



Jim Welty Oral History Interview, April 21, 2015

Title

“Seven Decades of Mechanical Engineering at Oregon State”

Date

April 21, 2015

Location

Valley Library, Oregon State University.

Summary

In the interview, Welty provides a detailed overview of his upbringing, which was characterized primarily by frequent relocations, before, during and after World War II. He then discusses the roots of his interest in engineering, his decision to enroll at Oregon State College, and his recollections of the campus climate during the post-war years. He likewise notes his involvement in Air Force ROTC and his extracurricular activities while an undergraduate, including his involvement with Sigma Phi Epsilon fraternity.

From there, Welty recalls his first job following college, working as an aircraft engineer for Pratt & Whitney. He then recounts his term of assignment within the Air Force, his memories of flight school, his decision to return to a university, and the circumstances that led him to enroll, once again, at Oregon State. In describing his graduate experience, Welty recalls his engagement with coursework on both mechanical and chemical engineering, his first experiences with teaching, his concurrent employment with the Bureau of Mines, and the offer of a faculty position that he received upon completing his doctorate.

Welty next reflects on his tenure as a faculty member and as department head, noting the fiscal problems that encumbered progress in the College of Engineering during his years as an administrator. He also shares his memories of co-authoring a very successful textbook and engaging in research on fluid dynamics and heat transfer, remarks on changes in engineering technology that he has observed, and makes mention of a few noteworthy students that he taught while at Oregon State.

As the session nears its close, Welty discusses his involvement in professional engineering organizations and his endowment of two faculty positions at OSU. The interview concludes with notes on Welty's family and his continuing interests, and his expression of pride in having studied and worked at OSU.

Interviewee

Jim Welty

Interviewer

Mike Dicianna

Website

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

Transcript

Mike Dicianna: Today is April 22, 2015 and we are at the OSU Valley Library in the Wilson Room to capture the life story of both an alumnus of the class of 1954 and an emeritus professor from the school of Mechanical Engineering, by the name of James R. Welty. Jim we thank you so much for participating in the OH 150 project.

One of the things we endeavor to do with our people is to get a whole life story and so we start with a brief biographical sketch, where and when were you born, early childhood years, that type of thing.

Jim Welty: OK, I was born in Kansas during the Dust Bowl days, in 1933. And my family moved from there two years later; the principle reason was – I was young at the time, I don't remember it – but I got dust pneumonia. And so my father decided he didn't want to expose me to any more of those kinds of atmospheric problems. So we moved from there to Twin Falls, Idaho. And from Twin Falls to Portland, and we lived in Portland when I started elementary school at Ockley Green Elementary School, I think it's still a school. But I don't think it's a primary anymore.

Anyhow, I finished the – excuse me, I did not finish. I attended grade school, Ockley Green, starting in 1939. And I was young for the normal parts of my classmates because I was born in October, so I was actually five. But they allowed you to begin if your birthday was before November 1st – well I squeaked in. Finished the first grade actually in Eugene, Oregon; my father moved to a different position and we lived in Eugene. And that stay was cut short because he was called into the Army, into active duty. He had been in the Army Reserve since graduating from college. And 1941 was the time when people began to think about mobilizing and getting ready for the conflict that people were expecting.

So he was initially stationed at McCord Air Force Base in Tacoma, Washington, in the Army Air Corps. He was, I believe, a captain in the reserve. He did have an electrical engineering degree from Iowa State, and with that background, fairly early in his stay in the Army, he was assigned to learn something about this new technology called radar. And so he was assigned to a six-month training program at MIT in Cambridge, followed by a six-month program at Harvard. So we were in Boston then for summer and most of the following year. And a sidebar is that, while we were in Boston, on December the 7th, 1941, my parents and I attended the Old North Church, in Boston, where they hung the lanterns for Paul Revere – one if by land, two if by sea.

Anyway, from there he was assigned to Fort Monmouth, New Jersey, so I spent a few months in Fort Monmouth, and then he was assigned to do some traveling for the Army. So I was farmed out to some relatives in rural Iowa at the end of that particular year. I went to a country school in rural Iowa where there were eight grades in one room. Some grades weren't populated at all; I think there was one other student in my grade. So I started out that year going to a large elementary school in suburban Boston, Massachusetts and ended up in a one-room country school in rural Iowa. So that was a contrast.

