



## Hossein Rojhantalab Oral History Interview, June 2, 2014

### **Title**

“From Iran to Corvallis and Beyond”

### **Date**

June 2, 2014

### **Location**

Rojhantalab residence, Portland, Oregon.

### **Summary**

In the interview, Rojhantalab discusses his upbringing and family in Iran, his decision to pursue further education in the United States, and the circumstances by which he arrived in Corvallis. He reflects in depth on his time at OSU, noting his social experience, his research agenda and the important role played in his life by Dr. Joseph Nibler and Lou Allamandola, who was a post-doctoral fellow at the time.

From there, Rojhantalab recounts his search for work following the completion of his doctoral studies, and his ultimate decision to return to Iran as an academic. He likewise describes the science publishing venture that he launched with three colleagues in the midst of a changing and increasingly undemocratic environment in Iran.

Rojhantalab's return to the United States and his eventual employment at Intel round out the interview. In the midst of this discussion, Rojhantalab lends his thoughts on maintaining work-life balance and provides words of advice for current OSU students. He also details a seven-month return trip to Iran that he took with his wife in 2013.

### **Interviewee**

Hossain Rojhantalab

### **Interviewer**

Janice Dilg

### **Website**

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

## Transcript

**Janice Dilg:** So today is June 2nd, 2014. My name is Janice Dilg and I am here with Hossein Rojhantalab at his home in Portland, Oregon and we are doing this oral history interview for the OSU oral history project. Good morning Hossein.

**Hossain Rojhantalab:** Good morning Jan, how are you today?

**JD:** I'm fine. It's great to be here in your lovely backyard.

**HR:** Well thank you very much.

**JD:** Lovely spot to talk.

**HR:** My wife and I work hard to make it like that.

**JD:** That part is obvious. So I thought we would begin today a bit at the beginning and have you talk a little about where you were born, where you're from, and how you came to the United States many years ago.

**HR:** Okay. Since childhood my father wanted me to come to the United States for higher education. I'm from Iran, I was born in Tehran in 1944 and after graduation we graduated from high school, high school friend and I came to the United States and it was 1964, I was nineteen and accepted to Berkeley to go to University there and my friend just tagged along. He was eighteen and I was nineteen and what a time to be in California in the Bay area in 1964 and it was lovely.

So I come from a large family. My family consists of nine sisters and one brother. I'm right in the center. I'm the sixth child and so that's how I come to the United States. It started in Berkeley, California in 1964. I had to work from the day I got to the United States because my father at some point was very rich but then he was a merchant and he was no longer rich. So I managed to work a little bit in Berkeley but then we eventually moved on to San Francisco and from there moved around quite a bit in California and then I was doing my master's degree and a professor from Oregon State University came to recruit students and he came to the chemistry department and he gave a lecture and he encouraged people to go and talk to him if they want to come to Oregon State University for grad school. I was finishing my master's degree and I was very interested to—in what I heard from him, so I had applied to some schools but then I went and talked with him and he was a very convincing professor and so a few months later I wrote to him and I said I'm interested to come Oregon State University and then I got accepted, my application was approved. I talked to several of my professor advisors during my master's degree and they gave me some advice and advices on how to pursue my selecting a subject and a professor, so I studied the faculties at large and their work and I became—and there were really beautiful works, really outstanding work in every field that I was interested in.

**JD:** What do you remember about the advice you were given?

**HR:** Well, one was that well, you've done a great work here at the master's degree, but when you go there don't be too proud and think that you are on top of the world, no. Start from basic. These guys have bigger head than you. And another guy said well, when you choosing an advisor, make sure you pick somebody that you can get along with because they can make your life miserable. So I remember those but my main interest was I'd just taken a group theory—application of group theory in chemistry and I had an interest in physical chemistry with more mathematical background and just doing the chemistry, basic chemistries or organic chemistries.

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So I had in mind three or four professors and when I arrived at OSU, Oregon State University, I—they had encouraged everybody go to talk to every professor, so I did that, and they were also convincing, they were all so nice, they were all so really profound and I was lost. I could not interview one because he was on a Fulbright in England, and that was Professor Nibler. He was only maybe three years older than I. He was from Berkeley, I had studied his background and I really liked his background and so I waited 'til he came back, but one of the professor who already, Professor Hedberg, who is ninety-four now, in February became ninety-four. I learned about it when I went to give a slideshow at OSU last Tuesday. And he was very nice, he gave me a room, office in his graduate students and I was there, and I told him that I want to wait to make up my mind, because it's very early on to sign to something, until Professor Nibler comes back. He

agreed, said that's fine and of course he was internationally known. He was an older—he was professor Nibler's professor when he was an undergraduate at OSU, so the age difference was like twenty years at least and so he knew that, you know. He either had me or had Joe, doesn't matter.

So I waited and Professor Nibler came and he was teaching the quantum chemistry that I was taking, so I liked his style and then I shined in his class and I was very happy that I really liked the subject and he was so good and helping, so I excelled and then by Christmas I had made up my mind, and from September to Christmas I finished my course, so I talked to him and we started relationship. And I was there from 1972, September 1972, 'til I got my degree, spring, March of 1976. It was a pretty quick one, but it was quite, quite productive. I—when I was there I published several papers that I put in my thesis and he had hired several really outstanding postdoctoral fellows that I learned quite a bit from, that one of them became lifetime friend and he works at NASA in California now.

And then, yeah, they taught me not only the lab and the experiment of physical chemistry, I was a spectroscopist, I became interested in molecular energy transfer at the very low temperatures. We were isolating this—we'd make this species, this reactive ions in the reactive chamber that we had built, and then trap them at the 10 degrees Kelvin, very cold, like the stars in the sky that you see, on a star there's nothing around it, so they're isolated and we would study them by shining a laser light or infrared light, study their structures and then we'd warm up a little bit to study their energy transfer to the medium or to the nearby species. It was really, really outstanding. The work that we did at that time, later on when I was at Intel and I was reviewing people's application for hiring. They were still following, we were still doing it, so it's still 1974 or 5 we did this work, it still was very outstanding, and of course Professor Nibler grew and his labs grew and he took over half of the chemistry department, and he became an NSF board committee member who would approve other people's proposal for funding.

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And he is the most admirable scientist, teacher, advisor that I really remember in my life. I've had several of them, but Joe stands out in my heart and my mind. I admire him a lot and he taught me a lot about doing independent work, doing independent thinking. He was not very keen on doing the repetition of the other works that has been in the literature and on other molecules. He was always thinking outside the box, which at that time was exciting, but it was hard because he could do it, I didn't know how to do it but yet I wanted to do it. But I had that post-doc, his name was Lou Allamandola and he believed that science is for people. That's one thing I took from him, and he would just—if somebody would ask him a question about his research, even if it was in the middle of the night, we were working together; he would sit down, even on the floor if he had to, and explain to it.

