when you became aware that there was a problem?

NELSON: Oh, it was gradual. I have to say it was gradual. Yeah. Most of it was in this department, because you're most aware of just what's going on. I could see other women talking about it at other universities. But I think it's this way for anyone. You're most aware of your own surroundings. And we had had some women leave this department and…

DOMUSH: Women students or women faculty?

NELSON: Faculty. There was the first one, Mary Jane Heeg. And then there were two others, Amy [E.] Stevens-Miller, and…I'm not going to be able to think of her name…just a second. Let me look at this. It's maybe here. Michelle Hanna, yeah, just keep that. I don't want to actually discuss it. But I'm giving it to you to take.[5] Michelle Hanna. And any…these things, students see it. I mean, they see all the…students are so savvy, especially women and minorities about political things. Because whatever impacts you, you notice. And so, I really think that women and minorities notice these things more than White males because White males aren't impacted so much by them. And so, the students would go to ACS meetings and discuss this. The students would go back home to their mentors who have sent them here, you know where they got their Bachelor's Degree and discuss it. And so, our department was being discussed. I would go to ACS meetings and people would come up and ask me questions about what happened. And so, I felt horrible about it because I'm here. If the number of students coming to this department decreases, it makes it harder for me to get a graduate student. You know, I'm in the same boat with them. And I hated to see it. I really hated to see it. And, so I mean it was very much, I was very much aware of this. When you see young women leaving before they even come up for tenure…they leave like after their two years [or] three years, you know, there's a problem. And so, I was just very much aware of it.

DOMUSH: Did you start seeing…you mentioned that there were some women in the department that had left…were there other women staying in addition to you?

[5] George Zabolski, "Discrimination Troubles Chemists," *The Oklahoma Daily* 85 (10 April 2002): 1.

NELSON: Yeah, me.

DOMUSH: Okay, just you.

NELSON: Yeah. And then finally…I can't remember. It was in the late…mid-1990s or late 1990s. I came here in 1983. And then finally, another young woman [Ann H. West] came. And she did stay. She says, "There is no discrimination in the department, everything is wonderful." So, we disagree. And so, we have totally different perspectives about the department. So, she has the right to her opinion.

DOMUSH: During this time though, as you kept going to ACS meetings and conferences and things like that, were you seeing more women at the meetings? Were you seeing…

NELSON: Oh, absolutely. Oh, yes. When I first started going…and remember it was early, back in 1977, I think. I can't remember. I'd have to look at my resume to know when I first went. But early on, I heard about these [Women Chemists Committee] luncheons, that's every Tuesday…still to this day. And I started attending. Now, when I attended my first one the room was very small. It was maybe fifty women. Now, you go and it's thousands. So, yes, I mean it's increased. I can remember also...I think I was, may have been a post-doc by this time. I think I was. And within the organic division I think…I'm pretty sure that we've looked at the female chemists by division even and chemistry is one of the worst disciplines, the worst division within chemistry is organic, as far as representation of women. I mean, compared to the Ph.D. attainment. And so, I noticed, I think I was, I think it was early as a post-doc I noticed that I never saw any woman chairing a session at an ACS meeting. And I had been going at that time even for several years. And so, I saw one of the…I'm not going to be able to remember his name—[Stan Hall]—but he was chair of the organic division at that time. And I just, sort of, jokingly said, "Hey, I never see any women chairs at these organic division meetings at the national meetings, why?" And he said, "Because I can't find any women who are willing to agree to do it. Will you?" And I said, "Sure." And he said, "Okay." [laughter] And so, I was one of the first.

And so, I'm absolutely, completely convinced that there are a lot of men out there who are in exactly the same situation where they're response is "I can't find any women who will say, yes. Will you do it?" And then you say, "Yes." And he says, "Okay, good." And it was just that simple. It was absolutely just that simple. So, a lot of times, you ask, and it is just that simple. But, unfortunately, it's not always that simple. [laughter] So, yeah, things have changed at the ACS meetings, absolutely. I mean, those things are public. You're not going to hide a lot that's going on at an ACS meeting. I mean, by definition they're public. So, requests are made and changes are made.

WEBB-HALPERN: Well, what did you find when doing this surveys and how…what was your response and others responses?

NELSON: Well, we started doing chemistry first. Originally that's all we were going to do, just chemistry. And so, we did that starting in the fall of 2000, which was the beginning…fiscal year 2001 starts 1 July 2000. So, this was during fiscal year 2001. And so, I became gradually more interested in this as the responses trickled in by mail. Remember, you open up an envelope, and you see the letter with the numbers filled in. And as they were trickling in, I realized the numbers [of underrepresented groups] were going to be very small. And so, and we had time in between each letter. It was going slow, not like with email today. And so, as they would come in maybe I'd get two or on a good day, maybe three back. And I would talk to the students about it and I would say, "Hey, we got a Black man among the faculty here, you know." And I would say this is at the department of whatever at whatever university. This is in the department of chemistry at Northwestern [University] or whatever. And I would say, "Why don't you go see if you can hunt him down on the website, you know." And we were just starting to use the web. And so, they started doing this. And they started hunting them down. We got this list. We started building a list. And they were getting the email addresses, and we were starting to use email more.

So, I thought, I'll just email these people and tell them what I'm doing. And so, I started doing this, and I got to meet them all by email. And it turned out…you know I'd just ask questions. We had discussions. I told them what I was doing. I told them why. They told me what they thought I was going to find…all of these things. And so, I would ask as we found who these people were…I would email them and ask them if I had their permission to reveal their identity to the other members of the group? And invariably they would say yes. That was not the case for the Native American faculty, I might mention. They asked me not to. So, I did not. I respected their request. So, for the Hispanic faculty and the Black faculty, I was introducing them to each other and in some cases they had not met each other. They had been in place for years and had not met. And I'll never forget the day, I started out emailing them and I started out the introduction, like, to make a point I started out "Gentlemen." And then I would write my message. The point being, I hadn't located any [Black] women faculty. And I'll never forget when we got the first Black woman, Vaneica [Y.] Young [the University of] Florida. We identified her. And it was like eureka. [laughter] We got a woman, and you're a Black woman, in one of the top fifty [chemistry departments]. Yeah. I think we had, oh, I can't remember the exact numbers. It was something like twenty Blacks and maybe twenty-two Hispanics and three Native Americans.

DOMUSH: And some of these people had never come into contact before?

NELSON: Were not aware of each other, were not aware of each other, yeah. And perhaps the most important piece of information that we revealed was the fact that there were *zero* Black assistant professors in chemistry, which was extremely important, because it meant that none of them had been hired. Because you almost always stay to come up for tenure. And so, the Black professors…see, this was the first time that anyone had gotten the whole population. We got data on all fifty [departments], which meant we had the whole population, which mean that we could reveal the zero. If you just do a sample, if you only get a sample you can't say there are zero because somebody can say, "What about that one [department] that you left out? There could be somebody there." And so you have to say "Oh, that's right. I can't say something like that." So, we had all fifty. So, we knew zero. We were just counting. And the Black faculty were bothered. I received emails saying something along the lines of…we thought this was happening because we would go to meetings and we never met any Black assistant professors. But we never had anyone actually hunt it down, determine it, do a survey like this, and found out that it absolutely was true. And so, it caused a lot of attention. We got a lot of attention because of that. And for a while, I felt like the faculty, the Black faculty in particular were just saying…were like calling up editors and saying…"She's got this data." "Donna, talk to him." And so…reporters or editors would call me and say, "This person told me you have these data that say this." And I'd say, "Yes." "Okay, well tell me about it." And so, we got a lot of attention, a lot of publicity on account of that. And within the American Chemical Society, there were different responses. To some people I was a total heroine. To other people I was a troublemaker. And it caused a lot of arguing. It was just data. You know it was just data.

