



Eric and Jeff Ball Oral History Interview, July 13, 2015

Title

“A Douglas County Success Story”

Date

July 13, 2015

Location

Orenco Systems Industries, Sutherlin, OR.

Summary

In the interview, the Ball brothers describe their family background, their upbringing on a ranch near Roseburg, Oregon, and their high school experiences, with particular emphasis paid to their early interests in engineering, their mutual love of tennis, and their attendance of classes at Umpqua Community College. Eric and Jeff next reflect on their undergraduate years as mechanical engineering students at OSU. In this, they each comment on their progression through the mechanical engineering program, the senior projects that they conducted, and their use of computers and calculators while students. They likewise note their living situations, social lives, campus involvement, recreational activities, and work at Orenco Systems Industries during the summer.

The session then shifts focus to the evolution of Orenco that occurred in the years following the Balls' graduation from OSU. Each comments on their decision to return home to work at Orenco rather than pursuing employment elsewhere. They also share the story of Orenco's founding, their memories of working for the firm when it was still run out of the Ball family home, and the early innovations in wastewater systems that fueled the company's growth during the 1980s. They next discuss the company's move into developing composites, the differing roles that Eric and Jeff have come to assume within the company, their sense of the company culture that has emerged over time, and the business creating custom ping pong tables that the Balls have spun off of their work at Orenco.

As it enters its final phase, the interview turns its attention to the socioeconomic realities facing Orenco as well as the larger population of Douglas County. The brothers lend their perspective on the role that Orenco has played within the community of Sutherlin and their larger view of the challenges facing Douglas County in 2015. The session concludes with an update on the Balls' continuing relationship with OSU and their thoughts on changes that they have observed at the university.

Interviewees

Eric Ball, Jeff Ball

Interviewer

Chris Petersen

Website

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

Transcript

Chris Petersen: OK, today is July 13th, 2015, and we are in Sutherlin, Oregon at Orenco Systems Industries, and we are interviewing Eric and Jeff Ball, both executives at Orenco and alumni of the OSU College of Engineering. We'll talk a lot about their school experience and their lives here in Douglas County. I'd like to begin with developing a biographical sketch of your guys' upbringing. One of you is one year older.

Eric Ball: Yep, I am.

Jeff Ball: Eric's the old man.

CP: Why don't I have you both say your names, so that our transcriptionist will be able to put a voice with a name.

EB: My name is Eric Ball.

JB: My name is Jeff Ball.

CP: OK. So, were you both born in the same town?

EB: No, I was born in Placerville, California.

JB: And I was born in Woodland, California.

CP: And you guys grew up there? In Woodland?

EB: No, we moved to Oregon, we moved here when we were four and five, I think, roughly.

CP: And what precipitated that move?

EB: Our parents wanted to live on a ranch and they wanted to get out of the heat. I think our mother had a difficult time in the heat and had a lot of headaches, so they traveled north and looked around and lived in Salem for one year, while our father looked for a ranch. And I think it was between Roseburg and Bend, and for some reason the ranch in Roseburg won out, so that's where we landed.

CP: What were your parents' backgrounds?

EB: Our father is a civil engineer, he has a master's in civil engineering from UC-Davis. And he's been a consulting civil engineer his whole life and he was also head of the Engineering department at Umpqua Community College, while also having his consulting business. And then, in the late '70s and early '80s, he was consulting with the state of Oregon to figure out how to solve wastewater challenges for single family homes in basically rural areas where you're off the city sewer, and that's what kind of precipitated our business, Orenco.

CP: So your father had his work as an engineer and also was operated a ranch in Roseburg?

JB: [laughs] It seemed like a lot of the ranch work was left up to Eric and myself and my mother, while he was off bringing in the income that supported the ranch.

EB: It was a hobby ranch, but it certainly kept us busy. When we weren't going to school – we grew up playing tennis too, so in the summers our choice was either to work or play tennis. We always had to work and if we wanted to go play tennis after working a certain number of hours we could go play tennis, or otherwise we could keep on working. So we played a lot of tennis.

CP: Tell me about the ranch. Was this livestock?

JB: Well, we had 100 acres and for the first ten years or so living there, we raised cattle and then sheep and then we migrated to something a little more manageable – Christmas trees. So we planted about, I don't know, probably thirty acres of Christmas trees at one point. But we planted those just in time to see the trees mature into the glut, and at the

point we were ready to harvest, the trees were worth very little. So we learned at an early age that ranching and farming was probably not the way we wanted to make a living. Well we saw dad doing interesting engineering work and he had an office at home, and it seemed like mom was helping him with a lot of that as well.