So I learned a lot from him. And we went camping, the whole group, Joe would take us camping and Lou would take us mountain climbing. He taught me how to do white water canoeing. It was outrageous, he would just, we were so fun. He had two—three kids then, he started one and then he had another one—his daughter was Monica and she was only four or five, I saw them for two years and I would go and serenade for her at her bedroom window, and they were really, really good friend. And Corvallis was just a place to be so intimate and friendly and get to do good work. One other thing that Joe taught me was that yes, you should be careful, but we should really take risks. He was a savvy racquetball player and I played with him and he was, he beat me up all the time. But you know, he was happy that I was—I beat him once. But, for example, I one time, I had twisted my ankle during racquetball playing and my foot was not in a cast but it was painful, so I was trying to be really, really cautious, but he already arranged to go for a skiing with the group and I told Joe I'm not going to come because of this—"oh no, no, you gotta come, because ski boots are very solid, keep your foot," I said no, he said "yes, you should come," so we went, and he was right. The ski boots are very solid and—but all along I was thinking wow, this guy really is focused and he wants to do what he says, but it's me that is hurting, but it didn't hurt. So the risk that he took was some kind of, outside the lab, in your real life. To me was a big lesson, and I saw that he does that in his life too. Of course the money was very tight at that time. He would make sure that he wouldn't damage something that we are not certain of, but he would allow us the freedom, and that I needed because I was going to go and be a professor on my own, whether in Iran at that time, I didn't know, or United States, and I needed that independent thinking. And by him, his way and by bringing those post-docs that were bringing so much of experience, built up my confidence and I could do anything. You know, toward the end of my graduate work it was just so exciting for me, was one of the moments of my life I really admire and I really enjoyed and I keep it so dear, and that's when I met Jo Augin [?], my friend in Corvallis. She was one of my good friends.

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And, so yeah, he ingrained in me a risk-taking, independent thinking and innovation. And not settling for comfort zone, and extending beyond your domain as a challenge to stay alive, whether it's academically or enjoying life and he did that without even saying these words. He did that by example, by being himself, and Lou by being himself. They were just so—I changed, I changed quite a bit. So when I got an offer to go to Iran, they were already supplied but I had enough material to write my thesis and I had Professor Hedberg and Professor Decius on my advisory board. They, of course, read my thesis, they corrected it and they really got them ready to go.

And I got an offer from Iran, from University of Jundishapur in Ahvaz, it later became University of Ahvaz right now, and I went there in April 1976.

**JD:** Before we get too far into your experience in Iran, I want to talk about—ask you about a few more things about your time at OSU. You touched on going mountain climbing and white water canoeing and getting kind of out and about, but talk a little about coming to the OSU campus, what your impressions were. This was, perhaps, yet again another kind of different geographical, topographical area from where you'd been in California and growing up in Tehran, what were your impressions of the school and the campus and in Corvallis?

**HR:** Well, that's a good question. I was shocked. You know, coming from the Bay Area and going to Corvallis, I remember I had arranged for a dormitory because I didn't—I finished my master thesis and two weeks later I was at OSU. I didn't have time to come to Oregon State, see Corvallis, to get the housing or anything, so I just chose Snell Hall. It was a graduate students' dormitory right across from the library, very convenient, and at least I was set for housing and I drove in on a Sunday. On the way to it I started to stop in Ashland and overnight and then when I drove in Corvallis, it was mid-afternoon. And I ran into some difficulty in getting to the campus because some street had just become one way and people were not giving me the right direction. So when I went and was in the dormitory to unload, the person who was in charge of the dormitory at the time, he invited me to have a beer with him and I sat down and talked and I told him my difficulty getting to the campus and he said "oh, they just changed these streets and you are not the first one. The farmers come here; they get totally lost; they go all the way to Albany." So that was the start of it.

But the students were not here yet, so the campus, I mean the town or the city was very quiet and at that time OSU had about 14,000 students and Corvallis had about 32,000, so like a third of the population was gone, especially the area that I was going to reside in. So it was, compared from coming from San Francisco, it was a little wake up call, that this is a college town and the college town that I was used to was Berkeley. It was also pretty crowded.

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But I liked the campus from the beginning. I liked the chemistry department, 'cause it was—the Gilbert Hall was much older. They had just got a grant of I don't know how many, forty million or so, to build, but they were still sitting on it. They were deciding how to do it, etcetera, and it wasn't done even when I left. But it was very cozy and it was very comfortable, you know it was an old building, it was in the classroom you could hear the water pipes, heating going on, but I felt very comfortable there. And it was of course very limited number of restaurant, very limited number of theaters, but nothing around it. Portland at that time was not, I wasn't familiar with it. I heard about it, and in fact it took me several months before I made a trip to Portland, because—and then we took an exam, an entrance exam, not for acceptance but to evaluate our background to see what courses we should start with, and there I met about I think twenty-five graduate students who were joining the department that year, and those were my colleagues and my friends and I still see a lot of them around.

And so, and then the first year I started I was of course a teaching assistant and I had a big load. I took a number of classes per my advisor's recommendation. They assign you an advisor right off from—based on the exams, what courses you should take, and then later they change it to your graduate advisor. And I took some instrumentation, some mathematics, applied differential equation and inorganic chemistry and quantum chemistry. That was a big load. And then on top of that I had five sessions for undergraduate teaching assistant that I had to have weekly classroom session with them, or classes, twenty-five, thirty people. So altogether I had about 150 students to grade and help their homeworks. It was quite a bit of work. But I was younger and I was able to do it. So that didn't leave me much time to go out of town. Yes, and it was very helpful.

**JD:** And I don't know how many, perhaps international students there were on campus at that time, whether they were other students from Iran, talk a little about what students or faculty knew about Iran or thought about you and where you were from and the kinds of things they wanted know about.

**HR:** There was one professor in organic chemistry who was very politically different from me. I was very anti-shah, I was very anti, at that time, we had, Iran had a shah, a dictator, and I was politically active in California and eventually we started something in Corvallis also. But he was very pro-shah and he thought that shah is very intelligent and that's why he's a shah, and oh he has a lot of money and you don't have any money, so what are you talking about? You're just a simple graduate student and he has a whole country. So that was his logic and I could not—Gleicher, he's Professor Gleicher. I think he's still alive. He was a good man, we had different view of him, and he wouldn't be shy of politically disagreeing very ferociously. He had a graduate student, a master degree, who was also one of the pro-shah students. At that time there were many students coming to Corvallis. They were like ROTC of United States, they were ROTC of Iran.

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They were coming from Navy or Air Force and Corvallis being safe haven, they wouldn't send them to Berkeley anymore because the student Berkeley had thrown eggs at shah and demonstrated at the San Francisco consulate, so they would send them to places like Corvallis or John Hopkins, or places like that. And in fact they had an Iranian organization there which was run by this group, and we had a hard time to dismantle that and make a real one.

And but there, things they were showing about Iran and talking about Iran was just the pseudo-modernism that the shah had brought to the Tehran and to the—not the elite group but to the army families. So these people were coming here mostly were affiliated with Army and the shah's family. So the knowledge and what they knew in Corvallis was a whole lot different from the other area, because they knew very little about Iran. They thought Iran is a big desert country, has lots of oil, and then shah has a pretty wife. That was just about—Persian cats, you guys have Persian cats, too. But that was it. That was very sort of insulting to me, because Iran has such a vast culture, such a deep literature, like it goes back to the 9th century and big poets that people adore and reread and it still makes it sing their poetries and songs, and they're all love songs. There are beautiful songs, and they didn't know anything about it. The Rubáiyát of Khayyam, like you know, it's very famous. The guy Fitzgerald did a translation of Rubáiyát in 1800s.