DOMUSH: Now, did you present this at an ACS meeting or was it just something people were discussing?

NELSON: Both. We presented it. I think I presented it as just a little poster.[6] [It was an oral presentation.] And so, it caused this big furor, because there had been so much discussion about it among the [minority faculty]. And as I had mentioned, I was in contact with minority faculty while the surveys were still coming in. And so, when I would receive a response I would get on the web, get on the email. I'm about to sneeze here…sorry. Get on the email and tell them, "Well, we received our forty-eighth response and still no Black assistant professors." "Well, we received our forty-ninth response and still no Black assistant professors." So, the suspense was really building. And when we finally got that fiftieth and still no Black assistant professors. See, all the minorities […] I was, sort of, proud of the fact that this was the first time perhaps that the minorities got the information first before anybody else, because as soon as I got that fiftieth response, I got on the email and emailed them immediately. So, they all got it then. And so, then we, sort of, had discussions about what are we going to do.

So, the point that I'm making is that I did not publish it. I did not publish it in a peer reviewed journal. I didn't have the time. These people were extremely bothered by this. They

[6] Donna J. Nelson, "Strategies for Increasing Women and Minorities in Academia: Women Chemists in the New Millennium," 221st ACS National Meeting, San Diego, CA, CEPA 12 (2 April 2001).

were discussing it before I had a chance to do anything. And talking about what are we going to do? And so then, the American…some people within the American Chemical Society were saying we should not even be discussing this until after its peer reviewed. And then other people were saying, well, look we all know. We all know that it's true. Why are you wanting to delay the conversation? And I was just, sort of, like a feather in the wind. I felt like, Donna, come over here, and tell them about this. Donna, come over here, and show us your data. And so, I had never gotten that much attention in my life.

And so, I went back to *C&E News* and sent them the information because I thought this will be a great companion piece for the article about women. And they said, "No, we're not really interested." And I thought, what? And so, I went back to the Black faculty. In particular they were extremely interested in this. And I said, "Well, *C&E News* said that they don't want to publish it. So, I think that we're going…you know *C&E News* won't publish it. I think that we're going to have to really try hard to get it in someplace." And so, they said, "Okay. We'll all try." Because they were, we were all just thinking well, I'll just call up *C&E News*. And so then, as, sort of, like [each person had] one had a contact here [and there]. That one had a contact there. That one had a contact there. That one had a contact there. And so, they all went out. And it was like…I think we had five different journals, who said they wanted to do the story. And *AWIS Magazine* though was the only one, *AWIS* was the only one—Association of Women in Science—who said that they would publish the whole table, all of the data.[7] And these are, this is the set that eventually resulted. And I'm going to give those to you to add to that file.

DOMUSH: Oh, thank you.

NELSON: But, *AWIS* said, "But we'll have to wait…we can't do it now…we can't publish it tomorrow. It's going to take a little while because it takes some lead-time to do …to get it all set up. And so, we had to ask the other journals and magazines, etc to embargo the data until *AWIS* was coming out—the *AWIS* magazine. And so, what happened was it was a series…like, the AP press release went out. The *Journal of Blacks in Higher Education,* the *Black Issues in Higher Education*, *AWIS*…it seems like there was another one, *Science* magazine, *Chronicle for Higher Education*. They all came out like at once over one weekend.[8] And my phone just all day the next day, Monday. It was just , "Hello, yes," and then hang up, the phone rings again, immediately. I've never experienced anything like that.

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[7] Donna J. Nelson, "Constancy in Chemistry Effects on females and Minorities," *AWIS Magazine* 31 (2001):10-16; Donna J. Nelson, "Contrasts in Chemistry and Chemical Engineering: The Supply vs. the Summit, Industry vs. Academia," *AWIS Magazine* 31 (2001): 33-39; Donna J. Nelson, "Diversity in Physics. Nelson," *AWIS Magazine* 31 (2002): 28-32; Donna J. Nelson, "Diversity in Academia: A Look at Engineering," *AWIS Magazine* 31 (2002):32-38; Donna J. Nelson, "Faculty Diversity in Mathematics Departments at the 'Top 50' Research Universities," *AWIS Magazine* 31 (2002): 42-46.

[8] Associate Press, "Universities Hiring Few Minorities in Chemistry," *Washington Post* (20 May 2001): A12; Hilary Hurd, "Study Shows Top Chemistry Departments Lag Behind in Minority Hiring," *Black Issues in Higher Education* 18 (2001): 12-14; Jeffery Mervis, "New Data in Chemistry Show 'Zero' Diversity," *Science* 292 (2001): 1291-1292.

And so, then the American Chemical Society started getting a lot of attention. And I think that must have been in May or something like this. And so, by around…sometime in the fall they contacted me. And by the way, *C&E News* did come back later and said, "Well, we do want to run an article on that after all." I said, "Okay." So, they did.[9] It was the next month. But, so then, the American Chemical Society contacted me and said, "We would like for you to come to Washington, DC, and we want you to bring all of your survey materials." And I just thought, okay. And I didn't really know at the time what it was. And it was to be studied, because they thought that the survey might be flawed, yeah. So, it was like an investigation, and I thought…"Well, it's just another presentation." And so, I went up there. And I set my surveys down. Well, the surveys were extremely simple. It was just the number of women, and you enter the number. So, it was like, the chair had entered these numbers onto the letter—form letter—and mailed it back to me. So, then I punched holes in it and put it in a binder. So, that was the study. [laughter] So, I said, "Okay." I took them up to Washington, DC and set them out. And people looked through them, and they'd say, "Uh-huh, there's one here, yeah. On the table there's a one. There's a two here. And uh-huh, on the table there's a two." And it was just that simple. They said, "Yeah, she's transferred the numbers exactly." And then they said, "Uh-huh, well, the numbers are accurate. Okay. You passed." [laughter] And then there's this big committee convened and everything to sort of investigate. And some people were just telling me…"Donna, this is ridiculous." And others were disturbed because it was, still was not in a peer reviewed journal. They did not consider *AWIS* magazine a worthy journal…but, it is peer reviewed.

DOMUSH: Right, but it's not in ACS.

NELSON: Yes, right. And so, anyway, I did not know it at the time, but that was the best thing that the American Chemical Society could have done for me, because it sanctioned the data. They said, "They've been reviewed. They're good." And they had studied them only pertaining to women. So in, it was something like, January the next year…like, just a couple of months later, they said, "Okay, now we want you to bring them to Florida because we're going to study them with regard to minorities." So, I said, "Okay." So, I went down to Florida. And then we had another meeting about minorities, you know all the zeros. And so, I went through, you remember the investigations they had for cold fusion. Okay. I went through that twice, and they [the data] passed twice. So, but, like I said, it was the best thing that could have happened to me. Because anytime any questions came up, they said, "We have investigated that. Those numbers are good."

And also, another thing that I decided to do was to release those data department-by-department, and to post them on the web, so that if any department had any different numbers…remember I received these from department chairs, you know. And so, if anyone

[9] Janice Long, "Minority Chemists Missing in Action: Survey finds minorities to be woefully underrepresented in top chemistry departments," *Chemical & Engineering News* 79 (2001): 67.

was going to say those data aren't correct, I mean, they were there, open, completely visible to the public. And occasionally, I would get an email, and they would say, "Well, we know that there's not a Black professor." And I would just simply say, you know…I would know who it was. And I would say, "Well, I got those data from the department chair. Would you be able to contact the department chair of that department and tell him that he doesn't have a Black professor in his department?" And normally, as soon as people would learn that the data came from the department chair that just ended it. I mean the data were straight from the department chairs.