[0:05:05]

We moved from there to Florida, where my dad was assigned to a position as a member of the training cadre for a radar battalion which subsequently went to Italy. And in Florida the school was bigger than the one in rural Iowa, barely. This was a small town, Oaks Town, Florida, which is now a resort; in those days it wasn't more than a crossroad. Amway, there were two rooms to this school – the first, second and third in one room; fourth, fifth and sixth in the other room. And during the first year, because of my various schools up to that point, the teacher, shortly after the school year began, decided that I was better suited to be in the fifth grade than the fourth grade. So I started the year in the fourth grade and completed the fifth grade there. So I was already young compared to my classmates, now I was much younger than my classmates.

And so my father was assigned overseas from that point on and we moved to a place called Kirksville, Missouri, northeastern Missouri, where my mother's sister lived. And my mother and I and my younger brother at that time lived in Missouri until the war ended. And just about the end of the calendar year 1945, we moved back to the Northwest to Bremerton, Washington, where I finished junior high and took one year of high school. My father was moved one more time to Medford, Oregon, where I finished my junior and senior years. And I graduated from high school in Medford.

So that takes me through the early years. I went to, I think the count is eleven different schools between the first and twelfth grade.

MD: So your main time in grade school is during the war years, did you get involved with the things that every kid did, like the scrap iron drives?

JW: No, not so much.

MD: Because you were kind of rural to that?

JW: Well, I think those programs came along, I didn't happen to be involved in them. Most of the time during the war - or the time that I remember well of course, when I was a little older - I was in Missouri and the war was known to exist but it didn't really touch the lives of people there so much. It was just something in the headlines. And people cared, but they didn't have any organized programs such as the ones you mentioned.

MD: That's interesting. Now, you finished high school in Medford and you were starting to look for a college at that time, what influenced your selection of Oregon State College? Or did you look at other universities?

JW: Yeah, during my senior year of high school - I did well during high school and I thought about going other places. I applied to some schools, I was accepted at MIT and at Carnegie Mellon; I don't remember why I applied to Carnegie Mellon, but I did. And I actually had a scholarship offer - not a complete scholarship - to MIT. But for reasons that I really can't explain now, I decided that I wanted to stay closer to home. I was still sixteen and my folks didn't have enough money to really send me to a place like MIT full bore. So for various reasons - I knew there was an Engineering school in Corvallis, so when I was sixteen years old I enrolled as a freshman at Oregon State in the College of Engineering.

And at that time, initially you didn't get assigned or you were not part of a specific department. We had a general engineering program which everyone took during their freshman year, so I started off the year thinking I would be a mechanical engineer, but I was exposed to other things. But it turns out that was my major.

[0:09:58]

MD: And so there was never any doubt that you were going to be an engineer from early on?

JW: Well, it was talked up. My father had that background and I had a talent for math and science, and it seemed like a good fit. I really didn't know what I was doing, but everybody said that's what you should do. So I said, "ok, I'll do that."

MD: Well, your freshman year of 1950 was significant in the fact that a lot of the returning World War II vets were just finishing up. And so here you are, a very young freshman, in contact with these grizzled veterans. Was that a different experience for a kid just starting school?

JW: Well yeah, it was interesting. I pledged a fraternity during the first term of my freshman year, so I lived in the dorm for the first term and then I was in the fraternity. And a lot of my fraternity brothers were veterans. And so we had a range of ages and experiences during those years. It worked out fine; I learned a lot by being around more mature people who had seen more of the world and done things. But, yeah, it was a significant time and those were influences that I had during that period.

MD: It was a unique time in Oregon State College, because it was a huge influx of veterans.

JW: Yeah. I think the biggest classes were maybe the two classes before me, but there were still some in the class of what would be 1951. And they kind of diminished as the years progressed.

MD: Kind of cycled through, yeah.

JW: That was also during Korean War - maybe that's what you're going to say.

MD: That's true, did you lose some of your people that got called back up?