But the campus was from, and it still is, it's a very safe haven from people who want to send their kids to a very safe place, good education and outside of the disturbances that you can see in places like San Francisco State or Berkeley at that time, and so it was totally different but, so and Iranian student, there were about, I think, fifty students there. After I was—when I went there, that guy from the—Professor Gleicher, was I think in his second year. And he left soon after that. Two other graduate student came from Iran. Then there was a growing number of Iranians, and not from the ROTC type, from other background. They came independently. Those guys would get funding from Iran, but like us we had to pay or I was under graduate program, I didn't have to pay. I was working there. So it was changing gradually and we, by the time I left, I remember in March of 1976, during the Iranian New Year, which is on the first day of spring, we had prepared for a show, a play, and he had invited a lot of Americans and it was very, very successful. It was a fantastic play. This guy, I was very hard working on my thesis, I was supposed to leave, so I was participating but not actively like the rest of them. But being person who's successful in his studies, getting a doctorate degree, now going to Iran, becoming a professor, I was big right there. So when I would go to the meeting there were new coming students who would look up to me and so I had a big responsibility to be a role model. But that play was really successful in introducing Iranian food made by Iranian students. They had several plays showing some kind of scenes in Iran, the Iranian clothing and Joe Ogden [?] helped me a lot and to get clothing for some of the Iranians who needed, beside their student clothing, to make that play successful.

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And it was great, there were a lot of Iranian songs and we had a piano player who came from Eugene, he my—very good friend of mine. He was a mathematician but he was from a very affluent family, but he was totally against the shah. So the whole play is—the whole theme was political. And the political was not really being something revolutionary; it was just showing different face of Iran. Showing how Iran's culture, dances, music, poetry is, and how is woman's participation in Iran, whether is in the university, in the fields picking rice among the men, so those are the things that people didn't know, even the students, Iranian students from ROTC, were not very happy that we were showing this thing. Oh these aren't—

this doesn't show Iran is a mother country. Well, Iran is Iran, we're going to show everything. So it was, that was the—when I was left it was much better or different, not better. Different than when I went to OSU, and that was good.

**JD:** And I think you've talked about being a teaching assistant and as well as working in the lab, so there's kind of a big span there, but you know, technology that either you would use as a student and/or a teaching assistant as well as the type of equipment in your labs has changed a lot between the 1970s and now. Talk a little about what were the technologies that were important to your work, in different aspects, and when you were on campus, how that might be different from now.

**HR:** Yes. Well, you know, when I joined Professor Nibler's lab, I was not as experimental-savvy as I'm now. And in fact I had very little experience with equipments. But I was very eager to learn. So that was because my background in Iran when I grew up. My father, really being a first son after five daughters, he wanted to protect me. I didn't even have a bicycle when I grew up. So I always wanted to have hands-on and I had that freedom at the lab. So the equipment that we worked—used at the, during my graduate school, was the state of the art equipment. Infrared spectroscopy to study the molecular dimensions, molecular structures. We had lasers for Rahman spectroscopy and they were just new. Lasers were just few years before that they had been really commercially available. And they were still improving upon them, but we had multiple of them and we had something called dilasers and you could tune to get the wave length of the light we want to use for—and that's where Lou really helped me a lot, because he was so proficient in these things he could look at the sky and just, it was much like dialing his radio. No other thing he had to touch. But when I left I had become such a giant myself, because I worked there—I had so much fun. I was there all the time. It was like I was there more than my house. At night I would go home about two in the morning, come back again tomorrow, the next day, at eight o'clock, seven o'clock. That was from second year on, and I taught, I was a graduate student and did a teaching assistant for, I think about a year and a half. And after that I was a research assistant so I did not teach anymore. It was mine to focus on the research. And I have something gained from my father that was never give up. There's always a solution for something but well, right now that you're working right doesn't work. Maybe you have to step out later on and you have enough resources or different thinking or learn something, come back to it.

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And the first problem that I was assigned by my advisor was the last one I finished. Because it wouldn't work. It was one of the hardest problems that he and I realized that was there. And he thought it simple for me to learn the equipments and not only us, there were several other groups that were trying to do that in the United States too, different universities. But I learned so much. But in between there were the highlights, the big highlights of my life, my educational. And so we—the computer at that time that we had was a mainframe computer that was near the library. We had to punch cards and take our box of cards to go over there and deliver it and get, next day come and get our results. And if you were lucky, we knew exactly when they were going to run it and there is not a high demand, you would get it in maybe four hours, three hours. You know it was - stock and the cycle will print out, we have to come back and take a number and put it in our paper. It was so different. In order to make your presentation you had to have those transparency and we have to write on it, so sometime our handwriting was not good. It wasn't—it was very wasteful, it was really, but that was the state of the art, and it was quite inefficient but you had to do it. And then the paper we would write, you couldn't edit it. It was a typewriter. You had to type it and my thesis, for example, they cost me a dollar a page, and then I would change it in my mind and say well, I want to change this, say well, okay, gonna cost you fifteen more dollar, 'cause you're changing this. I just change a little bit! Yeah, but you going to change the whole thing, you gonna buy—and okay, so it was different.

**JD:** Footnoting was a whole different challenge in typewriter era.

**HR:** Exactly. Yeah. But...so even with that inefficiency I was very pleased, amount of access I had to equipments and how you could produce and publish and then have fun talking about it. And we had internal seminars once a week. Graduate students or professor would give a talk about their work, which we were not in close association, but we were in same department. So it was a very good atmosphere of sharing and it built trust and it built friendship in this whole department. That was—I had a lot of fun.

**JD:** So, you've had this wonderful education and all these great experiences and you said that you had an offer to go become a professor back in Iran, talk a little about what went into that decision and then those first years when you were a professor back in your home country.

**HR:** Yeah, I making decision, it was very, very interesting, because at that time Professor Nibler was on a sabbatical at a Naval Research Laboratory in Washington. He was in close contact with us but he was learning totally new things, because when he came back, the laboratory and everything that we had, all of us had graduated and left, was small part of his research, became a small part of his, because he start going to different direction, what he learned at Naval Research Laboratory. And so it was a big change and I remember when I came back and I said it was just awesome. So different. So decision making for me, aside from Joe Nibler that I talked to, was my friend Lou, and he was leaving to go to Leiden in Holland, to be the director of an astrophysics laboratory that they had this, they were starting, and he had to start it.

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So he was going to go there and start a new astrophysics, cold temperature laboratory and I was going to go to Iran and I knew I had to start something there, because not too many universities had facilities and waited for somebody from here to go and to start working. So, we were both excited and he knew that I want to go to Iran, so—and I had not looked for any job in United States. So, I took that job not knowing much about the university. I had to keep asking them, writing them and they never responded.