EB: You know, the ranch was good in terms of developing, I think, a good work ethic, as we learned how to build fences and barns and do concrete work and run farming equipment and fix things and learn how to do wiring, we wired up all of our own buildings. So definitely it was something I kind of feel bad about for our kids because they didn't learn, when we talk to them about those sorts of things, they wouldn't know how to pour a slab or build a fence. So they kind of missed out on that.

CP: Did you guys have horses?

EB: We did not. Our parents didn't have really great experiences with horses and thought they were a real pain in the neck, so horses are not something – we had pigs and chickens and ducks at different times, but no horses.

CP: So a lot of work and some tennis as well, it sounds like. Did you play for your high school?

EB: We did.

[0:05:00]

CP: Were you a doubles team?

JB: Yes, we were. Three years?

EB: Two years. My senior year and his junior year we got second in state. That was our claim to fame in high school tennis.

CP: Wow. That was back when Roseburg was – maybe, is Roseburg still at the top level? Or are they 5A now?

EB: No, we've been in and out of the top five teams for the past twenty years. Back in the late '60s, early '70s, when Roseburg was dominant in tennis, they haven't had that, they haven't won a state title since then. They've been close a couple times in the '90s. But when Jeff and I did well, I think we placed fourth or fifth, team-wise. But there are a few teams in the Portland metro area that just dominate, because it's such a large population and they get really good tennis players that all kind of congregate to two or three schools and it's tough to compete.

CP: How far out of town where you guys?

JB: Ten miles west of Roseburg.

EB: Our mom and dad still live there and they've enlarged their property; they have 1,100 acres that they live on now. So, good hunting grounds.

CP: Were you able to be involved in community life much, being ten miles out of town? Was that an issue for you?

EB: Well I have to tell you, when we first moved there, we thought we were out in the middle of nowhere, because the last six miles, ten miles or five miles was gravel. They hadn't fixed the roads. And I remember, when I was six years old, going to the grocery store was like a great thing. It was like, "wow, we're going-"

JB: "We're going to town!"

EB: "We're going to town!" But eventually they improved the roads.

JB: When we moved there, it didn't even have a street name, it was just rural route 3.

EB: Yeah, and we shared a phone line with four other houses around us. So you would pick up the phone and somebody else-

CP: You had a party line.

EB: We had a party line, yeah. That's all you could get back then. That was in, what, '69?

CP: Well what you do guys remember about Roseburg from those years, as a community?

EB: Timber town. I remember the main drag, Garden Valley Boulevard, there were those wigwam burners, 100 feet of the road, there's a big wigwam burner. Which, they're not even legal now.

JB: And the log trucks, I remember lots of log trucks with big logs.

EB: If you went up Highway 138, which is the main road going into the Cascades, you could drive up there on any weekday and you'd pass fifty or 100 log trucks, and you're lucky to pass two now.

CP: So probably a lot of your friends were children of timber workers.

JB: Yeah, a lot of people involved in the timber industry in various ways.

CP: Were there any strong interests that you guys had outside of tennis and the work you had to do on the ranch, growing up?

EB: There really wasn't any question for me that I was going to go into engineering. And I think math and sciences were always our interests. So I could've maybe chosen a different profession, but it still would have been some science or related. It just didn't seem like there was any other choice.

CP: That's something you both shared?

JB: Yeah, I remember dad asked me specifically when maybe I was a junior, he asked what I wanted to do. And I said, "I'm pretty sure I want to understand engineering." And he said, "well, why don't you want to be a doctor or a lawyer or some other profession." And it didn't even dawn on me that I could do any of those, I just didn't have any interest. Eric and I are both very interested in and had a good aptitude for math and science.

CP: Was there somebody in your high school who was influential as far as that was concerned? Or was it mostly your father?

JB: Well, the most influential instructor I had in high school was Don Crossfield, who was a math instructor.

EB: Yeah, Don Crossfield, I think multiple times, was Math Teach of the Year for the whole state.

JB: He was Math Teacher of the Year for the country one year, I think. He was an amazing guy.

EB: We had a chemistry teacher there too that was just amazing. I think chemistry and math were the two teachers that stand out. And then the chemistry instructor at UCC.

JB: Oh yeah, Dr. Dale Ritter.

EB: Amazing. I had him as a chemistry instructor when I was a senior. I only went to school, Jeff and I both, our senior year just had like three classes and we'd go to the community college and take classes, including from our father. So the chemistry teacher was just wonderful. So I started out wanting to be in chemical engineering, because my chemistry teacher in high school and the one at UCC were just amazing. But then, I think after one year of engineering school, I started realizing that chemical engineering is cool but its likes, most of the companies you go to work for are big huge conglomerates and it felt a little bit limiting. So I changed into mechanical because it felt like it was a lot broader spectrum of engineering. But still to this day, chemistry is still one of my favorite subjects.

[0:10:42]

CP: What was it like taking a class from your dad?