DOMUSH: And this was still just for just chemistry.

NELSON: That was chemistry. And so, what happened was when we got all that publicity there in…I think it was May. It must have been May. You know, with so much hitting all at once, I started to get phone calls from women in other disciplines. First, it was physics and they said, "We want you to do for physics, the same thing that you did for chemistry. We want you to do a survey of physics." And I said, "You know this is really easy. And I said I did mine for chemistry. You can do physics." I said, "All you have to do," I said, "I'll send you the survey and then you can." They said, "No, we want you to do it. We want you to do it exactly like you did chemistry, so that they will match. And we want you to do it." And so, I said, "Okay." And then. you know…because I was thinking, I just want to do my lab work, you know. And I was feeling like I don't have enough time to do it as it is. And so, then women in chemical engineering [asked]. So, we started in physics. I went back to those students and I said, "Do you want to do physics?" And they said, "Okay." And so then women in chemical engineering contacted me and they said, "We want you to do for chemical engineering the same thing that you did for chemistry." I said, "You can do this, and it's very easy. I'll send you the survey." "No, we want you to do it." So, I went back to the students. They want us to do chemical engineering, also. Are you willing do this? They said, "Okay."

And by that time, other students were joining. So, I was getting a little bit more assistance. And we had email, which made it infinitely easier. And so then, someone from another discipline contacted me. I don't even remember which one. And I thought, "I know where this is going." And so, I simply went to the NSF [National Science Foundation] website and at that time I looked to see…because we had to use the list of the top fifty off of the NSF website. It was the top fifty, as ranked by NSF. And I simply went there, and I looked at all the disciplines that NSF had a top fifty ranking for. And, I went back to the students, and I said, "Okay." There's fourteen at that time. I don't think they had astronomy in there. There were fourteen. And I said, "If we do these fourteen, I will be able to tell anyone else that asks that this is all that we can do, because we don't have a top fifty ranking for anything else." And I said, "Will you agree to do these and nothing more? It will end here." And they said, "Yeah, okay." And so that's how we got those fourteen disciplines. And I thought that's the end of it. Now, we've got fourteen, that's all she wrote. And so, I was telling this.

And then, Laura Lopez at MIT [Massachusetts Institute of Technology]—an undergraduate—amazing person, physics and astronomy major, contacted me. And she's a brilliant student. She was an undergraduate student at MIT and said, "I want you to do astronomy." I said there's not a top fifty ranking by NSF. NSF doesn't rank the top fifty, sorry. And she said, "I can get the top fifty ranking from another source." I thought, oh, no. [laughter] And she said, "Yeah." She said, "And I'm willing to do all the work if you'll just supervise me on it." I said, "Okay." So, then we did astronomy, also. So, that brought it up to fifteen. So, that's how we got our fifteenth [discipline]. That's the long history behind it.

WEBB-HALPERN: This would be a good time to take a break to plug this in, I think.

DOMUSH: And get a drink of water.

NELSON: Okay, yeah. If you want a soda there's you know a lot more sodas in there.

[END OF AUDIO FILE 2.2]

DOMUSH: So, we just finished talking about the process and how you got involved in actually conducting all of these surveys. And there was obviously a lot of attention once the surveys were published and a lot of people had a lot to say about it. Were they published at all or were they made reference to in any of the popular literature, anything where someone who wasn't already involved in academics or in science might know of it?

NELSON: Yeah. They're all over the place. I mean, they were listed in *Ms. Magazine*, you know.[10] I gave up trying to track it. What happened was any time that anyone would tell me or I would run across a reference, I gave it to Christopher and he actually listed them all on one of our websites.[11] So, we've got a list of where all it appears. I mean, it's a long list. And we gave Capitol Hill briefings.

DOMUSH: Right.

NELSON: When I was, you know there was a time period in there after I had the results and before I went public with them. And I was trying to decide what to do. It was a really difficult decision, it was. Looking back now, it seems like it should have been easier. But when you

[10] Lisa Wogan, "Summersgate: How Lawrence Summers' ill-considered comments on women scientists became a worldwide story, and an unlikely catalyst for change," *Ms. Magazine* (Summer 2005): 57-59.
[11] http://cheminfo.chem.ou.edu/faculty/djn/Diversity/TableReferences.html.

first cross over that line, it's difficult. It was a difficult, a very difficult decision. And, Billy Joe Evans at [University of] Michigan, is a Black professor in the chemistry department at Michigan. He was one of my…you might call it mentors. We had many, many conversations about this and the significance of it and how it did a lot toward building the community. It wasn't really just a survey. It built the community. By the time, I finished talking with them and informing them every time we would get a new survey, they no longer were saying, "her" survey. They were saying, "our survey." Our survey, you know. And I thought that was wonderful.

And so, he and I…the significance of him being from Michigan is that Vern [Vernon J.] Ehlers in the U. S. House of Representatives is the representative from Michigan. And Vern Ehlers is one of the few scientists among our Congressmen. And he's very active on the Committee on Science [and Technology]. He's a former physics professor. And so, he's extremely interested in this and extremely knowledgeable and extremely sincere and wonderful. And so, he and I made an appointment to talk with him, to go up there and see him. I think there might have been some other meeting going on, or whatever. And that's how I got into see, I from Oklahoma got into see this Representative from Michigan. And so, as it turned out, Billy Joe wasn't able to make it, but I went ahead and made the appointment. And so, I went up there and I was really a novice. I was just starting and I went in and I said, I thought I'm going to let him know what's happening. And I showed him my data and I said, "The professional organizations," and before I could finish, he said, "They won't do anything." And I said, "And the funding organizations." He said, "They're not interested either." And I thought this guy really knows what's happening.

After you have a few conversations with those people…I mean, they are really knowledgeable. It made me feel so much more secure knowing that people like that are in charge of our country. I mean, he is just great. I realized that he knew so much more than I did about this, even though I was sitting here in this department. And when I was talking to him about these surveys, I was trying to figure out what to do. And I don't know if he read my mind or not, but he said, "Donna." He said, "You have the power to change science." He said, "You have the power to do this, to change science now, and for the rest of time. You have this in your power." He said, "You've got to go public with this." He said, "You've got to go public with this. And you've got to embarrass them." He said, "The funding agencies and the professional organizations and the universities will not be able to ignore these data." And I was sitting. I felt like it was my mother talking to me. I said, "Okay." And so, I walked out of there, and I can remember walking out of his office and walking down the long hallway inside the Rayburn [House Office] Building. I can't remember…you know, one of the U. S. House of Representatives' buildings. And walking down that long hallway, very slowly, thinking about what he was saying. And I thought "embarrass them, embarrass the professional organizations, the funding agencies, and the universities, and they're all going to be mad, and they're all going to be mad at me." And I mean it was really a scary thing to do, because nobody had done this.

Now, [at that time] everybody was talking about it. At that point, really about the only people that were vocal, really vocal was Nancy [H.] Hopkins up at MIT. They were being…but she had a strong backing of MIT. And she was vocal. And MIT was right behind her, saying,

Yeah. And so, but she had fought her own battles inside MIT. I'm not trying to take anything away from Nancy Hopkins. I have the greatest amount of respect and admiration for her. But, I didn't have the backing of my university. I was in a different situation. And so…but, I had Vern Ehlers. And I thought, I have to assess him also, because if I go public with this, is he going to back me up? Is he going to step forward, and say, "Yes, those data are reasonable. Yes. And we need to act on this." And so, I thought I have to assess if he is going to come through? Is he sincere? Is he going to back down? Is he going to crumble? Is he going to, you know what's he going to do if I do this, what he suggested? And so I thought you know he's a member of our U. S. House of Representatives. I have to accept him at face value. I have to accept that he is a totally honest and honorable person and that he will do exactly as he says he will do. And so, and I still was having to think about what will happen to me. And I finally just decided one night, I can't delay on this anymore. I'm going to have to decide tonight.