But I had accepted the job. I left in April, early April, 1976. On my way, I went and visited several universities. Some colleagues that I knew, one of the graduate students that we worked together, was at Utah State University and started a good postdoctoral research there, and I stayed couple of nights with them. He showed me everything that he had started. He left three months before me. He and his wife are good friends. And then from there I went to Ohio State University and another laboratory I saw from a very good friend that I lived in California with, Iranian. And then I went to MIT with one of my friends from OSU. She had got accepted at MIT to—for geology. She was a very good geologist. And so I was there and eventually chemistry department at MIT, but they said the research that I did with Joe Nibler was really top of the line, so I would talk to them and they would get interested, they would show me their work and then they—I went to Harvard just down the street and visited that one and then went and stayed with Lou's sister-in-law in New York and I went to Columbia and I saw the place there and then flew to France and Germany and I saw—and I was so excited. I was just wanting to get enough information when I go there I saw something that's not continuation of my graduate work. And these were all state of the art, I mean these are the best schools. So I was full of it when I went there.

I very energetic and very hopeful, but the school that they have in there was not really a graduate school program. It was very good for undergraduate, was very historical university, but I never lived in Ahvaz, so by the time I got there it was getting close to very hot weather there and that's exactly what happened and I got there and the weather was very warm and I learned that this is really an undergraduate school. So since I was in the last—in the spring term, I was in the middle of the spring term, I didn't have any assignment, I start travelling in Iran. I didn't have a car so I travelled by bus and went to several, a lot of universities and it was very ironic because I was not—in Iran professors are usually more formal and I was acting the same way I did at OSU and professor at OSU did, you know like OSU people just, it's very, very low-key. They just come in with their little shirt, they don't care if it's wrinkled or and then they go to the laboratory, and that's how I was doing it. They were all looking at me, what's going on, you know? They all had tie, suit, but I had a lot of good things to say, so I would just give them a seminar, and soon I got offer from several of the universities and finally I chose one that was the best at that time, it was in Shiraz.

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And I went there and there I had equipment similar to what I had at OSU. And—but I had to build a laboratory for the equipment was there but the person who bought it moved on to another university to be with his family in Tehran and so I—that's what I did. I build a laboratory, very modern laboratory, and the faculty was very friendly, they needed somebody like me to move the physical chemistry in the right—in the more modern direction. They had good professors, had seventeen professors, fifteen of them from the United States and two from England. One of them was English. But then—and I got graduate students and undergraduate student projects and we started getting funding, but then the revolution had started and everything sort of slowed down and I was there and all this time, during this time I was in contact with Professor Nibler, Lou Allamandola, who was in Leiden at that time, very successful. And they even provided me with some material for my experiments that were not really accessible here. Or helped me to get those purchased in a way that was...God, soon I learned that things I think it was costlier, but \$500 over there I have to pay \$6,000 for it. Yeah, it was just so much bureaucracy and so much bribery. People, that was the old times. In this times, I don't know how different it is, I'm not a professor there anymore.

But anyway, I was able to get grants and had the money and students were very eager because they said I was very low-key and they could approach me and it was exciting. It was a really exciting time there because students have a very sharp sense of their professors, who is working with them, who is bringing them new ideas, who is still working in the old times and like what they call it, the age of the dinosaur. So, and I was lucky to be one of the non-dinosaur ones. But after the revolution the students left, they closed the campuses in a cultural revolution. And we were all active during the overthrow of the shah and we wanted democracy, wanted to be able to improve the education standard, the country. There were other people in the country had other agenda for the political system, but ours was focused on the education system because we had different understanding of where the students' focus should be versus just static academic.

Anyway, we lost our fight against the non-democracy. We wanted democracy and they didn't, so by 1982 I left the university and along with three other colleagues, we started a publishing company in Tehran. A popular science publishing company. We wanted to still do—continue our goal, to reach the students, to reach the teachers, high school teachers, by providing them with a non-text material, textbook material that would help them in their education. And in the first year we published five books we'd translate ourselves and publish it. The name of our publishing company was Dena, so DNA was our symbol, and Dena is the Zagros peak in the Fars province in the state of Fars province, and I had been there with couple of guys overnight and we had a good time there and we just, I remember it, so it was great. And then my other colleagues joined us, they saw that it is really, this is very useful for the country. By the time I left in 1984, we had seventeen ex-faculty members writing and publishing books with us. It was really exciting. And we had such a good time. We never made very much money, though. Not at all.

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But then my wife, my ex-wife was pregnant with my daughter and she was eight months, had to send her to France because we realized that she's a daughter, it's a girl, and now I have two of them to take care of, in the Islamic republic that is totally undemocratic, and I didn't want that to happen. So they went to France and I couldn't go to France, so I took a little workshop in Italy and I went to a UNESCO center in Trieste, Italy, and I was there and it was a group theory workshop. It was great. It was taught by a professor from England and United States. It was pretty intense but there I was able to get a visa to come to United States, because I couldn't go to France to see my daughter and they wanted to come here to see me, so then I came back to Corvallis in, I think it was February '85, and went to see Professor Nibler and Joe was very gracious. He offered me a visiting faculty position to do research. He gave me an office and got me an OSU card and I had access to his labs and graduate students and he helped me to come back to the academics, because now, by then, 1985, it was, yeah it was 1944 I was born, I was 41 years old and now I was competing with people coming who are 30, Harvard, Stanford, 26, 27, for a job. Because my wife from France said she's not going to go back to Iran. And it was difficult but it—I built my stamina back and was able to get back into academia and I got a job at University of Oregon as a post-doc and I was there for three years, but always in contact with Joe and then after that I got an offer from Intel Corporation.

And at Intel it was quite different because I was used to academia and now there is a first company I ever worked. And they wanted to make money and I was never made money for anybody, so—and I was totally focused on my research, doing good work. I didn't care if it didn't made money or not. And they did. So, but soon I learned, oh, this is different, I better make something that is going to improve making money or bringing something innovative that makes more money or changes the direction. So, when I relied back on my—what I learned in graduate school, and also what I did in Iran, that building laboratory from ground zero and my expertise in lab and in science. And the third year I was there, I started shining and became a guy that if something didn't work or the group was taking too long, they would come to me, say well, you want to take this project? And it was always new, it was something new to learn and something innovative and fun. And I was there for twenty-three years. I moved across the whole field of spectrum of semiconductor manufacturing and development. I didn't know anything about it.