JW: Yes. And at that time, everybody that could pass the physical took ROTC as well. So I was in Air Force ROTC as it happened and went through the first two years, which were mandatory. And at the end of the sophomore year, the second year, the colonel came in and told us that he had our names on pieces of paper, and people who elected not to take advanced ROTC, their information would go on one stack, and people who did, theirs would go on the other stack and they would be applicants for the advanced ROTC program. And the people on the other side, their information would be sent to the draft boards.

MD: [laughs] Yeah.

JW: So the percentage of people opting for advanced ROTC was pretty high.

MD: And so you, being in Air Force ROTC was a legacy from your father?

JW: No, that was by chance really. Oregon State just got into Air Force ROTC in the very late '40s, like '48 or '49.

MD: Yeah it was '48 because the Air Force was formed in '47.

JW: OK, anyway. In fact, as freshmen we wore our uniforms one day a week. And the Air Force cadets wore the same uniforms as the Army cadets.

MD: That's true, yeah.

JW: But that ended the second year, we finally got some blue uniforms. But you took mandatory ROTC and the classes were offered every hour during the day. And so, the decision was made that everybody taking ROTC at eight o'clock would be in the Army ROTC, nine o'clock, etc. They laddered it up. And I happened to be in one that was Air Force. And it was understood in those days that if you were physically able and could pass the flight physical, that when you completed your degree and were inducted into the Air Force, in my case as a second lieutenant, that you were going to flight school. Which, I wasn't too sure I liked, but that was the way it was. So I tried it.

So when I graduated – I got a B.S. in mechanical engineering but also a commission in the United States Air Force. And I decided to work in the engineering field for as long as I could before going into the service. So I delayed by entrance into the service by about five months. And I worked at Pratt Aircraft as an engineer during that period, in East Hartford, Connecticut. And I entered the Air Force with that as my permanent home record, Hartford, Connecticut. So that began my next lifespan, my life experience.

[0:15:10]

MD: OK, well let's catch up on a couple things that I always like to hear about. We look at people's campus life and from your era, one of your contemporaries, one of your classmates actually, is Ken Austin. And he was the original Benny Beaver. Did you go to the football games on a regular basis to see his antics as the first Benny?

JW: Oh yeah, I did. Oh yeah.

MD: Because we just interviewed him recently and he told some stories about having a real live pistol on him that he would shoot.

JW: Oh ok, yeah he had some things to say that I can't repeat.

MD: Well yeah, he actually graduated in '54 when you did.

JW: Yeah, he was a little older. I don't know the full story of that. I didn't know him well but I knew him casually.

MD: Yeah, because he was Business and...

JW: Yeah but he spent a lot of time in the Mechanical Engineering department.

MD: Oh yeah, building his hot rods. [laughs]

JW: He did, he did.

MD: Now during your era there was times when the people that we see now, buildings named after, were some of your instructors and people that were involved with the program, like Samuel Graf. Was Merryfield still a teacher here during that time?

JW: Yes, he was a civil engineer.

MD: Oh yeah, because he went off to form CH2M Hill.

JW: Yeah. Sam Graf was a long-time head of the Mechanical Engineering department. And I met Sam in that time, but in a little more collegial way a few years later when I was on the faculty.

MD: How about – you're in Rogers Hall now, but he was civil engineering too, wasn't he?

JW: No, he was mechanical. But he was gone; I didn't have any contact with him.

MD: So how about social activities while you were in college – was your nose to the grindstone or did you have fun?

JW: No, I was fairly active on campus. I was a member of Blue Key, which is the senior honorary; I think there were like twelve or fifteen people selected for Blue Key. And I was in just about every engineering honorary I was eligible for. In those days, those were things everybody did if they qualified. So I was in those. I was in a fraternity.

MD: Which fraternity?

JW: Sigma Phi Epsilon. And that was a very good experience for me.

I was elected twice to be on the student senate of the campus. And I participated in a lot of things through the fraternity; I played intramural sports and had a reasonably active social life. Married between my junior and senior years. So I had a full four years, yeah. In those years, graduating in four years wasn't unusual.

MD: So you had the full Beaver experience.

JW: Pretty much. And I sometimes spent a little more time on extracurricular and social things than I might have. So I got a few grades that probably should have been higher in retrospect, but I was young and immature.