EB: You know, it was totally cool.

JB: Oh yeah, he was a great instructor. Normally he would lecture for maybe, at most, two-thirds of the lecture period, and at the end of lecture he would say, "well, that's all I've got for today. Does anybody have any questions?" And usually somebody had a question or two.

EB: Yeah, inevitably we would just work problems on the chalkboard.

JB: Yeah, and sometimes if we ran out of problems, he'd say, "you guys are all free to go," and nobody would get up and go because they knew that stories were coming.

CP: Oh, really?

JB: My dad always had stories relating what he was talking about in lecture to stuff that he did in real life. So it was kind of cool, looking around there would be fifteen other students in the class and not one of them would get up and leave, because they knew.

CP: Wow. That must have been a great experience, not only to take a class from your dad but to see how effective he was and how he was respected like that.

JB: Yeah, it was cool.

EB: A lot of his students transferred to Oregon State like we did, but a lot of them also would just get two-year degrees or they'd go to OIT for the technology program, four-year program. I think he had multiple years in a row where he had a ton of kids go take the EIT exam in California, because in California you could take it, I think, after a two-year degree. I think in Oregon you had to wait until after four years. But tons of them passed it after taking just the two-year, which was pretty amazing.

JB: Very impressive, yeah.

CP: Was there any connection with Oregon State before you went there?

EB: No, I think my father had dealings with some of the professors, just because he taught at UCC.

JB: Yeah, he would have to plan his curriculum to match so students could transfer-

EB: -transfer the credits.

JB: And then Terry Bounds, who founded Orenco with my father, is an Oregon State graduate.

EB: But as far as engineering schools, I know when I graduated I was kind of thinking about maybe going out of state. I looked at Chico – we lived in Chico for a while, so I looked at Chico State. I looked at Arizona State. But when it came down to it, Oregon State was the easy choice. It was in state, it was close to home, had a renowned engineering program, so it was pretty much a no-brainer.

CP: Tell me about your first impressions of the school and of Corvallis.

JB: You went there first. [laughs]

CP: You went there first, so let's hear your first impressions first.

EB: Well, I felt like it was a really quiet, calming experience when I first went there, because you go there in the fall, of course, and it's cool and just seemed like a really laid-back environment. So for me the transition was really easy to go to school there. I went to UCC for one year, so I transferred and I lived in an apartment with a friend. I would say that the curriculum or the classes were a lot more difficult. I think after my first set of midterms I was getting B's and a couple C's, and I was going, "holy crap," because I was used to getting A's in everything without having to study all that hard. After

that first set of midterms, I really had to buckle down and go, "wow, I really need to study a lot more." Which, after the first couple months, was no problem; just a little adjustment to a real competitive environment.

JB: My experience was similar. When I moved up there, I lived the first term with Eric, so I had lots of coaching, I guess, available to me. I too, in high school, I didn't have to study, almost straight A's. I spent a year at UCC and had to study a little, but I was carrying 20+ credits per term there, straight A's, and it really wasn't very hard.

[0:15:20]

Then I went to Oregon State. [laughs] But under Eric's advice, I didn't take a heavy load the first couple terms, still struggled, because I hadn't developed study habits, but it didn't take long to do that.

EB: Yeah, I think when they say you're supposed to spend two or three hours studying for every hour in class, we'd never had that experience.

JB: Two or three hours per week per class, maybe.

EB: Our toughest classes at UCC for sure were, like, physics and chemistry and our father's class. Even at Oregon State, I have to say, the engineering classes were the tough ones. We took technical writing; we had most of the stuff out of the way, but still, they weren't that tough compared to engineering classes. Especially under division, before you get into the professional school, those classes are tough. I guess they make it tough so they can weed people out.

CP: You mentioned that you spent a year in chemical engineering, was that OSU or was that at UCC?

EB: When I was at UCC my first year, I was thinking chemical engineering, but while I was at UCC – when I went to Oregon State I transferred in to the professional program, because I had enough credits and everything was good to go. But no, I was at UCC when I decided to do that. If I was going to go into chemical engineering, I think I would have had to go to Oregon State and not get in to the freshman program, it probably would have cost me another year or two to get those other classes, those first two year classes you can't get at Oregon State.

CP: And you were mechanical all the way?

JB: Yeah, I don't think I had any doubt from the get-go.

CP: Were there any mentors that either one of you had, a professor, that had a big impact on you from OSU?

JB: Dwight Bushnell.

EB: Dwight Bushnell.

JB: Dr. Bushnell was pretty instructive.

EB: Yeah, unfortunately he died when – was he sixty?

JB: Yeah, he was pretty young.

EB: He was pretty young. He had a big family, but a great guy.

CP: What did he teach?

JB: Mechanical engineering. [laughs]

EB: What was the name of his class? I can't remember. It was structural engineering.