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When I was at University of Oregon I really wanted to go to academia, but it was so difficult, because there's so many good people here from all over the world, and younger, you know, and no responsibility like a kid and a wife and so they would go to them, or they had they're coming from Berkeley or Harvard. I remember, for example, that the—some universities would ask Joe and Lou to write me a letter of recommendation, they would graciously write it. I have still the stack of these rejections. One of them say sorry you're not as competitive. We have so many applicants from Harvard,

from Berkeley, and you come here from OSU. And the other said no, you're overqualified, you're teaching school and you're going to get bored, you want to do research. So I was in-between a rock and a hard place, no which way to go. It was very disappointing. You know, those signs. So then I say okay, I'll go to industry. I never wanted to go to industry because of the—I was not used to making money from somebody, I was not trained at it, and I didn't like to work for some people to make money and rework it. I was like—anyway, I knew I'm a good teacher but unfortunately those doors were too competitive. I even went to change my field. I went to NIH, I created some projects that in 1988, before I got the job at Intel, the proposal that I wrote—and NIH is the opposite way of NSF. NSF, the higher score that you get is the better. In NIH, the lower that you get is better. So they started funding from one up to whatever, when the money runs out. The California wanted 164, I got 167. I was so disappointed, but when I showed it to my adviser at U of O, she said "oh, this is great." I said "what do you mean? I failed." She said "no, you—look at it, I have this application, they got 567 points, yours 167, this is your first time. I know it read it but it was all your idea and so forth." It was really disappointing to me, so when I got the job here it was so relief, because I was on a visa. I was on a sort of a week to week visa. I was getting a job, temporary to—'cause the money was out at U of O, for me to get the job for another post out here. And it was really, very, very stressful.

**JD:** Sounds like it.

**HR:** I remember when I went to Intel to do an interview, one of the questions still is how do you deal with stress. And I look at the guy, he was maybe twenty-four years old, an engineer, very nice man, he's still there. I look at him and say "stress? Okay, let me explain to you some of the stresses I've been through. When I was teaching in Iran during the uprising, two of my colleagues got shot. They were put in front of firing squad. Then I was, before coming here, my graduate funds changes, so I have to write more proposal, and so, and I have a kid and this, so you know the stress." It's really, it was a relief for me to get the job at Intel, but it was not something that we wanted to do it.

**JD:** But it sounds like you figured a way to kind of create a niche for yourself that allowed you to continue to experiment and teach in a different way, but still that basic—

[0:59:05]

**HR:** I loved it. I mean my work at Intel I really enjoyed because I contributed a lot. I moved from one—I started in lithography because of my background in optics and chemistry and it was really great, because the first year that I was there and I was learning and producing, I was in the bathroom one day, in men's bathroom, and then from the mirror I saw somebody walk in, a young man, and he also came and wash his hands and he turned and said, "oh, can I ask you a question?" and I said "yes," and he said "were you at Oregon State?" And I hadn't seen his badge, but I remembered he's one of my students when I was teaching assistant at OSU and he was an engineering student and those guys were the least favorite by me, because they did not care about chemistry at all and they just wanted to be there, to show up to get their assignments, and he was one of the smartest, but one of the least interested because he wouldn't pay attention, say "yes, once." He said "you know, I took your course, I didn't pay attention to it. When I got hired at Intel, I went electrical engineering; the only thing I use is your courses." He was in the bathroom at Intel, two month after they hired him. It really was amazing that this guy remembered, one, and second he was so honest, to state how much chemistry really helped him to keep his job. He's a big manager now there.

But it was, but what really made me survive at Intel: what I learned at OSU and in Iran. At OSU was, as I said, Joe taught me how to take risks. Well, what is more important about you—than your life, you know, your body. He said yeah, this is okay, to put your foot in this ski, this is very protective. Of course, he says those word, it wouldn't register. God, my foot has got hurt, I'm going to fall down, I don't know how to ski, and he taught me. He spent about two hours with me going up and down the rope and make sure that I'm not falling. I mean he wouldn't just say go do it. So those things were something that unconsciously brought me to—it was okay to move from one area to another at Intel, its okay to do experiment, although you don't know, although other people don't dare to open this equipment. I would open the equipment, because they are so much hands-on, you know. And then building from ground zero the laboratory in Iran, all the chaos going out in the country and revolution was going on, and I had a part in it, but the discipline was that yes, you come and build your laboratory. Every day you put your part in there and they'll go participate, because you don't want to bums in the country, you want to have people support your revolution happen, so then whatever you do, what do you do? Well, you have to have something. You have—I'm a chemist so I do my chemistry and that part is an addition to it.

So, those lessons really helped me at Intel and I was very grateful that they would allow me to do it. Because I was producing now. When I got my lessons that no, a company you have to produce and make money, not to publish a paper and then you don't care because you did your science. You have to make money, otherwise you don't do it. And quickly I was able to do it and then it was really, really enjoyable. I made a lot of contribution to that company and they, I enjoyed working there. They taught me a lot too; you know I was just so driven. When I went there, the productivity of each person was like 1.4. One person would produce like 1.4 people, so two people would produce themselves like three. So instead of hiring three people—two people were good enough. But with the more electronics and information technology, advent of computer, etcetera, etcetera, and equipments being so raw and people who had all these experiences and they could just cut through the pitfalls and then go to get the results. The productivity is more than eight—I mean it's, one person can do eight people's jobs, in some areas. It's just amazing. You know, like you used to carry the, what we call these wafer boxes, by hand. Now it goes all by automation. Well, that takes one person out, you don't do it. So, if you had to do a lot of monitoring of equipment before we start running the rear product, now we have inline monitors. These are the thing that people like me brought to that company, you know, there are many, many more smart people there. I'm not—but I learned and I learned from them also. Way before me there were very innovative people. It's just, but you have to have the eyes, and that eye and that interest came to me from OSU and I really, I tell Joe every time I see him, I tell Lou every time I see him. It's really, they understand, it's really this is my life changed there, and for better.

[1:05:32]

**JD:** Well, and you're talking kind of kind of specifically about the work ethic and the way that you use that in your career, but also there, I think the term that's used a lot right now is work-life balance; you also figured out how to do that. And talk a little about just sort of your personal life that went along with your career at Intel and up to the present.

**HR:** Well, that's a very good question, because that's what a lot of companies in United States, high tech companies that are struggling with, work-life balance, because I think I was very lucky in my life, because I had such a, not by plan but by circumstances, learned from outside of my academia, how to connect to the world. When I was growing up in California, I was there from '64 to '72, that's when I went to OSU. There were, it's the biggest social uprising in United States, you know Vietnam War, or the free speech movement. And I was part of it. It took me seven years to get my bachelor degree, it took me one year to get my master's degree, it took me three years and a quarter to get my PhD, because that seven years really built me.

And the reason wasn't an interest in physics. I fell in love with a girl who was in chemistry, so I became a chemist, but I didn't like organic chemistry at all because it was all memorization. I was, and from my background in high school was mathematics and physics. It took me three years to get my physics. By then I was, you know, not that enthusiastic. But I always liked mathematics, so then this country was in the upheaval by the social changes and music and hippies and I had to work all my life at United States, I worked in the restaurants. I was a dishwasher and then became the busser, waiter and bartender in San Francisco. And then I had to go to work sometime in the day, I worked in a topless bar for a while, three months. And I would go to university at night. But you know, I had to make it. I remember that I would go, I was a busser, I would serve coffee and these old people say get out of here, I want to look! I couldn't understand, you know, I was just 21 years old. So, all this thing and then I got involved with all this social movement in United States and got gassed and everything in San Francisco, Berkeley, and I fell in love so many times in America. And each time I learned something, you know. So, it took me a long time to get my—but, in my fifth year or sixth year of my chemistry, I would take fifteen, seventeen credits, and I would drop out and not, because they were not interesting to me.