MD: Well you were graduating a couple years younger than some of the other folks did. You were a very good student, and you ended up with honors and S.O.'s; you had quite the undergraduate career. Now I have a couple questions about Pratt & Whitney, as an engineer for them during the early days of the development of the jet age, jet engines, and Pratt & Whitney was a leader in that. What projects were you involved with that we would know about?

[0:19:42]

JW: Well my specific job assignment was in a group that was working on a prototype engine, a turbo prop engine. But it was partially gas-turbine driven. And the engine had not actually been constructed, there were little pieces, modules, of the engine that were being tested and assembled. And the first complete prototypical engine was tested in early 1955 after I'd gone. So I was in on the early stages of doing analysis and a little bit of testing on that engine. It was called the PT-5 and it was to drive a turbo prop, that's what the PT meant. And I don't believe it ever went into production, but turbo props were fairly common in commercial aviation and military aviation during that time.

MD: And so you ended that and moved into an Air Force assignment.

JW: Went to flight school.

MD: You did go to flight school?

JW: Yes. Primary flight school was in Bartow, Florida. That's about six month's duration. Basic flight school was in Greenville, Mississippi and at the end of that time was where you got your wings. So I was a pilot at the end of that time, this would be January of 1956. And I was assigned to a Strategic Air Command bomb wing at March Air Force Base, California. In retrospect maybe I should have been a little more circumspect about the Air Force. I had no intention of staying in during that time and I didn't really think much about the possibilities. So I didn't take advantage of going to advanced flight training, which would have required an additional two years of active duty, and that was a trade-off I didn't feel comfortable making. As I say, I should have been more open-minded, because that might have been a great experience for me. But anyway, three years was all the active duty time and I spent a full year of that in training.

So at March Air Force Base, I was in a bomb wing and did some flying on what was then the main Air Force bomber, the B-47, which is a six jet bomber. And they were just phasing in B-52s at that time, and my wing, after I got out, became a B-52 wing. But that was after my time in the service. So I was in a B-47 squadron for about two years.

MD: One of my favorite aircraft. So you decided to go back into graduate studies, were you kind of pushed into that or had you already planned that as one of your goals?

JW: Well, not really. It became my goal. While I was in the service I wasn't doing anything related to my academic experience, so I felt - when I was getting within a few months of finishing my active duty - I felt as though I had kind of forgotten a lot of the stuff that I had been taught and lost my edge, so I thought I should go through some kind of a review process. And a good way of doing that was to work on a degree at the same time I was getting my skills back up. And I applied to several institutions to go to graduate school, and when you apply to graduate school you have to have references. So I asked some of my professors to serve as references, and I got a letter from one of them a few weeks after I had applied, and he had reviewed my application and remembered me, and said "we have a fellowship available." And I was, at that time, married with one child and money was an issue. I was eligible for the GI Bill, which I used, but that still wasn't going to see me through everything. But the fellowship was a carrot, which I took.

So without any planning on my part, any significant planning, I moved back up at Oregon State, which is not something I expected to do. But anyway, I came back, worked on my master's degree, my major was mechanical engineering. My minor - a little sidebar, I didn't know you had to have a minor when I came back. In graduate school you kind of tailor-make a program, depending on your interests. And so mechanical engineering was going to be my major, but I needed this minor and I kind of liked chemistry, so I said, "I'll do a chemistry minor." But then I looked in the catalog and to do a chemistry minor you had to have a whole lot of pre-requisite courses in chemistry, which I had not had. So it would have taken me two full years just to get up to the point where I was ready to take it, so that didn't seem like something I wanted to do.