JB: Advanced Statics?

EB: I can't remember the name of the class now, it's been almost thirty years.

CP: But he was influential because?

EB: Well, just because he was such a really good instructor that you could kind of relate to. Some of the instructors we had were there – good enthusiasm, really willing to help – some of the instructors were so, some of them were hard to communicate with because they were not American-born, so it's just to communicate. And they're a little bit, not so warm and fuzzy. Dwight was one of those guys who was just down to earth and willing to come in any time. You didn't feel-

JB: Approachable.

EB: Very approachable. Another instructor was Clarence Calder.

JB: Dr. Calder, yes.

EB: He was my senior project engineer. I did a project on testing tennis racket strings and he was really cool to work with. He had a sabbatical – I don't know if it was a sabbatical, but he went to teach in New Zealand at a college there and he took my project with him, and some students at the University of Auckland went and continued to more work with the tennis racket strings. And also, both Dr. Bushnell and Dr. Calder would let us in to the Mechanical Engineering building up to like ten years after we left, and we'd go use some of the testing equipment when we were testing some parts that we were doing here, so that was really cool. He'd let us in and he'd go, "you guys remember how to use that machine?" And I'd go, "yeah, no problem."

CP: Was MECOP around at this time? Or was there another internship program similar to it?

EB: You know, I think it was right after we-

JB: I think it started my last year, maybe, or the year after.

CP: But neither one of you was part of it?

EB: Either it didn't exist or I didn't know about it when we went there.

JB: Yeah, there was something, I remember there was something starting right when I was finishing up.

CP: But you both had a senior project.

EB: Yeah.

[0:19:58]

CP: What was yours?

JB: It was a corrosion study I did with two brothers who were the top two students in the class, and they were local guys.

EB: Oh, the Schmidts?

JB: The Schmidts, yeah. I think they had a connection with Teledyne Wah Chang, which was the metals producer there in Albany. So we took coupons of titanium and zirconium and some special stainless steels, and set up a fixture to hold these metal coupons at water level out at Yaquina Bay, and just let them float there. And you'd come back and weigh them after so many months to see what kind of corrosion they saw. It was really boring. [laughs] Because these metals are so corrosion resistant, you needed a scale that was far more accurate than what we had to determine if there was any corrosion. High tech metals in a very low tech testing situation.

CP: Were these the Schmidts of the garden center, by any chance? There's a big garden center in Corvallis that's been there forever.

JB: No. Glen – I don't know what his parents did. Glen, who was one of my best friends at Oregon State, he went to work for HP and he lived in Cupertino for a number of years, and then they moved him back up to Corvallis.

EB: He and his brother both were engineers working for HP.

JB: He was doing something with printer cartridges, I don't remember. I think his wife was a project manager or something.

CP: Well HP was very important in Corvallis at this time, did you guys have much connection with or exposure to HP when you were in school?

EB: Just owning their calculators. [laughs] I still have the same calculator on my desk now that I had at Oregon State, the exact same one. HP 41c.

JB: I have the iPhone version of it. Somebody developed an exact replica.

EB: Yeah, which, if I'm not at my desk [pulls up app on phone] there it is, the same one as on my desk. It's cool; I know where every button is and have used it for thirty years now.

CP: Well that's a nice segue into my next question-

JB: Yeah, it's definitely the best calculator they ever developed.

CP: -it's about technology and the technologies that were important to study back then. The Engineering curriculum has changed, technology has changed, but I'm interested in what it was like. You guys were there in the early to mid-'80s.

EB: Yeah, so we had an Apple – was it called a Macintosh then?

JB: Yeah, it was called a Mac-plus, I think.

EB: Mac-plus, one of the very first – '84 was when they introduced the Mac, right? Well, I guess we had a Mac in '84. Hardly anybody, students, had their own computer. You'd go to the computer lab and they'd have 286's, which we had to do our – we did some programming, and we'd use BASIC mainly or sometimes FORTRAN, in a computer lab. It was really not very fun. But I had a Mac so I'd do my reports on the Mac and you could change the fonts and all this stuff, and I swear to God, some of our professor, I swear, would give me an A on a project just because it looked really cool, because it was on a Mac. Everybody else was, you know, there's one font on a PC, there was nothing else. You couldn't do any diagrams – I was doing diagrams and all kinds of cool stuff. It was kind of neat. But I think back now, this phone has fifty times the power of that little Mac. We also did, remember in our-

JB: The card-punch things?

EB: We did finite element analysis, we had to use the mainframe, and we used punch cards. So you would write your program – I remember analyzing a bicycle frame which, a pretty simple thing we were doing – so we had a stack of punch cards like this high and feed them into the mainframe. And it would spit out a result and it's like, I don't even know how anyone got anything done using that technology. It's just mind boggling.