When I took physical chemistry it was just, believe me, like a shock. Wow, you had chemistry in it, you had physics and you had a lot of mathematics. I loved it. I just, my friends just started disappearing because now I had a different friend called books and library and I started shining. My physical chemistry teacher would say "whoa, you know, which school do you from? You know, I see you, first time I see you at this school." And he was sharing the office with another professor and he said "what, you haven't seen him? He's called Berkeley bar man, it's a Berkeley bar here on campus." He said "oh, what are you doing in chemistry?" "He's a chemist but he never comes to chemistry. Now I don't know why he likes your course." I said "it's the best field in the lab." It was just changing me. It was so good.

[1:10:03]

And oh, then I had connected, I made a lot of connections, you know, unconsciously that I was interested not only in one subject matter and getting my degree and going back home, but now I had learned, I really learned American culture, being out there with them, shouting and wanting democracy, wanting free speech and oh, they all made me you know—pot was around, acid was around, Haight-Ashbury was around, Golden Gate Park was around, you know, it was just, these are the experiences you don't get by watching movies, or—a lot of people were scared, the places I would go there, were scared. But it was easy for me because I lived in a house with a Jew in the middle of the Arab-Israeli war. He became such a good, tight close friend. He, I learned so much from this guy. He was allergic to watermelon. We both worked in a restaurant, it was summertime. He was allergic to watermelon. He would touch watermelon, he would swell up. He would buy watermelon, ask the guy to put it in a bag, carry it you know, arm length away from him, and he would bring it for me. I could not believe it. I mean he and I lived in the house for two, three months and he was a, I learned very quickly he was a homosexual but he never told me that. Never. He was afraid that he would lose his friendship because I was from a country that he thought that they wouldn't accept it. But you—but these are the things you know, that there's nothing, not of my studies, not of my—but they add to your life, and then you can rely on them. You see something it reflects back oh wow, that's why. Your understanding goes up, your compassion goes up.

And so when I got to Intel I saw a lot of kids coming from school; 26, 27, from MIT, from all this, but, their life was go to high school, go to best university, at the very age, young age come out and get a job at a place like Intel, Microsoft and, and you know at graduate school you worked very hard. Sometimes you worked until two or three in the morning, because your work, you want to finish it, come out. And they had this habit, after five years they carry it at Intel, they love it. They don't want any experienced guy, they want fresh out of school because of this, and they will educate them, yes. You can do the same thing here. And, what do they learn? They learn to stay there twenty-five, thirty years. They love managers there. They're—god, money grows out of their ears. They cannot retire because they don't know what to do with themselves. They don't. You going to retire? What you going to do? Going to live. I don't know. I said "okay, now January 2nd, you're not coming to work. What you going to do?" I said "well, then I will learn how to retire." They could not understand, really, and some of them which were honest said "really I don't know what to do. My wife doesn't want to travel by car, she doesn't like driving the car. There are a lot of places that you tell them you're going—you can go by airplane. And maybe one of these days I'll put my backpack on and walk away." He was honest, but he's still there, he's not doing it. They forget to change their patterns. Believe me, they got cars and some of them I know they sit and I say, yeah, you still have the same path. You still has you know, trains coming down. He doesn't even see. You know he don't see it.

I was lucky to have Tami in my life, because she is so creative. She changes things, she's an artist, she gets—I'm used to setting up a system and okay, forget about it, now it works. And now I do some other thing and this becomes part of, you know, she doesn't like it. She want's change. So she would tell me, say "you don't even see that there is that spot on that wall, you're living with it. That pile of things in here, what you going to do with it?" and I don't see it, she's right. A lot of people become accustomed to that.

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So, one of the setbacks that I had was that I went through a divorce back in 1993 and I haven't seen my daughter since 1997. She's thirty years old now. She'll be, on August 19th she will be thirty years old. She's in Seattle, she's doing great. She's a good musician; she's a violinist and also harp. When she was in high school her advisor told me that she became nationally number one, that was back in 1997. But when she was finishing high school, though. And then she went to Europe, in Genoa, and became internationally second.

**JD:** Wow.

**HR:** Yeah, so I miss her a lot but then I met Tami in 1994, we had blues festival, in a booth of—table booth. I had a friend from Corvallis that I hadn't seen for many, many years, and he and I paired up and I was—I went to see him, sitting there, and then she walks in with a kid that happened to be her ex-boyfriend's daughter, and I start talking to her because it was my daughter's age. And I was very good at that time with kids because, you know, I was missing my daughter, I was studying a lot about kids and parenting and etcetera. The girl actually came to me and we were talking and that made her—it made some impression on her. So, later we met at Joe's house, and Carlton's birthday that was in the booth. He was the guy who introduced me to Tami and now Joe was the one who set up the second time with Tami was there and I met her and then she had learned more about me from people who were around her and we became interested and we

continued our relationship and in 19—in 2004 we married, after ten years being together. And I was really in a lot of pain at that time because of my post-marriage and she was a soothing agent, and also changed my directions, because she introduced me to all these artists in Portland, they're the best people that I've come across. Potters, jewelers, designers, fabric people, you name it, ceramics, sculptures, and I had learned a lot of Portland's music. I had become good friends with Portland musician because I used to go walk in Portland every night after work. It was so hard on me, you know, to be alone, and now they're really, really good friends are still there in Portland. And so we merged this together. She brought me the artists, I brought her the musicians and we stay together. I used to go to her studio and build—she taught me how to make my first ring and it was—so I got enriched again, you know, but I was working at Intel and was coming sometimes to see her with Intel culture and she could not understand what is this person.

Now that I'm retired it's really so different. We start traveling together. We have travelled with—when I was working we would take off and go places weeks at a time, two weeks. The—I worked on my retirement almost ten years, how to make sure. I would learn that people retire and then they go get another job, and I didn't know why. Some people needed to go and make more money because they were in this habit of well, we'll make money, we spend it. And others were just didn't know what to do with their life, and I didn't know this. I just see well why does he retire from here and then go somewhere else? Anyway, well I didn't want to go back to work. I said when I retire, that's it, because there's so many other things in life that I want to do. And Tami's step-mother was also told me something that really stayed with me. She said she saw me dancing, I really like to dance, and so she saw me dancing every time that we were together, on one occasion or another, and she said "Hossein, I recommend you and advise you to retire when you still can dance." 'Cause her father kept asking me "when are you going to retire, when are you going to retire?" I'd say "not now, not now," and then she told me this and I thought a lot about it. She was right. Because a lot of people retire but they're so out of energy, so been beat. I just wanted to be—and I, I took that advice.

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So I planned, really planned, but then we had this financial crisis in the country, the wound in the industry and the high tech industry went down, so everything changed. But, my ten year plan didn't change. It was—so I was fortunate. When I retired, before retirement we went my third sabbatical that they had delayed; we take eight week sabbaticals every seven years, paid of course, and then I had four weeks of vacation on top of it, so combined this, we went to Europe and traveled and drove all over Europe. From Spain to France and Italy and then go through Austria to Alps, go to Germany and then go to Prague. That three months was so great. I think back and I said I want to retire. And they say okay. We hate to let you go but you want to go. But they don't talk about age at Intel. So, not too many people know how old I am. They would just come and say hey, you're too young, why you want to retire? What you going to do? But I wouldn't tell them, you know, hey man, I'm like your grandpa.