[0:25:49]

But right next to chemistry in the catalog was chemical engineering. And I looked at chemical engineering and there were classes that I had no idea what they were all about, but there were no pre-requisites. So I went over to the ChemE building and I told the head of the department, Jess Walton, what I wanted to do, have a chemical engineering minor. And he said, "well that's interesting, we have never had anybody do that before." And I said, "well, I'd like to try." And so he said, "well, we'll work something out. Of course you've had physical chemistry." And I said, "well, no, Professor Walton, I never took physical chemistry." He says, "organic chemistry?" And I says, "no, never took organic." "Analytical chemistry? Qualitative, quantitative analysis?" "No, sorry about that." So he said, "did you take a course in chemistry?" And I said, "yes, I took one year of general chemistry." And he said, "well, I don't think you can do this without that background." And I said, "well, I looked in the catalog and they don't have listed pre-requisites, and I'd like to try." So he said, "ok, go upstairs and talk to a young faculty member named Charles Wicks and if you can work something out with him, you can do it." So I went up there and we talked and he was very helpful, and the first term in chemical engineering I took Unit Operations, which is the main course that chemical engineering majors take. And I came out second in the class. So after that, I stayed in chemical engineering without a lot of chemistry background, which I filled in as I needed, but it worked out.

So I didn't finish my degree that year, but I finished the year and then I worked that summer at the Bureau of Mines in Albany, which is now a Department of Energy station. And came back the second year and the head of Mechanical Engineering asked me if I'd like to be an instructor, the second year. So the financial incentive was there, plus the

possibility of getting some good experience. And I kind of liked the idea of teaching. So I went back the second year and finished my master's degree and did my thesis, but I also did a full-time teaching job and worked part-time in the Bureau of Mines.

MD: So you started teaching in 1958 then?

JW: Yes, and at the end of that first year the head of the Mechanical Engineering department – in those days things were fairly informal – I read in the paper that I had been promoted to assistant professor. And I went back to Dr. Slegel, who was the head, and I said, "you know, I can't do that," because if you have an academic appointment at the assistant professor level or higher you can't get a degree. And I hadn't finished my master's degree. So I had to reject the promotion.

Anyway, I finished the degree and I built upon the experience at the Bureau of Mines and got involved in a project which became my Ph.D. thesis, but my major would be chemical engineering, with minors in mechanical engineering and mathematics. And I finished that in '62. So the decade of my twenties was a busy one – three years in the Air Force, three years full-time teaching, a master's degree, a Ph.D. That was by the time I was, I guess, twenty-eight or twenty-nine.

[0:29:55]

And at the end of that time, Professor Walton, the head of Chemical Engineering, offered me a position on the Chemical Engineering faculty. And I said, I'd have to think about it, that really Mechanical was my home. That was a standing offer. So I went back to Mechanical Engineering and Dr. Slegel – I said things were informal - he hired me back as an associate professor. I skipped assistant.

So I was an associate professor in Mechanical Engineering, with tenure, starting in 1962. And went through the usual stuff with the faculty. I took a leave of absence during the winter term of 1967; there was a Ford Foundation-sponsored program, and I spent a term at Dartmouth in New Hampshire. And during that time I got a call from my boss, Louis Slegel, who said that I had been proposed for promotion to full professor, which I thought was great. And there were no hoops to jump through, there was no promotion and tenure committee, this was just done as the department head chose.

So I was a full professor at that time, and served two and a half more years, and the dean of Engineering, George Gleeson at the time, was retiring that year. And my boss, Louis Slegel, was also retiring that year. This was 1970. So there had to be acting people putting into these positions, so there was an acting dean and an acting department head of Mechanical. And I was the acting head of Mechanical – dean Gleeson, before he retired, made that assignment.

So I was acting head of Mechanical. Then there were search committees to find a new dean, and the department head was kind of a nominal thing. So President MacVicar was hired to be the university president – I didn't mention, we had a new president, new dean, new department head. So MacVicar was hired. And, after a search, Fred Burgess was hired as dean of Engineering. And, after a search, I was hired as the permanent head of Mechanical Engineering. This was 1970. And those positions remained in place until I stepped away at Christmas-time of 1983...'85, excuse me. So I was department head for fifteen and a half years.

MD: And that was an interesting time in the school of Engineering because, I read in the histories that are published about the school, that in general, engineering as a field was on a downturn during the '70s, so the school of Engineering, it was a challenging time for the school.

JW: Yeah, we had continuing fiscal problems and there were years where there were no raises. I was department head, so I was involved in scraping together enough funding to keep faculty busy and doing the battles with the budget people to be sure that we got our fair share of things. So there were challenging times and there were some less than pleasant decisions that had to be made. People that were hard working and all didn't get tenured, because there was no money to pay for the new faculty lines.