And so, I sat there one evening just thinking about this, weighing everything in my mind about what he had said. And remember at the time I didn't know that this would really have a big impact. I didn't know. I knew that the minority professors were very concerned, but I didn't know. I didn't know what was going to happen. And so, I was sitting there thinking, well, if what he says is right, I mean, it can change science now, as well as change science for everybody in the future. That's a lot of people, all science now, and all of science in the future…versus me. I mean I was very concerned about what was going to happen to me. So, you come down to well, okay, it's me versus all the other scientists in the world right now, and all the other scientists in the world in the future. Hmm, me versus everybody, is about, you know who's more important to me? And so then, I guess the thoughts about my stepfather and trying to do what's right for other people. And so, I finally decided well, I'll just have to take a gamble. I mean, it was. I felt like it was a gamble. And I decided if I'm going to take this gamble, I'm going to take it in a manner such that it makes the biggest impact possible because if it makes a really big impact and it's successful like Vern Ehlers says, I'll be somewhat protected.

So, that's when I got back in touch with the Black professors and I said, "Okay. Let's do it. Let's go with this and, you know, but *C&E News* won't publish it. So, let's try to get as many publications [and] make as big impact as possible." And so, everybody went out. You know one person got one publication. One person got another one. One person got, it was really a group effort. And I think I got *AWIS,* and we really planned it. And it turned out that Vern Ehlers, when I contacted him, and I said, "We've got an AP press release," because there was a Black professor here in the journalism school, and I told him what I was doing, and he got that for me. And I called Vern Ehlers, and he said, "I want to give a quote in your AP press release. Tell them to contact me." And boy, they did. And right there, we had a quote from the U. S. House of Representatives in that press release. So, there was Vern Ehlers coming in right like he said he would. I mean, I have the utmost respect for him. And it all, worked out. But, there was no guarantee in the beginning that it would. I felt that way, anyway. I felt like it was taking a big risk.

DOMUSH: Now were you in touch with Nancy Hopkins at MIT at all.

NELSON: Well, no. I don't think so. I met Nancy Hopkins after those surveys had all come out…after our Capitol Hill briefing. I think I got invited to some workshop or something at MIT. And I'm not even positive. It was one of her workshops. It was a workshop. She attended it for part of the time. And I remember meeting her at that time. And I had a sabbatical coming up. And I think I emailed her later and mentioned you know I've got a sabbatical coming up. I can spend part of it at MIT that, if you know you're interested. And she said, "Yeah, sure. That'd be great." So, I got the Ford Fellowship to fund that.

DOMUSH: Now, you also spent time as, I believe it's called Chancellor Diversity Scholar at UCSD [University of California San Diego].

NELSON: Out at UCSD…San Diego [California], yeah. And I'm still interacting with them. Now, that's…

DOMUSH: Marye Anne Fox.

NELSON: Marye Anne Fox, yes, who I respect greatly.

DOMUSH: So, what kind of things does that involve? What are you doing out there?

NELSON: Brainstorming, a lot of brainstorming. One of the reasons that I was very interested in that and I've contacted Marye Anne about this, because…there's some background to it. So, let me just fill you in on why I made that selection. Some of this is looking back also, now. I really do see Nancy Hopkins as being even more of a leader than I think a lot of people regard her to be. And she really in many cases stuck her neck out even though she did have MIT behind her, she has…there have been a lot of detractors writing things about her which are in my opinion, completely ridiculous. And in some cases, inaccurate, just flat wrong. I mean for example, at the Larry Summers talk there's all these reports that she slammed her computer shut, you know slung her "this", grabbed up her coat and stormed out and all this. It's ridiculous. I was there. There was one person seated between us. And I was looking at Larry Summers on this side, and she was over here. And I mean, I was not that far away from her. And when she was packing her things up, the only thing, the only noise that I ever heard was the zipper from her briefcase closing, just zip. And I turned and looked and our eyes met, and she just shook her head "no" and got up and walked out very quietly. I mean, no noise at all.

And so, there are things that are said about her that are just absolutely wrong. And she's received a lot of…I guess, you could call it retaliation—just completely unfair, and inaccurate,

[and] completely not based in fact. And in spite of all that, she's done a lot for our country, for all of us. We all owe her a lot. And so, she sort of led this for women. And with MIT; I think you have to have a university backing you to do, to take on the whole United States, leading that effort nationwide. And so, it's not something that I'm going to do out of University of Oklahoma. You have to have strong backing. When they got their Ford Foundation grant to start their national activities, I know that the president of MIT went with her to New York City [New York] to make a presentation to the Ford Foundation. For example, she had that sort of support from MIT.

DOMUSH: That's great.

NELSON: And I admire MIT for it. I think it's a wonderful university. I keep sitting back and, sort of, watching for another university to step forward to do this for minorities. Because she was working really on her own. So, as I'm watching, I could see this forming out in California. They've got some issues going on in California. They've got on the one hand Proposition 209 which is basically not letting them do anything special with regard to race. And on the other hand, they've got a booming Hispanic population. And so, there's a lot of pressure to do something to ensure that Hispanics are not excluded. So, you know it's sort of hard to do both simultaneously. And so, I looked at that and I thought…wow, you know if they can handle this in California, they're going to be able to handle it anyplace. And I thought that's going to be where the real challenge is. So, I was wanting to get a little closer look, not jut at UC San Diego, but the whole [University of] California system. I have been in contact with people at [University of California] Berkeley. And when I went out to UC San Diego […] you know, they have chancellors at each of the UC universities. And then over that they have one president for the whole UC system. So, the president is based in Oakland [California]. And so, in the president's…sort of, not his office, but his building that contains his office, they were having a meeting of all the diversity officers of all the different campuses there. And I was included in that meeting. So, I was able to go up and hear them brainstorming and hear them talking. And talk with people from UC Irvine and a lot of other universities within that system, just to, sort of, hear what they're thinking about and what their plans are and the sorts of things that they're putting in place.

And it was, sort of, a learning process for me, because here at University of Oklahoma, we have no diversity officer at any level. None. And out there in California, they'll have them sometimes sit at the chancellor's level, then the provost level, then the dean's level, then the department's level, you know. So, they'll have all the levels, simultaneously. And so, I was wanting to see that and see what each one does. What sort of reasoning is given for having it at all the different levels. Sometimes one level will be skipped. Why did they skip that level? What the different duties are? I was just wanting to see that, because invariably they use my data. [laughter] And so, I'm just very interested to see how they're using my data to justify some of these things.

DOMUSH: So, another place that I've seen your data be used…Harvard [University]'s Chemistry and Biochemistry Department recently announced a [Mary Fieser Post-Doctoral Fellowships Program] for…I believe it was female post-docs in the department. And on, the press release, on the website there's two [or] maybe three paragraphs and one of them is devoted to your survey.

NELSON: Really. I didn't even know that. I mean this happens. You know I just can't keep up with it all. But thank you for telling me. It's really nice, thank you.

DOMUSH: I'm just wondering…I mean, have you heard from anyone…any, sort of, personal communication from anyone about…you were in contact with all these professors. But, have you heard from any students, or any post-docs, or anything like that—personal communication—saying anything in response to your surveys aside from the faculty.