**JD:** Well, and I want to give you a chance to talk about one recent adventure that you and Tami went on together, which was going back to Iran together for seven months. And talk a little about what it was like to go back to your home country after, I don't know how many years it had been since you had been there, but you also now had Tami with you, seeing this country through fresh eyes.

**HR:** Yes, yes, it was—yeah after our Europe trip we made one big, major travel to Africa. Northern Africa. I stayed there four months, Tami stayed there three months. She had shows to come here to—she was the head of the planning shows, she had to come back. But we went to Egypt, stayed there five weeks. We traveled all over. And then we went to Mali and the—it was right before we went to Mali, we were in Egypt, that we heard that in Timbuktu they had kidnapped some French and one German, so we wrote to the Malian officials, what's going on, and they—we were going to go there because of Timbuktu Festival of the Desert in Timbuktu, and is it safe, because? Said yeah, we'll get back to you in a week, and they did and they say yes, their government had said that we guarantee the safety of the festival. So we went there, we went there to Mali in December 2011 and we stayed there until, well I was there 'til February 2012. Tami left end of January. And we went to the Festival of the Desert and that's something that is just totally, you don't find it anywhere else in the world. It's right in the middle of the desert. To get there we have to take a boat in the Niger River. It was bullet type of boat, but they're just so low, there are only six people that are, yeah, these were just amazing, amazing experience. Then we go in the middle of the desert in the sand dunes and then people all sitting around and you're in tents and you stay there and the music, it starts about seven o'clock and goes 'til two in the morning. It's so hot in the morning during the day. So that year—and then we went to the other places after the festival. We saw the whole Mali.

Then when we left, about a week or two after we left Timbuktu, it was occupied. And that festival is annual but now is not in Timbuktu, it's another nearby country.

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Then we went—Tami came back and I went to another festival in Segou, and those are really amazing, amazing festivals. All African musicians come from all over Africa and they play. And it's day and night. Segou was in the daytime there were people who were not in the part of the festival but then fantastic musicians, you know there were Tuaregs and camels and it was just fascinating. The people in Mali really changed me so much, 'cause it reminded me so much of old Iran. And then I went to Morocco after that and by myself. I traveled for a month in Morocco. And that was great. I went to every bazaar in every city of Morocco. And I felt so comfortable because I grew up in bazaar of Tehran. So, when I came back and Tami wants to pick up some Farsi here and there, taking classes at PSU and PCC, and of course used me sometimes as a tutor, and tapes. So, she was becoming more and more interested, but one gift that she has, and that's also a problem, is that she's a linguist. She doesn't just want to learn the languages to speak, she wants to know the root of the—that's her, and she unconsciously, she hears a word and she wants to enunciate it correctly so she knows how to get that from me, but then she asks me okay, where does this word come from? And many times I cannot answer that. So, the interest now shifts from learning the language to learning the origin of the word is. It goes back to some other languages. But anyway, we said okay, our next trip we'll go to Iran. But it took us quite a bit to get her material to get in, because my divorce was not done in Iran, I was married to, according to Iranian government, I was still married to another wife. And even one time she called a place called AFTA, which is the interest section of the Iranian government, United States, to facilitate visas, etcetera. It was in Washington D.C., part of Pakistan's Embassy. She called them and said:

"Yeah, I want to—I'm married to this guy."

Said "well, he has a wife."

"That's right, I'm his second wife. You guys allow five wives."

"No we don't! You are—he has to get divorced and then he marry you."

But then that took a long time, but once it was done—my sister helped me a lot to go to the courts and get that divorce done there—they wanted to make sure that I have paid my wife's, half of my, whatever our belonging is, or whatever our agreement was in Iran, and since my ex was not accessible, we had to do that through her family, and they wanted to wait, and it was a long time. But after that she got her passport, Iranian passport, and an Iranian birth certificate, just like United States. When I got citizenship they gave me a citizenship paper and my picture on it and a stamp, I'm a U.S. citizen, and then based on that I can get a passport. So now she can go in Iran anytime she wants. So, we wanted to go there and she retired from her work. She said I cannot go to Iran for this many months and still be employed. So, that was a big decision for her to make, because she has worked for as a jeweler for thirty-four years. She's very well-known and galleries depend on her personal clout. And she has a passion for it, as a designer and a maker. And she always made one of a kind. It wasn't a production line. So, she would make an intimate relationship with her customers, and she liked it, she really liked to work with her hands.

[1:30:15]

Anyway, we went to Iran and I don't like to travel so far and go for a short distance, because you're taking a risk when you take a plane. Whether it's personal risk or general risk that you make get an accident, and it is tiring, you know? As you age like me, you get tired. So, airplanes are getting smaller and not more friendly. So, I said I want to go there and stay as long as we can. I've worked on this, seeing the whole Iran; that was my dream. And it would take us seven months, or eight months. And I really wanted to see places in Iran because when I was six years old my father started taking me to his shop in the bazaar. Tehran bazaar is the biggest bazaar, covered bazaar in the world. I don't know how many kilometers. It's very big; you go and go and go and go on. And it changes from merchant to merchants, and it's very interesting. People are friendly to each other, they always, they trust each other, they leave the shop and go and do their things, and they bring their kids to this in summer time so the kids can play and learn. And then what I saw early on was that people come from different part of Iran, that have different clothing, different accent, or even sometimes they talk and I couldn't understand. And I would ask—and they would come to my father's shop, a lot of them, and would bring him gifts or bring

material for him to buy and then buy his material, so it was close interaction. They always pick on me because you know I was a little kid and we're friendly, you know. But I would ask my father, why are they so different from us? And he would explain. And I started reading about them; novels, stories and then later in the school, history, and learned that there are different ethnical groups that have moved to Iran throughout the history of thousands of years and resided there, but have kept their identity. They all look not very wealthy, the one who come to bazaar, but they all were so kind, they all wanted to make sure they leave a smile on your face when they leave. They would teach you a little bit.

So, they made a very good impression on me since I was a kid and I wanted to go see their homeland. So—and Tami wanted to go see them, too. It wasn't a pull from me, she just wanted to go, and I told her, this is different. But she's living South America when she was much younger. She was not even thirty years old that they were there and stayed for a year and a half, two years, and she went to Amazon, so I knew she can do it. So, but I have a big family, as I said, and I, she had a lot to learn and they all wanted to see her, oh, never been there for fourteen years. So things had changed. A lot of new kids have come. The older ones have grown up and got married. So, it was really fascinating. We went there and went in March, we left U.S. March 1st, we were there on March 3rd. My brother and my, one of my sister, picked us up and the next—I told them I don't want to stay with any of them. They all say oh no, you're going to stay here, this, no, no, none of it. I do not want to stay with any of you, I want to come and visit you. So we stayed in hotels and that was very good because then we had our freedom and we'd go visit them and it was always fresh.