[0:34:51]

MD: Now as a department head did you continue to teach at that time?

JW: Yes.

MD: So you were able to teach too.

JW: Yeah, and one of my principle activities during that time was, along with – I mentioned Charles Wicks, earlier – he and I and a colleague in Mechanical Engineering, Robert Wilson, were involved in teaching a new course sequence we had gotten into engineering sciences. And during those early years there was no textbook for the course we were teaching. So I started – I had the major contact, even though I was department head, I was still doing this. And after about two years of putting class notes together to teach all this – they became somewhat voluminous after a couple of years – we began interaction with some publishers who were interested in this becoming a textbook. And we went through the courting process and ended up signing a contract with John Wiley & Sons. And in 1969, edition one, was published and the authors were Welty, Wicks and Wilson – '69, and that book is still in publication.

MD: Yeah, I found that in an Amazon search.

JW: That's probably one of the more significant things that I was associated with, and continues to be an activity of mine.

MD: Now one of your main areas of research has been fluid mechanics?

JW: Well, generically, fluid mechanics/heat transfer – the thermal-fluid sciences, yes.

MD: So can you give a layman explanation for what part of mechanical engineering and part of that science?

JW: Well, fluid mechanics would be one of the so-called engineering sciences. And it's the foundation course for fluids engineering – well, it grows from thermodynamics, heat transfer, and fluid mechanics. Fluid mechanics, of course, is the study of fluid at motion and at rest, and all of the processes that are involved. Everything from aerodynamics, to ink jet printers, to most everything in between. So it's very common, very pervasive, and very important. And during the time I was department head, I was also very active in research, working with graduate students, publishing. There were still quite a few fundamental areas that were ripe for research, so I was fortunate that I was around during a time that – it was kind of exciting times.

Nuclear engineering was important during those days, and a large part of the nuclear fuel cycle and operation is the heat dissipation and generation. So that's a natural thing. And one of my long-term projects - which was supported financially by the Atomic Energy Commission, now the Department of Energy – was to look at heat transfer phenomena associated with liquid metals. Because in the early days of the nuclear program, one of the concepts for advanced reactors was the breeder reactor, which was killed a few decades later. But the breeder reactor was actually liquid metal-cooled, operated at high temperatures, but a lot of the fundamental understanding of liquid metal heat transfer hadn't been really determined. So my project, which was probably six or seven years long, had to do with a look at fundamental properties and behavior of liquid metal as a heat transfer medium.

MD: Which kind of goes back to your master's thesis on fuels.

JW: Yeah, it was related.

MD: With a career in a science like engineering lasting as long, from 1958 to basically today, you've seen so many changes in the fields and technologies. How did the engineering department and MIME especially, adapt and keep up with – I'm sure it must have been changing just like the computer industry changes.

[0:40:16]

JW: Well, a big part of the change was associated with what we now call high tech – the advent of the computers. It was revolutionary in education, just the fact that we had computers. You had what used to be a big device in a room along with many other devices, now you had that much power in your hand. So that changed education and it changed the way we do things and it changed the speed at which you do things. And I think the speed of technology and technological advances was increased, obviously, during that time, because we could do so much more. A lot of the stuff we used to do experimentally, they were somewhat crude by today's standards. But now you can do it analytically and you can actually change the whole time scale as to when you acquired your learning and understanding the process.

MD: Yeah, you can build a computer model and do it rather than-

JW: Exactly. So a lot of the stuff we used to have to do in the lab, we now do using computer modeling. And if you have to do experiments, you design the experiments according to what your models suggest. So yeah, it's been profound really, if you think about it.

MD: Yeah because you go from slide rules-

JW: I did, when I was an undergraduate reading slide rules, absolutely.

MD: Yeah, to the early days of computers-

JW: Yeah, and the hand held calculators came in right around 1970, and then everything mushroomed beyond that.

MD: And things that today people take absolutely for granted, it's all on their phone. And you saw this stuff develop to the point where we're at today.

JW: Yeah.