CP: Was this a timeshare computer?

EB: No, I don't even know what building it was. It was where the mainframe is, and actually you'd hand the guy the cards and then you'd come back that the stack, that everything was right. It was just, it blew me away. I was like, "how can anybody do anything using this?"

JB: It was more efficient to use our HP 41's to do those calculations than to go through the rigmarole.

[0:25:04]

EB: The problem is we still didn't have the computing power. Obviously now the cheapest PC would do what that mainframe was doing now.

CP: I like to ask people about buildings on campus. I gather you probably spent a lot of time in the Mechanical Engineering building. Which building was that?

EB: [laughs] Right across from the College Inn, what was that?

JB: Rogers?

CP: Across from the College Inn, was it Dearborn?

EB: Dearborn, yeah. Dearborn was one and what was the other one right next to that?

JB: Connected.

CP: Well, it doesn't matter; I'm just interested in the places where people spend time. Did you study mostly there or do you have memories of the library?

JB: I studied a little.

EB: The library's clear on the other side of campus. We lived on Monroe right across from the whole Engineering buildings, now it's called something else, it was called the College Inn back then. Now it's called-

CP: The Gem.

EB: The Gym?

CP: Gem, G-E-M.

EB: Oh, Gem. So, you know, I had most of my other classes at UCC, so I didn't have much reason to go even on the other side of campus. I hardly ever went on the other side of campus. I bet you I didn't go to the library more than ten times the whole time I was there.

JB: The vast majority of my studying was done in my room. One term I had a class where I had to do quite a bit of research, so I spent, I bet you I spent two days awake in the library. But that was; I mean, I never studied anywhere else. Maybe occasionally with a friend in their room. That good friend I mentioned, he lived like a floor up from me, so he and I would study on occasion.

CP: So there weren't a lot of group projects then, it sounds like. Engineers now, my understanding is they spend a lot of time in groups.

EB: Is that right?

JB: I had, probably through the course of my years there, probably three group projects, if I remember correctly?

EB: Yeah, sounds about right.

JB: There weren't a lot.

CP: So you both lived in the College Inn? Any particular memories of that place? It's been around a while.

EB: Yeah, it has. It's a little different set up now, I guess. We had a, I kind of called it a glorified dorm. But we had our own bathroom, we had maid service once a week. You had your own private bathroom, and I thought it was a really cool set up. It was way better than the dorm, you had better food downstairs, more space. I'm surprise there aren't more buildings set up like that, not just at Oregon State but in general. It seemed like a pretty-

CP: Did you guys spend any time in the Memorial Union?

EB: Some. Not really that much.

CP: Too far across campus. [laughs]

EB: Yeah. I mean, literally, you didn't have to go very far. They had a whole row of Engineering buildings right there on Monroe, and that's where our classes were.

JB: It was two minutes to get to class.

EB: An eight A.M. class, you could get up at ten 'til and you were there, no problem.

CP: I want to ask you a little bit about social life. Were you involved in athletics, attending games, that sort of thing?

EB: Yeah, we went to most of the home football games.

JB: Yeah, football and basketball games, I hardly ever missed.

CP: An era of bad football and good basketball.

EB: Oh my gosh. You know, back then when we were going to school, there was actually talk of the football team, like dropping a level. Like instead of D-1 to D-2. I don't know what they were really talking about.

JB: It was bad.

EB: We had not won a Pac-10 game in two years and we beat Stanford, and both goalposts – both goalposts – ended up at the Memorial Union. I think that's when they started greasing them up so kids couldn't get up there to get them down.

But, on the other hand, the basketball team, I remember – so, A.C. Green is the same year as me in high school, 1982, and I remember our high school basketball team then was really good too. In fact we lost to Benson, who A.C. Green played for, in the semis, and it was a close game; we ended up getting third. So I remember watching A.C. Green play. And then he went to Oregon State and I remember – and he was a pretty religious guy – I remember, he would stand on the street corners a lot of times, handing out leaflets to people. I remember walking around – I'd just walk with my head down, like this – and I remember walking around the corner and there was a piece of paper in my face and I went [cranes neck up] and there's A.C. Green handing out leaflets. It was pretty funny.

[0:29:58]

CP: So was this an era of having to camp out for basketball tickets?

EB: As students, I don't think we ever had a problem.

JB: Never had a problem.

CP: Might have been a couple years earlier when they were number one in the country, people lining up on the ramp and spending the night there.

EB: Yeah.

CP: Certainly not so for football. Did you guys have any hangouts around town? Your experience of Corvallis?

EB: You know, I didn't turn twenty-one until my last term there, so I didn't spend any time at bars, that's for sure. Mainly for me, it was just with friends at their apartments or somebody else's room. Did you play on the club tennis team?