[1:34:24]

And so we told them, this is our plan, we're not staying in Tehran, we're going to go travel. So, that's what we did. We traveled 17,000 miles. We bought a brand new car and we got a map that I had here, you know my sister had sent me that map because I wanted to plan all this. And no GPS. And we, yeah we went, we made three major trips, went all the way south to Persian Gulf to the islands of Iran. I'd never been there. 17,000 miles that we traveled, seventy-five percent of it was new to me. I had not been to those places, or if I had passed through, I never stopped and be with people, so it was as new to me as Tami. But, my advantage was that I spoke Farsi better and I knew the culture. But our trip in Africa and Europe has made us so resilient, you know, we didn't think that we were American or Iranian, we were just world, you know, just whole world was ours, so what's the difference if we're here or there? We never felt that we were in a foreign country. And it was fascinating. It was really, really fascinating.

We went and saw all the ethnic groups and their homeland, their clothing, their music, their food, and stories that we have, we have interviewed twice since we came back. Once on NPR and Think Out Loud and once on cable at Voices of the Middle East, and they're all on the internet under my name, and then the Intel retirees asked me to write an article for Life after Intel, and I asked them how long should it be? They said "oh a few pages and a couple of pictures," and then they assigned me somebody who was their editorial and their newflash, they have a monthly newflash for retirees. So we started working with them and she said "yeah, well send me four or five pictures and I'll choose two or three of them." So okay, so I sent them our first draft and she said "oh, holy Pete! This is not a one-time thing, send me more pictures and we'll start editing, it took us two months. She was going to publish it in January and we end-up publishing March and April. Two articles, eight pages each and many, many pictures. She did a great job. Tami did the first draft, the editing of my first draft, and then she'd change it and send it to me. So it was great, it was great. So, we have given five slideshows. We took about ten thousand pictures and movie clips of our trip. We have family pictures, friends from high school, from college, from my colleagues from university and my publishing company. Tami became really good friends. We were all crying when we were leaving.

And you know the stories, there are many, many. Every corner that we went to was a great story and a great historical site to see. There were things that we saw there dates back to nine thousand years ago. They have artifacts where excavation have shown how old they are. Amazing. And I didn't know about these things. I knew Iran is a very ancient country, but I'm not seeing those. I mean we went to stone village, and people are still living there. Since nine thousand years ago, the same places. It's stone, you can't change it, but they made it a little more modern. They have electricity now. The tourists, they go and stay there, foreign tourists from Europe mostly, overnight, because this is in Lonely Planet. They learn it from there. I didn't know, I learned it from Lonely Planet too. I went there. I took my sister and her family and then they'd say "wow, we didn't know this thing exists here." And there are many, many things in Iran that we are missing. It's a big country. It's seventeenth largest by land, now by population of seventy-five million people. People are nice, beautiful. Governments come and go but those people have stayed, you know? So we would—they—Tami had to promise that

she'd go back in 2015 again, because you know, she really made this bond with Iran. As I say, she has been many places. She speaks fluent English, Portuguese because she lived in Brazil for a long time, but it's just different, she says, in Iran. Different not only because of the family, because we were with them but we were not with them most of the time. It just feels different. So—and of course, I inherited that, you know, I grew up with that. But having—hearing this from her, it makes me feel, well, maybe there is a truth in that. So...

[1:40:23]

**JD:** So, while you're in reflective mode here, I guess do you have any, either reflections or advice or thoughts that you'd like to share with current OSU students about their, you know, what advice you might impart to someone who's on campus now and starting out in their education and careers?

**HR:** Well, that's really the core question for people who go to schools not to be only focused on their work as a student, but rather learn about life outside of school. Thinking that just getting the education, coming out, getting jobs, which are very important, all of it, is not going to make a full life. It's not going to make a full life. It's just you have to make—the bricks that you build are getting an education. The bricks that you build in your life, it needs to be cemented, and that cement is going to be missed, so unless you really connect to the rest of the world. If you're learning science, take the science to the people. Whether it's through becoming a literal teacher, or volunteer work, or explaining things for people who don't have that opportunity, they're not as lucky but you have to live with them and don't look at them as they don't know what I know, that's no good. And by doing this thing, you make those little connections; you make that cement or make that grout. I made this mosaic and this backsplash, I learned so much from her, you know. She just—and putting the grout on is—that's not you slap on it, you cannot, you have to make it connected and those connection you make your life really rich. Really rich and oh, you don't see your life as okay, high school, college, work, family, you see connections between them. And if is only true you making that connection or you're planning and choosing and leaving the rest behind, it's going to be weak. You've got to make it strong by learning other things, make impression of you and accept it. Accepting that our people, things outside of your control, your circle of influence and you got to accept it. It's sometimes painful, but that's life, you know? But you've got to just-happiness is a lot of things, but you have to also think of how you're going to change this world. A little thing that you make affects people, affects—learn how to build things with your hands, learning how to build things with your hands teaches you so much, builds your confidence. And then you can be anywhere you want. But you have to work on it all the time, even until you die, getting better. And by just learning through books you improve your mind—but sometimes you really get a hell more out of it by making it human, by getting your hands in.

What I'm doing these days, I'll always be interested and question why we're so one-sided. Human beings use their left, right hand, use their right eye if they want to look at the microscope or something, keep to their right or left, depending which side you've been accustomed or encouraged to use. I always wanted to use—and I'm right-handed. Right-footed, everything. I wanted to use my left. I'm still struggling but I'm very good at it now, and I had to because I, when I was in Corvallis, I did one of my best experiments and I had to go eat lunch and I had an old bicycle and my brother and a girlfriend were with us and I had an accident. I fell and broke my right thumb. And for five weeks it was in cast. I lost my experiment, I lost a lot of things, I could not do anything with my left hand. I could not use my right hand because you cannot do anything with this unless there's a thumb.

[1:45:51]

**JD:** That opposable thumb comes in handy.

**HR:** Yeah. And I had to use my left hand, but I was so clumsy. I could not shave, I could not eat, I had to learn, and to write. I'm pretty good now. Consciously I work on it, but I'm still not habitually with my left. When I eat something, it's very easy when I want to use this one. Sometimes I'm going like this and I stop and I say wait a minute, let me see how I do it with this hand, and then I use this one. So, my mind is working. It's just that I'm a human being. I believe it is hard. Every time I want to reach, this one goes first. And it's not me saying it. And now I read an article in Scientific American, last week it came out: habit, how hard it is to break the old and make a new one. And I said "god, I'm twenty years ahead." It's really hard. I'm not successful in choosing this hand. Unless this is very close to this. It always goes this—and I don't even command it. It goes automatically. So, this is how it is if you spread yourself and connect to different things. You

will have a richer life, that's all I'm saying. It's nothing better or worse, it's just a richer life. But you've got to take risks. The more risks you take in your life, the wholesome—the more wholesome you become. I still have a long way to go.

**JD:** That seems like a lovely note to end on. Thank you so much for sharing your thoughts.

**HR:** Well thank you, thank you for giving me opportunity to be with you and bring some of this up.

**JD:** Great.

[1:47:45]