MD: By the same token, for a professor that's been around and has seen the changes from the turbulent 1960s and '70s on campus and the tech boom of the '80s and '90s, you've seen students change. How is today's student compared to a student when you started teaching in 1958?

JW: Well, they've adapted. Engineering students, the ones that finish and succeed, are basically pretty smart. So I had the pleasant experience of working with intelligent people, to start with. And I don't think that's changed. I think the level of intelligence is still very high. And I think Oregon State does a good job of attracting good intelligent people; I think the track records of graduates from here would attest to that.

But the things that people study and the nature of the curriculum these days is much different. It's strongly computer-driven as far as, say, rendering plans, things that you read from to build things or to design things. When I was in school we took classes in mechanical drawing – it was T-squares and triangles. Now everything is on the computer and people don't have a clue how to use a triangle or a T-square, they probably don't even know what they are. So students do different things, and they still do them well, but even since I've retired the sorts of things that are a part of the curriculum are much different. Much more applied, much more project-oriented. And people do things like work on race cars and race them competitively across the world now, from Oregon State. And those cars are designed on computers that the students know how to run and they know how to do simulations; it's a world that we couldn't even have imagined in the early days.

[0:45:03]

MD: Any students that you've had over the generations of engineers that you've trained that stand out that you can think of?

JW: Many and I hesitate to name them, because I'll probably forget somebody. I undoubtedly will forget somebody, so if any of them watch this, don't be offended if your name hasn't come to mind. But I'll mention some that come to mind. Ron Adams was my Ph.D. student, also my undergrad, I took as an undergraduate. And he subsequently became vice president of Tektronix and then dean of Engineering at Oregon State. So Ron stands out prominently.

I had a student named Don Trent who I knew when I was young on the faculty, and he had flunked out of school, went into the Army, and came back and got serious, and became just an enormously talented student. And he went and had a career at the Pacific Northwest Laboratory in Richland, Washington – Hanford work – and became a chief scientist up there, and is now retired. So he was a big success story, and deservedly so.

An undergraduate student from here, I had him as an undergraduate and gave him, I guess, some advice over the years and got to know him because he was such a good student, his name was Timothy Tong. Tim went from here to Berkeley, got his Ph.D., and went through various academic and research experiences very successfully. And he became a department

head at Colorado State, became a dean at George Washington University and now is president of the Hong Kong University. He's from Hong Kong, so he's back home in a very influential position. He comes to mind.

I had a number of students who have gone into academia and have become deans, and I guess Tim would be the only president, Tim Tong. But Ron Adams, a dean. Two brothers from Iran, with their own interesting stories about surviving from Iran. Mohammed and Amir Faghri. Mohammed is a chaired professor now at the University of Rhode Island and Amir is a chaired professor at the University of Connecticut. Very well-known people in the technical field.

A number of others who I should probably remember – I do remember, but their names don't come to mind.

MD: What it does illustrate though is that the school of Mechanical Engineering here at Oregon State has produced some top people. And we run into that in our collection here of oral histories, but it makes a Beaver proud to know that these people got their start here at Oregon State.

Now, the field has changed, the people changed, and you've probably been in contact with numerous different faculty and colleagues over the years, do you have any significant memories of being a noted member of the faculty here at Oregon State for so many years? What are some of the high points of your time here?

JW: Well, I guess I would change the thrust of your collection a little bit. Some of the experiences that I value and cherish the most are the interactions that I've had with colleagues from across the country. I've been very active in ASME over the years – American Society of Mechanical Engineers. And held some offices, including a member of the board of governors of ASME. But my principle connection with ASME has been on the technical side, and people in the heat transfer community – one of the technical committees in ASME is the heat transfer division, and I was chair of the heat transfer division at one time, some years ago. And some of the people I've interacted with, these are National Academy of Engineering people, really leaders of the profession and of the field, academically as well as professionally. So that has been an opportunity and a total pleasure to work with people of that caliber who I call my friends. I've been able to do that in a career that kept me busy both on campus and off. So those are cherished interactions that I've had.