JB: No.

EB: So my first year there, the outgoing president of the club tennis team left, and so I took that over; I was president of the club team. And we did some fundraising things, it was really pretty low key. We wouldn't practice that much and then we'd go play Willamette or Portland State or somebody like that, and get our tails kicked. It was fun.

CP: Was there still varsity tennis at OSU at this point?

EB: No, it was just the club team.

CP: Did you have any interaction with, I think Paul Valenti was the coach once upon a time.

EB: No. I think it was Title IX, I think, when they lost it and that was in the '70s, right? So I don't have any memory of Oregon State tennis. I remember seeing pictures of it.

CP: Was it the facility that's across the street from Gill Coliseum now, is that where you were playing then?

EB: Yeah, but it's not like it is now. It's really nice now. When we were there, it had four indoor – I think it was four indoor – it had a roof over it and kind of like some screen, but in the winter the wind would blow and it was so cold. And it would get wet inside; it was not nice like it is now. And the outdoors courts were really lousy. Now they have a beautiful facility. All the intramural fields there are all turf; that was just poorly maintained grass, mud and mucky grass. Oh my gosh, it's so nice now.

JB: The student gym – what was the student gym called?

CP: Dixon Recreation.

JB: Dixon, I thought, was pretty well kept, and I would go down there quite frequently. I remember playing basketball with some of the guys who lived in our building who were pretty good players and in a lot better shape than I was. And I remember so many times, I'd go down there and play a few games of pick-up basketball and work out so hard I'd get sick afterward.

EB: I used to run a lot too.

JB: Eric's an avid distance runner.

EB: Every Wednesday, after class, I'd run on Monroe and you'd keep on going out past the OSU farm and go all the way out there past, then you turn right and go past the fairgrounds, and then you'd end up farther north and come back onto Circle, I think it was. There was a twelve-mile loop that I'd do once a week, and I was running probably twenty-five or thirty miles a week. For me it was a really good stress-reliever from studying.

CP: Well running kind of took off in the '70s, was there much of a community that you were involved with or noticed? Or was it just a solitary pursuit?

EB: For me it was just my own time; I never ran with anybody, ever.

CP: You weren't in any organized races or anything?

EB: No, I ran some. They had some 10K's and I ran a few races when I was there, but mostly for fun.

CP: I'm interested to know what it was like to be brothers going to college together.

JB: When we first moved in together, our parents were really worried, because we fought like cats and dogs.

EB: Well, they were shocked.

JB: They were. We fought like cats and dogs, growing up. And mom was really worried that we would be fighting while rooming together. And we got along great.

EB: Everything changed after high school.

JB: It really did.

CP: But you moved out after one term?

EB: No, we lived together for that whole year, didn't we? At the College Inn? It was the next year that we didn't. We lived together for one whole year and then next year we got our own rooms. Based on seniority or whatever you could get your own private room at the College Inn.

CP: It must have been great having an older brother who could give you a heads up on what was coming down the pipeline.

JB: It wasn't just a heads up, he had all his homework from the year before and tests I could study from, it was a godsend.

CP: Now it can be told. Did you guys have jobs when you were in school?

EB: My first year, when Jeff was still in high school, my first year I worked just one afternoon a week at Timberhill Tennis Club, so I could have a free membership so I could play tennis. I just did it for that one year. I didn't really use it all that much, because I had to drive there and it wasn't super convenient. So I did that for one year.

[0:35:09]

CP: Were you giving lessons? Or just helping out?

EB: No, I worked behind a desk and take reservations, answer the phone and stuff.

JB: We both worked during the summer. I guess it was mainly doing Orenco assembly work.

EB: Yeah, Orenco. So I graduated in '82 and he was '83 from high school, and Orenco was incorporated in '81, but it was just kind of an R and D effort, really. It wasn't until we were getting close to graduating from college that my dad said – well, I don't know if you remember, but in '81-'82 there was a recession probably worse than the one we just had. Maybe not as long. But in Roseburg, my dad always said there was twenty percent unemployment in Roseburg in '82, and that was after twenty percent of the population moved out. And so, Orenco was actually started with, there were six partners in my dad's consulting engineering business, and they all started up Orenco and all had shares. But when the you-know-what hit the fan, his engineering business went from thirty-five employees to like fifteen in two weeks. And so, most of their principals went to move to other towns and become public works directors or whatever they could find.