NELSON: Yes. Oh, yeah, and some of the most gratifying things. When I go out and give talks to large groups, and sometimes it will be like the Ford Fellows, or SACNAS, or minority health organizations, or whatever it can be—sometimes you know thousands of people in the room—and while I'm at the meeting, people will come up and strangers, complete strangers, and they'll come up and you can see from their faces, they're very emotional. And, they'll say things like, "I just wanted to thank you for what you've done. It's changed my life. It's made all the difference in the world." And in some cases, you'll even see tears come to their eyes as they're talking about the changes that it made for them. That was very important to me, those sorts of things. And being told those things makes me very happy that I made these decisions. Because that's why I did it. I was wanting it to make a difference to help other people. And I do believe I experienced…have experienced some retaliation because of it, and I would like to think that some good came out of that. And so, when people come up to me and tell me that it changed their life or thank you or whatever. And it's at every meeting, every meeting people come up and tell me this. And sometimes I just can't believe what's happening. I'll go to meetings and people will come up and say, "It's Donna Nelson." It's *the*…I mean, I'm *the* Donna Nelson, you know. I don't know what to say when they say this. I just, I don't know what to say.

DOMUSH: But you did change their lives.

NELSON: I guess I did. Yeah, but how to react to that because I don't feel any differently, you know. I mean I'm just…I'm still just the same person. I just made a few different decisions. And I do think, I got a lot out of this. A lot of times, and especially at the very beginning when people would say, "Thank you," I would tell them very sincerely, "it's my pleasure." And I really meant that because think about it. How many times in your life do you get this opportunity to do something that impacts all the scientists today, all of scientists in the

future? I mean, stuff like that doesn't come along very often. And to be there and to be the one who can do this, sort of, easily, just by taking a risk at a certain time. And I really felt like I had to. You can't say no. I wouldn't have been able to sleep for the rest of my life if I would have decided not to do that.

DOMUSH: So, looking at all this survey information there is…as we've, kind of, been discussing, a disproportionate amount of White males. How do you suggest…or have you talked to anyone about how White males should look at this survey information? Young graduate students or young faculty who are White males, what can they do about this issue? What can they do to be more supportive or to be simply aware other than looking at your surveys?

NELSON: Well, the one thing that I have been suggesting is there needs to be more discussion—open discussion. Open discussion with no fear of retaliation, just a great amount of discussion. I'm really big on this. Because if you discuss it…you know, from discipline-to-discipline-to-discipline, the problems are going to differ, and from university to university, problems are going to differ, and from department to department, problems are going to differ. So, it's going to be really rare for you to be able to see in one department the exact same problems that you see in another department. Now, there may be some that are, sort of, common among all departments and you may see…

DOMUSH: Do you mean by discipline or by university?

NELSON: Both. Both, by discipline, by university, there'll be some things in common because of the general organization or the professional organization, the way they're set up. So, you know the disciplines within engineering won't be the same as within the College of Arts and Sciences. But, still, even if you pick a discipline like mechanical engineering and you go from one university to the other the barriers that you see in one department of mechanical engineering won't be exactly the same as what you see in another. There may be commonalities. But, I really don't think they're going to be the same because people are always different. And it's individuals that make up the departments. But there will be certain things that will be common. And there will be incidents that will be common. So, things that happen in chemistry may happen in a few of the departments in mechanical engineering, for example.

So, some of these mechanisms, I'm really convinced that if you learn enough of these mechanisms then you can fairly confidently go out and…I've gotten this opinion from talking to different people. I speak a lot where at the end young women or minorities are told that they can ask me any questions…including describing to me any problems that they're currently having, that I'll give them advice. And it's getting so that it just almost never happens that they will tell me about a problem they're experiencing that I don't have some experience with. So, I can tell them how to handle these things. And I've either seen it or heard a lot about it. So, I

really am convinced these things are common from one discipline to another, from one department to another, but you're not going to see the same collection in any two departments. You know it's, sort of, an assortment. And in come cases, one will be much worse, full blown, whereas in the other one it's, sort of, in another department it's, sort of, mild or just getting started or whatever. Did that answer your question?

DOMUSH: Well, I mean, it did, but I wonder…

NELSON: Oh, so what do you tell White males.

DOMUSH: …just about raising the level of discussion and awareness.

NELSON: Raising the level of discussion and…as, sort of, a joke, at the first meeting of chemistry department chairs that was put on, I think co-hosted by NSF and NIH [National Institutes of Health], at the end of that where we were given suggestions, I told them that the departments are not like cookie cutters, where they're all alike. You take a cookie cutter. You cut it out and they're all alike. These are all different. And so, the only way that you're going to find out exactly what problems or barriers there are in a particular department, is to ask the women and minorities in that department. They'll be the ones that will know because they're experiencing it. And I said, "And when you ask them [women and minorities] and they tell you what the problems are, don't argue with them. Just believe them". You know because a lot of times they'll say, well, this is what I'm experiencing. And then they'll be told know, "You can't possibly be experiencing that. We don't do this, and this, and this." And so, that is exactly, when the women and minorities learn, well, there's no point in telling them because they're not going to listen anyway.

DOMUSH: At some point, you said that you would advise young women or young underrepresented minorities who are going into one of these scientific fields for graduate school, to use your surveys to help them pick a department that might be more supportive.

NELSON: That could be done. But I think that that could be done. That would be…I wouldn't say that…see those are just numbers. I wouldn't say that that would be the only piece of information to use, but it could be used. You can see clearly in some disciplines you can see that the pipeline—a lot of people don't like that word, but I think it conveys what I'm talking about. The pipeline isn't so leaky in some disciplines, as in others. And so, let's say that a student decides they want to be a chemist. And you can look at the pipeline and you can see there's big leaks…you know, the numbers they're representing, drop, drop, drop, drop, as you go. Then you can look at chemical engineering and you can see the representation of women among B.S. recipients as low, and then Ph.D.s it gets a little higher, assistant professors it gets a

little higher, you know. So, here it's the opposite for chemical engineering. And if you look at the most recent surveys, you'll notice that the representation of women among assistant professors in chemical engineering is actually a little higher than it is for chemistry. See, they cross there which means chemical engineering is doing more with less, if you can see what I mean. And so, in that case you might advise a person who would fee equally comfortable with chemical engineering [as with chemistry] "Hey, why don't you consider chemical engineering." This gets back to the idea of students who come in and haven't ever heard about engineering from high school.

DOMUSH: Right.

NELSON: And so, this exactly happened with Christopher. He came in as a chemistry major. Remember the sheet I gave you [which read] "I want to be a chemist. I want to be like my mom." So, he started out as a chemistry major. And he was in this department. He was my son, and I think he was viewed as a little bit of an extension of me. And so, you know he was talking to me about this one day, and I said, "Well, you know Honey, if my surveys are actually correct, and they really do predict environment, then you could look at…" because I'd been thinking about this. How do we test this? And I mean this is n=1, I know. Yeah. But it's a very important "one" to me. [laughter] And so, I said "You know you might try chemical engineering. You're really good in math and you love physics." And I said, "Why don't you, you know just have a look. It doesn't hurt to look." So, he said, "Okay." And he went over to chemical engineering, and he's sitting out there laughing right now. He went over to chemical engineering, and he came back in a couple of hours, and I could see him as he came down the hall. His face was just beaming. And I knew what had happened. And as he got closer, I said, "So what do you think?" He said, "I think it's great. And I've already switched my major." Really. And he went on to get a BS in chemical engineering.