[0:51:06]

On campus, which I think was more the thrust of your question, I've been closest, of course, to the Mechanical Engineering department, where I was department head. And I continue to interact a little bit on an informal basis with those people. And I think that the growth of the program, as far as the content and as far as the product we deliver, has continued to impress me. There was a time when we were kind of a home-grown Oregonian group; certainly in my case, since I got all of my degrees here. But there are other people with an Oregon State connection that have gone through the program, and now there isn't much of that at all. All of the people that are here now have done their academic work elsewhere and then come to Oregon State. And I was concerned early on that there would be kind of a loss of the local connection and that Oregon State would, I won't say suffer, but it would be lessened for the loss of that. But it had to happen. I've been impressed that people come and they care about the place, they care about doing a good job, both as researchers and as teachers. My experience has been that they become Beavers very quickly, they become very connected and very loyal and very high achievers. And that's very gratifying, I'm obviously pleased with that.

MD: Now you became emeritus and retired in '94?

JW: No, well, my active service ended December 31st, 1996.

MD: And there's also an endowed chair, a professorship, is that still on-going?

JW: Yeah, the Welty Chair is occupied now by a very well-known colleague. And that's on-going, that's endowed. And then there are some lesser assignments – there's a Welty faculty, I think it's called professorship, which I've helped to support and continue to, which supports somebody at a little lesser level than the endowed chair. So those are some legacies, yeah.

MD: So you didn't just quit and go away.

JW: No.

MD: Now did you continue with your research and keeping your fingers in the pot, basically?

JW: I did. Shortly after I retired I received a new research grant, so this was a National Science Foundation grant that I had applied for and it came through. So I continued to do research and have graduate students and be involved in the usual stuff. I didn't teach anymore, after that time, but I stayed active in research for almost ten years. But then I decided it was time to let other people use the facilities and let them get on with their careers. So I stepped away, but I still hang around. And that textbook that I mentioned, we just did a sixth edition a year ago; it was really two years ago, I guess.

[0:55:31]

MD: Yeah, I ran across that in my research as well. So you finally earned some leisure, I would like to back up a little bit and talk about family life and fill that in, because your family's going to enjoy this as well. Kids?

JW: Yeah, I have five kids – three boys, two girls. My youngest is now fifty-two and my oldest is sixty. Four of my kids live in Oregon and one of them lives in Houston, Texas. And in the mix I have a doctor, a lawyer, a nurse, medical assistant, and an employee of the state of Oregon in Salem, in the Department of Motor Vehicles. So they're all gainfully employed, not in jail – they'll appreciate that comment if they listen. But they're doing well. And I have seven grandchildren – actually I have nine grandchildren, seven that are a direct lineage of me. I was divorced and remarried thirty-six years ago, and my wife has one son and there are two grandchildren through them.

I've always enjoyed physical exercise and sports. I was an avid runner for quite a long time; I ran one marathon and I've played golf as often as I could over the years. My physical situation is such that I don't play it very well anymore, but I was pretty good at one time; single digit handicapper. And that's something I still enjoy, but I enjoyed it a whole lot better when I played better. But that's part of getting older.

MD: Any hobbies that you've kept with?

JW: Well, I would say that I like to read, of course, and golf. And I still do physical workouts on a regular basis. Never been too much involved in craft-type things. So I guess those would be my principle things. The world is an interesting place, so I like to read and keep up with current events and politics and all of that.

MD: So you've got plenty to keep you busy. Well, we just really appreciate the fact that you're willing to share your life story and all this history of Oregon State with us, are there any final thoughts or words of wisdom for the Beaver Nation that you'd like to impart?

JW: No. I think I've already said that I've seen a lot of people go through and become prominent and do good things in the outside world, as well as some of them become members of the faculty. I have had an opportunity through a number of associations away from the campus to compare what we do with what everybody else does, and I have to say that we're a very well-kept secret, because we've done a lot of great things and certainly there's no reason to think any negative thoughts about Oregon State, and in particular the College of Engineering. I think we have a really significant history, a proud history, and I hope the citizens of Oregon appreciate it. It's a great place and it's been a fantastic place to be.

MD: Well, Professor Welty, on behalf of the OSU Sesquicentennial Oral History Project we thank you for your participation and your years and years of dedication to Oregon State.

JW: My pleasure.

[1:00:30]