So my dad ended up with one-hundred percent of the shares of Orenco and was just working out of his garage, tinkering. As we were getting close to getting out college, to graduating, he said, "do you want to come and work for Orenco and we'll try to grow this business?" At that point, he was pretty much of the opinion that if we wanted to go get jobs other places, then he would just forget about it, because he didn't have the energy to try and do it on his own. So we were like, "yeah, that sounds kind of fun." So it was kind of interesting, when I was interviewing my senior year, my dad said, "well, I'll match whatever salary you can get out there in the real world." So I interviewed with like ten companies – with Boeing, Shell, Pacific Gas, PG&E, flew all over the United States and got about half a dozen job offers. That was really fun, actually. Did one interview with – Lawrence Livermore was really cool, got to go down and see R and D work on nuclear fusion and all kinds of stuff. Went to the Westinghouse nuclear facility in Idaho, paid for my trip to go skiing for a week at Jackson Hole, because they pay you to drive over there. That was really fun.

CP: And the offer stood for you as well?

JB: Indeed it did, yeah. At that point, I think that Orenco looked like it was much more of a going concern. Eric had been working there a year. And I interviewed with quite a number of companies on campus, but only accepted two on-site interviews. And after I saw what was out there, there was no question in my mind that I wanted to go to work for Orenco.

EB: Well a couple of jobs like, remember Shell Oil wanted to give me three different positions. After one I said, "no" and then they offered another one. Almost every job, you would have to work for two years in one location, and then they would move you around every two years at least three or four times. And that was true of Shell and it was true of, I think it was PG&E down in California. It just sounds awful. You just get your roots down and you're guaranteed to get moved again. No thanks.

JB: And then the Idaho National Engineering Labs, up in central Idaho, was operated then by Westinghouse, and Eric and I both received offers from them. But it's a remote place - the nearest town is an hour away, and you can't drive your own vehicle to work. You have to take a bus. And when I interviewed on site there, all these young engineers said, "you don't want to live in Idaho Falls." And I said, "well, where do you live?" "Oh, we all live in Pocatello."

EB: Which is even further away.

JB: That's two hours away. So they commuted two hours each way, every day.

EB: Actually, when I graduated, I think there were seventy-five mechanical engineers. I think literally half our class took jobs with Boeing, they were in one of their hiring cycles. That was another company that offered me two or three different positions because they were just trying to hire as many engineers as they could possibly get their hands on.

[0:40:15]

CP: So it sounds like, if you made your way through the curriculum at OSU, you were in good shape as far as being competitive in the market place.

EB: Oh yeah. I graduated in December of '85 and there were lots of jobs at that point.

CP: Did you both feel that you were pretty well prepared for the workplace, by the time that you graduated? It was kind of a different situation for you coming back to Orenco, obviously, but you felt like you had the skills that you needed to progress through your work?

EB: We were starting a kind of manufacturing/civil engineering/consulting kind of a business, and the civil engineering design part of it was not a problem, because we were working under my dad and Terry Bounds. But the manufacturing side of things, in hindsight, we didn't really have time to do that necessarily, but in hindsight it would have been nice to work for a manufacturing company for a year or two and work under a manufacturing engineer. That would have helped a ton.

JB: Yeah, a little more experience with manufacturing-

EB: And that's where, if they had MECOP back then, that would have been super. That would have been awesome.

CP: We touched a little bit on the early roots of Orenco, but I'm interested in the idea behind it and how your father and Terry decided to go ahead and move forward with this.

EB: Well, back in the late '70s or early '80s, the state of Oregon and Douglas County, hired my father to look at alternatives to help treat wastewater. So DEQ back then determined that you couldn't just put a regular septic tank drainfield on any old property, which is what happened back then. When we first moved here, Douglas County didn't even have a building code, so you could just go build a house. You start getting these regulations in place, and when DEQ put this regulation process in place that said, if you have high groundwater or poor soils or both, you can't just put a drainfield in. So everybody was, all the sudden, fifty percent of the properties that people wanted to build on were not buildable, because you couldn't just put a drainfield on.

So my father and some other engineers were hired to look at this problem, and they spent a year just going around the country and actually went to some other countries, looking at what people were doing to treat wastewater. And so what came out of that were sand filters. So sand filters were used as the standard to treat wastewater on tough sites in Oregon for a long time. Now there are some other technologies, including a new one that we developed about fifteen years ago, that uses a textile material instead of sand; it's much more compact and easier to maintain and easier to install. But that's how Orenco got started, was they designed these sand filter systems for the state of Oregon, did a bunch of demo prototype systems, put them in, they worked well. But then, lo and behold, there was no equipment to implement these designs, and that's how Orenco came to be, just starting to manufacture equipment to implements these designs.

And at the same time, Terry was working at Douglas County as a special projects engineer, and he and another engineer were looking at Glide, Oregon, which is a community of like about 1,000 residents now. And they wanted to sewer that

whole town, conventional gravity sewer for Glide. Well, it's just too expensive, because it's really rural so the houses aren't close together. So putting in a collection system was super expensive. So they looked at an alternative technology called pressure sewers, and they did a bunch of research on that and, same thing, they came up with a technology that – a pressure sewer collection technology that they implemented. They went ahead and built it and put it in, and they saw all kinds of problems. So they started looking at equipment to improve that technology, and so that kind of was brought into the fold at Orenco, which was pressure sewer collection technology.