And so, I think that it can be used. You know I think that…I'm a big one for data. I don't know that I would blanketly say, "Use the data and nothing else." But, I don't see what it hurts. You know, I think that it's another piece of information, and I certainly would use all the pieces of information I could get when I'm making an important decision. Similarly, if you were trying to decide between two different, say, departments of chemistry, you could look to see how many women professors there are or how many minority professors there are in those two departments. Now, just because there would be more women, or just because there would be more minorities, it doesn't necessarily mean it's a better department…better environment. Those people could be very miserable. The only way you would know is to actually contact them and really talk to them. But in the absence of anything else, it is a piece of information, and you could use it.

WEBB-HALPERN: Well, we wanted to ask you about your mentoring relationships. So, you obviously had two important mentors, who you identified as scientific mentors. And something that you said before is that it's really important to see yourself in other people…to see that as a

possibility for you—to have role models who look like you. You said at one point you had to turn to history to find a female role model. So, we were wondering if you could talk about the importance of having women mentors or a minority mentor, specifically an advisor, perhaps.

NELSON: Yeah. I didn't really have a female advisor I guess when I was…especially when I was an undergraduate. When I was a graduate student, as I mentioned Marye Anne Fox was on my dissertation committee. I really didn't have all that much contact with her. But, I mean, you could see her, you know as she went whizzing by. I mean, she was very active and busy, this is the problem with the people who are extremely smart, and popular, and capable, they're always very busy. And later on when I was trying to make a decision about how to handle Christopher…I might mention I drew from history. This is a book on Marie Curie and do you notice this photo of her with her daughter [Irene Joliot-Curie] working side-by-side.[12] And I thought, if that's good enough for Marie Curie, it's good enough for me.

DOMUSH: Her daughter went on to win a Nobel Prize, as well.

NELSON: Yeah, I know. And so, that's really one of the things that gave me the idea. You know my son could just work with me in lab. And I have to say, I think I started a little earlier than she did. Because when he was nine, I strapped the goggles on his little head and got him down there to do GC injections in the lab. [laughter] Really. And so, he's been running around here for a long time, you know, learning. So, I don't think it can hurt him. But I have had one person that I would call a great friend. And we brainstorm everything. And that's Ann [Elizabeth Ann] Nalley who was president of the American Chemical Society, I think 2006 [or] 2005…in there. So, when she became chair-elect, I started working with her. We had been doing things together. She's based in Cameron [University] which is just about seventy miles away—Cameron University in Lawton [Oklahoma]. And so, it's an undergraduate institution. It does not have masters or Ph.D. [degrees]. And so, as American Chemical Society President there are these presidential events. And ACS is changing a little now, but at that time, they hadn't changed and presidential events were extremely important, and you needed to have a good selection of research-oriented sessions. And at an undergraduate institution, it's a little hard to have a huge research program. And she didn't have, excuse me, a lot of research collaborators. And so, she and I had discussed single wall carbon nanotubes some. And so, when she was running for office, I helped her a little. And I said, "You know, if you win this, as part of your presidential events at the ACS meetings the year that you're president, we should do something on single wall carbon nanotubes." And she said, "Oh, that's a wonderful idea. We'll have to do that." And so, then when she actually won, we already had our idea in place.

So, I think she was president-elect in 2005. And we had already discussed this in 2004, while she was running. And so, then we knew that she had won in something like November. And so, we started talking about it, really sincerely at that point. And at that point, it was just

[12] Robert Reid, Marie Curie (New York: New American Library, 1974).

going to be a small event, you know maybe one morning and one afternoon session. But we knew that we wanted to get Rick [Richard E.] Smalley. He was a Nobel Laureate. He had won the Nobel Prize for Buckminster Fullerene. And so, I called down there. I had talked to Ann and I said, "I'll be happy to do this for you." And she said, "Oh, thank you for doing this." I said, "Thank you for letting me." Because I considered it…I knew that I was going to be…I was just starting and I knew that I was going to be in contact with people who were really at the top of this area. And it was going to be wonderful for me. I thought it was a great privilege. I was so thrilled. So, I called and I was told that he had had a relapse of his cancer. And they said, "We don't know if he'll be able to participate or not." But they said, "If he recovers, he's having to go back in for chemo or whatever. If he recovers, he'll probably want to [participate] because he enjoyed doing this. But, we won't know. So, call back in six months." And so, I said, "Okay." And in the meantime, we were going to get together some other people. Turned out he didn't recover. He passed away.

And so, then Michael [S.] Strano who had worked for him also did research in single wall carbon nanotubes. Unknown to me or to Ann, he was preparing a similar symposium and he was going to do his in the spring and we were going to do ours in the fall of the same year—Ann's presidency year. But, he wasn't going to have his be a presidential event. He wasn't really in contact with Ann. So, as soon as Rick Smalley died, people started just talking more about this. And so, someone told Michael Strano what we were planning, and Michael Strano got in touch with me, and said that it had been suggested to him that we combine our sessions. That he combine his with mine and that he would be willing to wait until the fall. And I said, "Sure, okay." So, then instead of one day, two sessions, there was going to be two days, four sessions. I thought well, I can do this. And it was obvious, I mean, I was going to be doing a lot of the work. He was going to be the main organizer, as far as contacting the people, etc, for his.

So, then Rice University contacted me and said, "You know we were really wanting to do something for Rick, but we've been sort of distraught and so we weren't able to really get our act together. And we heard that you were doing this. So, we were wondering if we could just add some sessions into yours and make it a memorial symposium for Rick." And I said, "Sure, absolutely." And so, then it wasn't two days and four sessions, it was four days and nine sessions. And as it turned out…I mean, I was really thrilled to do this because, I mean, it was filled with Nobel laureates and all these people that I would never have the opportunity to meet otherwise. And so, Ann was saying, "Thank you. Thank you." And I was saying, "Thank you. Thank you." And we were both just so thrilled and happy.

And it turned out to be a wonderful symposium. It was like a huge shot in the arm for me from the single wall carbon nanotube chemistry. And people are still telling me that that is one of the very best SWNT symposia that they ever had. And so, Ann was involved in that. And I did something very special there. Since I was running this, I was able to do it. I had for each speaker a young student get up and give the introduction. You know a lot of times there's an argument…"I get to introduce the Nobel Laureate. No, I'm going to." And I just said, "No, the students are going to do all of the introductions." So, these brand new students in some cases, Rick Smalley's students were able to get up and give these introductions for the Nobel

Laureates and other famous people. And they're, all the people in these sessions were very famous. And so, I thought that worked out great. You know it tied everything in together, the workforce development. And then we wound up publishing all of the papers in this *Journal of Physical Chemistry* issue, and I'll give you a copy of that.[13]

DOMUSH: Oh, great.

NELSON: That's an extra. So, that's that symposium that we organized. And it all worked out great. I mean that was just absolutely wonderful and the students loved it. Everybody was really happy.

WEBB-HALPERN: So, that friendship was important to you guys.

NELSON: That friendship, I mean it helped my career. It helped her too, because she needed to have a presidential event, you know, that was heavy in research. And this was.

DOMUSH: Yeah. What an amazing presidential event.

NELSON: Yes, it was, yeah. And also, I think that a good message there is how wonderful rewards can come from being flexible…because I just kept saying yes to everybody, oh, yes, yes, sure. Add that in. Yeah, I'll do that. Yeah, sure, add that in. Yeah, I'll do that. Add that in. Add that, yeah, sure, sure. You know and they would contact me, can we do this? Sure, absolutely, happy to do it. [laughter] And it just kept getting bigger and bigger. And I never got one complaint from anybody. Now, one thing I did do also, though that helps eliminate complaints is I was able to get funding for everybody—travel funding for all. Yeah, except the people in industry and the people in government. People in government are forbidden from taking any travel money. And the people in industry, you know, they have their own. But all the other people and that included the students, yeah.

DOMUSH: I have another question related to, kind of, back to the surveys, but it made me think of it just now when you mentioned people in government. And I've seen some recent articles…there was a *New York Times* article last week about Title IX and science.[14]

NELSON: [John] Tierney.

[13] Editors, "Richard E. Smalley Memorial Issue," *The Journal of Physical Chemistry C* 111 (2007).
[14] John Tierney, "A New Frontier for Title IX: Science," *New York Times* (15 July 2008).

DOMUSH: Yes. And you had said when you went to Ehlers, the House of Representatives…

NELSON: Vern Ehlers. E-h-l-e-r-s.

DOMUSH: Sorry. You said that he told you that people in government, people who the fund, people who run these departments, are not going to change anything. You have to be responsible for changing.

NELSON: Yeah. He was talking about professional organizations and funding agencies. I don't think he was talking about people like in House of Representatives or in Congress. So, not really in government. He was…professional organizations and the funding agencies.

DOMUSH: Okay. So, then what do you think in response maybe to him saying that, but maybe also in response to some of these issues about Title IX and science about NSF, and the Department of Energy, and NASA, going and doing these accountability…this accountability research to realize that Title IX should apply to all of these departments that get government funding. And that they have not done their job.

NELSON: Yeah. As a matter of fact, John Tierney just called me Friday. Yeah, and talked with me at length about many of these things. And I wasn't really that much aware of what he was…there's just so much out there, you know you can't stay on all of it. And so, the way I find out about it is when the people call me to talk to me. But, yeah, I do have some thoughts about that. I have several thoughts about it. For one thing, I mean, Title IX is a law. It's on the books. I think it's important that we obey the law…everybody obey the law. I've often thought about…now, what if what is happening here in the schools was going on in a bank? And the laws that govern the way the bank handles money weren't being followed, what would happen? Well, the bank would be shut down. I mean, very rapidly. You know this idea of, well, laws are on the books, but we don't really need to obey them. You know, it's ridiculous if you're talking about money. Okay, so that's money. Here we're talking about children's minds. To me it just seems so much more important than money, and the things that they're seeing, and the things that they're hearing and experiencing, and the idea of having a law on the books and not obeying it…it just seems very foreign to me. And so, I guess that my idea…and what I told him is that if it's been decided that we're not going to obey this law, we need to be very open about this, and vote the law off the books. And until it's voted off the books, until it's removed from the books, we need to obey it.

So, what's the problem with ensuring that we're obeying the laws? And we do this. We have these accountability checks or whatever all the time in banks, etc. Now, even another

organization that is even closer to this, where they've been having these accountability checks is with the Office of Federal Contract Compliance Programs—OFCCP. I think is what it is. And they do basically the same thing that Title IX does. They're responsible for it, except it has to do with contracts, instead of grants. And that's it. I mean, its contracts, instead of grants. And so, they check to see if women are experiencing discrimination or minorities are experiencing discrimination. For some reason it has not gotten all the publicity that Title IX has gotten. And yet, it's been sitting there. It's being implemented. It's just cruising along quietly, while there's all this furor about Title IX. It seems so strange to me. To me they seem like the same thing, only one is contracts and the other is grants. And I do know of universities that did not pass their OFCCP, Office of Federal Contract Compliance Programs review. And the way this goes and I'm having to go way back in my memory here. There's three things that can trigger an OFCCP review. One is that just every so often the office…somewhere in the office, I think it must be up in headquarters or whatever, just decides at random or not, they make the decisions. "We're going to review them." And so, that, whoever it is they selected and it may not be a university, it could be a company that has a lot of contracts. We're going to review them. And they get reviewed. If a company or a university gets a huge grant and I think, it's something like twenty million [dollars]. It's a big grant and it may have gone up, I don't remember exactly what the number is. But if they get a grant that size, it's an automatic trigger. They must be reviewed unless they've been reviewed in the last two years or something like this. And then a third way that they can get reviewed is if a whole group of people get together and file a complaint similar to an EEOC [United States Equal Employment Opportunity Commission] complaint. EEOC is sort of like for individuals and OFCCP would be a group of people.

And so, I do know of one university where a group of people actually went to the OFCCP and complained. And then the OFFCP came in and did this review and said well, we can't find out. We can't determine whether you're complying or not because you're not keeping records. And so, we want…you don't have the full records. And so, we were going to come back in five years and check these records. So, when they came back, and I know who this is, but I'm not going to tell you. The university had actually ceased keeping any records. And OFCCP said, "What? We absolutely demand that you keep records. And we're going to come back in five years and check you again." So, there it is ten years, see. So, even the OFCCP, they're not really quite doing what they're supposed to be doing. But, they are making checks.

Now, I know of another university which got a huge grant, and it triggered one of these checks, compliance review. And they did not pass. And so, what they had to do is construct this elaborate website where they had to post online for public viewing a tabulation of all of the EEOC complaints and all of their…all of the external complaints of any kind by type…like, age discrimination, gender, race, Vietnam Vet, you name it. And also, they had to do this same thing for all the internal complaints, internal grievances that have been filed. And so, the way I found out about that is I just happened to stumble across the website. But, this is ongoing. And this has not ceased. So, I don't understand the problem with the Title IX. If the OFCCP is doing this, what's the problem with Title IX? I don't get it.

DOMUSH: We wanted to ask about the public perception of science and I'm trying to think how to phrase that. So, you showed that picture of Marie Curie…

NELSON: Oh, yes.

DOMUSH: …a few moments ago, and for so many small children—at least this is the way it used to be and I don't what it is still because I don't…I'm not around small children very often. But their image of the scientist is a man…usually an older White man in a lab coat holding some kind of beaker up. And if they think of a female scientist, they think of Marie Curie because that's the most public female scientist that they've ever had any contact with. What do scientists do? Or, what do people who are concerned about this perception of science, what can be done to raise awareness for small children—school age children—so, that that they might be excited about going into science and not think that it's a field blocked off for them?

NELSON: Yeah, that is a hard problem. That's a very hard problem. And it's a serious problem because we're…right now in the US, the number of U.S. Citizens going into science is continually decreasing. And in many of these disciplines as you know going in…starting out, like, in chemistry and math, the representation of women is about half. If you go in and you look at that and you look at the percentages and you say, ah-ha, representation of women is increasing over the years, sadly the reason that the representation is increasing is mostly because White males are decreasing and women are staying about the same. So, the number of scientists and the number of U.S. Citizens going into science are really going down.

And so, we have actually in my eyes, at least two problems. One is in some of these disciplines, the representation of women is still quite low…below, far below 18 percent, far below. So, there you have to think about how do we get women up? In chemistry, at least the BS level to me it doesn't seem like such a problem now because you've got over 50 percent of the BS degrees going to women. I don't see that much of a problem for gender there. But, the numbers are going down, so there we have this overarching problem of the representation of the number of U.S. Citizens going into science is diminishing. And this is getting at what you're talking about here.

And so, what do we do? I think that we're going to have to, and this is what I'm trying to do. I think that we're going to have to reach out more to media. In particular, I've heard some scientists say that when an editor…not an editor but when a reporter calls that you just say no comment, because you don't know what the reporter is going to say. So, I don't do that. I talk with them. Try to explain things as best I can, try to, intentionally try to reach out. And I'll give you an example of one thing that I've done recently. I read in *C&E News* that there was this new show called *Breaking Bad*. And when I talked to many chemists about it, they said, oh, what a horrible show. It's about…do you know what it's about? It's about…the long and the short of it is it's about a high school chemistry teacher who discovers that he has cancer and is dying. So, since he's a high school chemistry teacher, his income has been very low. And his

wife is pregnant. And so, he's faced with dying soon. They don't have a lot of savings. His wife is pregnant. You know, what is he going to have to leave them? Not much. And so what does he have? He has this talent. He's a chemist. He's a very good organic chemist. Okay. So, what does he do? He needs to make a lot of money, soon, fast. So, this term "breaking bad"…I had never heard this term. So, breaking bad, it means, like, breaking your morals, turning bad, you know breaking bad. So, the producer/director, Vince Gilligan, was discussing this. And so, he's got this star of his show who is the main character, who has a split personality. On one hand, he's the mild-mannered chemistry teacher. And on the other hand, he is a synthesizer of methamphetamine who sells it to the drug world. [laughter] Right, but he can make really great methamphetamines—crystal meth, you know—super pure and all this. And so, he has this dual personality. You know, he's this role model for all the high school students, and on the other hand, he's dealing with the drug lords and can make better meth than anybody else.

So, you know, chemists are having a little difficulty dealing with this. They're saying…some are saying it presents us in a horrible light. And I initially, when I first read about it, I thought, oh, my God. What a horrible thing. And so, but the thing is this Vince Gilligan had stated, and it was written that he had stated this, that he wanted his high school chemistry teacher to be able to teach really proper chemistry, good chemistry, and get everything right. He didn't want to have mistakes. And that he was having to surf the web to find out stuff to put in the show. And he had made the statement that "If anybody is willing to help me—we can't afford a science advisor—I would really appreciate any ideas." And so, I thought…the light goes on. I contacted him. And I received an answer, and I was told he would really like to talk to you. And at that point, I asked Christopher, I said, "See if you can go online and download these shows because I really think I need to look at them first before I talk with him." So, Christopher downloaded them, and they were seven. You know, there was the writers' strike, so there weren't the typical eleven or twelve. There were only seven. And so, we watched them all several times. And after watching those, I decided you know there is nothing that glorifies that lifestyle. I mean, this poor guy was constantly being beaten up, threatened, robbed, you know stabbed. Just he had a horrible lifestyle. And in order to synthesize methamphetamine, he would have to strip down to his underwear, put on this lab apron, and they got in a Winnebago and drove out into the middle of the desert and they would synthesize it out there in this like 110° heat. And I thought I cannot see any student thinking this is glamorous. Would you want to go out into the desert in your underwear and synthesize methamphetamine? I went to bed and I thought nobody in their right mind is going to try to make mimic this.

And so, I thought I'm comfortable with trying to help him put good science on television. And it's going to be in mainstream television. It's during the prime time. And so, I contacted him and I said, "You know I'm making these trips out to California." And they said, "Oh, great. Can you come up to Burbank [California]?" And I said, "Sure." So, I went up there. And on the way up there, I was telling Christopher, now remember we're not going to meet with anybody important. We won't meet with Vince Gilligan. And he will just send somebody that is really a low-level person. We're not going to meet anybody important, so don't get your hopes up. We got there and they said we're going to take you to lunch. Vince

Gilligan and all his staff—his whole staff of writers—went to lunch with us for, and we sat there for several hours. And I was asked all sorts of questions, chemistry questions, a lot of similar questions to what you're asking me now. What's it like in the lab? What makes a student choose to go into chemistry? What makes a student drop out? All these, just all sorts of questions, everything you can imagine. And then they [asked] if we send you some questions about organic chemistry, would you be willing to give us answers that would be appropriate so we can put correct material on television? I said absolutely. It does not help any of us to have incorrect science put on television. And here is a person who is trying to put good science out there. And so, I said sure, I'll be happy to do it.

And again, it's volunteering. And but, I feel that that's a service that I want to do. And in a way, I think it's a little bit of a stretch for me, you know it's being open-minded because think about it, you know it is a drug synthesis. It's a show about drug synthesis. There is this connotation…well you know, are some children going to be influenced? Well, I don't know but if I say no, what are we going to have? Is it going to improve it? No. They're still going to have the show, they're just going to have bad science mixed in with the show. And it's going to have nothing good about it. This way at least they'll have good science. Walt is a high school chemistry teacher. He will be showing really good science. And so, I agreed to do this.

And so, I think that perhaps things like that, you know agreeing to participate even though maybe it's not as pretty as we would like. It's not perfect. It's helping in a way. And it's putting science out there on prime time television where students will be able to watch. And I don't know if you've watched it or not, but they are…while he's a chemistry teacher they are portraying this as really great science. I was watching that and he was explaining chirality and was saying that as a high school chemistry teacher, he was saying there are chiral molecules. You know, these are molecules which are just as similar as your hands. They're very much alike, except their mirror images. And I thought this is great. This is on prime time television. They're putting this out there.

DOMUSH: So, have they sent you any more questions?

NELSON: Yes. They did. And one of them was hilarious. It was something like, oh, using the P2P [phenyl-2-propanone] method. If you start with thirty gallons of methamphetamine…no thirty gallons of methylamine, how much methamphetamine will it make in pounds? [laughter]

DOMUSH: Do you get your name on the credits as science advisor?

NELSON: I don't know. I mean, if they were to do that, I think it would be wonderful.

DOMUSH: Yeah.

NELSON: But it's not a requirement that I placed. But I think that they will probably be asked…I hope, you know…maybe. If not, that's okay. I don't really care.

DOMUSH: The important thing is that the science is correct.

NELSON: The important thing is that it's correct. And we had our photos. You know, I had my photos taken with them and everything. So, I mean you know if I ever had to prove it, I would be able to prove it. I've got a picture of us all at lunch together, so and all the emails. But that's not really what it's about is you know getting the credit. I've done a lot of things where I don't get credit. So, but I think that's one example. And I've told them, I don't know if it will have any impact, but I told them if you know of other people, other producers, other directors where they would also like some sort of assistance like this…let me know. I'll be delighted to help you. We need it. In a way, by him putting the science on the television and insisting that it be accurate, he's helping us…this insistence that it be accurate. He's helping us.

DOMUSH: Well, I think we've covered almost everything. And there's been a lot to talk about, so unless you have any more questions, Leah.

WEBB-HALPERN: We were just wondering if there's something that we didn't ask that you think is important to mention.

NELSON: No, I think I've mentioned it. The only last thing is I'd like to tell you again, what an honor it is. Thank you so much. I really appreciate this. I'll remember it for the rest of my life. And I am not kidding. And it meant so much to me to be able to get these [oral histories] of Michael Dewar and Herb Brown because I didn't realize until after they had passed away that I had nothing with their voices.[15] And now I do. And it was so thrilling to be able to hear them speaking again. It meant a lot to me. So, I really appreciate what you're doing. And I'm so honored by your coming here and doing this.

DOMUSH: Well, thank you so, much.

[15] Michael J. S. Dewar, interview by James J. Bohning at University of Florida, 22 January 1991 (Philadelphia: Chemical Heritage Foundation, Oral History Transcript #0087); Herbert C. Brown, interview by James J. Bohning at Purdue University, 11 November 1994 (Philadelphia: Chemical Heritage Foundation, Oral History Transcript #0117).

WEBB-HALPERN: Thank you so much.

DOMUSH: This has been great for us as well. So, it's been really wonderful.

NELSON: It's my pleasure.

DOMUSH: Thank you.

NELSON: Thanks.

WEBB-HALPERN: Thank you.

[END OF AUDIO FILE 2.3]

[END OF INTERVIEW]

INDEX