JB: So now there are pressure sewers all over the country that use the principles, I guess, that were developed back there in the late '70s.

EB: What really got us going on collection systems was that we were able to modify a standard well pump that you put in a well for drinking water. We were able to make some modifications to that pump and come up with a filter technology for that pump that allowed us to pump wastewater. It was kind of like a water system in reverse; every home has a tank with a high head well-style pump that would pump back to a treatment plant. And we could do it for half or sometimes a quarter of what a conventional gravity sewer would cost.

[0:45:26]

And so in Oregon, there are pressure sewers in Glide, Elkton, Brooks, Tangent, areas around Lake Oswego, areas around Camas, Washington – Camas has a huge one. In fact, our technology was influential in getting Sharp Microelectronics to build there, because we were able to build a pressure sewer collection system so that it was looped, so if they had a problem with one area they could pump to another area. Which, because Sharp said that if their chip plant got shut down, it would cost them a million dollars a day. So they said their sewer and utility has to work, no matter what. And now it's really highly used all over the world. On the West Coast, in Oregon, Washington and California, it certainly has been adopted a lot.

CP: You mentioned, when you guys were in school, you would come home in the summertime and Orenco was sort of being operated out of the garage. Now it's the eighth largest employer in the county. I'm interested in trying to get a sense of the development of the company, the milestones, and the work that you guys did in helping move that development move forward; the roles that you've played over time.

JB: Our first half decade there was spent in manufacturing and product development. Not that we don't still do it, but back then Eric and I were mainly involved with developing and/or improving products. And then, of course, everything else that goes along with growing a business from four people to eight people to sixteen.

EB: Yeah, when we first started we did everything. Like, we would literally take orders on the phone, go down to the shop and actually build it, package it, get it to where UPS came and picked it up. We were pretty small. When I graduated there was five of us; we had a little shop in the garage of our parents' house. In fact, before we moved out here from out in our parents' property, there were twenty-some people in that house. And it's about a 2,000-square foot house, and for a while our parents lived there in their bedroom, and then, come 8:00, here comes twenty people to take over this whole house. It was kind of crazy. My desk was, at one time-

JB: -stuffed in an old closet.

EB: Stuffed in an old closet in the bedroom that Jeff and I grew up in.

CP: That must have been surreal.

EB: At one point though – so the city of Sutherlin shut down the airport here and they turned it into an industrial zone, which there's only us and one other company after all these years. But the county kind of was pushing on us, because we were really not, we were out in the country and we had seventy-five people out there. In Oregon you can have a cottage industry and have five or ten people or something, and we were way past that. Of course the county wanted to keep us, so they helped locate this facility for us.

JB: So we converted the T hanger in the late '90s over in the corner of the property here, and started fabricating control panels there. And then we built the office that we're in now in '94, and were able to move the rest of the operation here.

EB: We've slowly added buildings over the years. In fact, this office space, five or six years ago, we tripled the size of it. Now we've added about 100,000 square feet of manufacturing space here. And a few years ago when the you-know-what hit the fan again, Bayliner shut down, I think, seventeen plants around the country. And so we purchased the old Bayliner plant about six or seven miles south of here, and that added another 130,000 square feet of manufacturing space. And then just earlier this year, we purchased the old Alcan Aluminum manufacturing plant, which is right near the Bayliner plant. So that added another 210,000 square feet. So now we've got close to a half-million square feet altogether, between our three plants and right here. So we've grown substantially from five us in my dad's garage.

[0:50:12]

CP: I would gather that, as the company grew and became more complicated and sophisticated, your work probably became a little bit more specialized. Can I assume that much? I'm interested in the strengths that each of you have and the particular specializations.

JB: Yeah, Eric is, I think, a far more technical person than I am. He stays and has stayed focused on product development.

EB: And composites in particular. I mentioned chemistry was really one of my favorite subjects, and so composites has a lot to do with chemicals – fiberglass and resins – so that really interested me. Back when we first started, we were just kind of tinkering with doing a few fiberglass parts; we were doing what's called spray-up and manual lay-up, which is really a messy, not very fun environment. So when we first started doing that – in fact, even when we were in high school and college, we were using a chopper gun to make parts in the summer, and it was just an awful awful kind of way to build stuff. Not very accurate.

JB: Real messy and smelly.

EB: Yeah, it was just not a fun environment. So I started talking to our vendors and asking, "isn't there some other way to make stuff?" And somebody brought up, "well, there's this guy that does resin transfer molding. It's kind of a closed molding process." So I called up this guy in Seattle, a vendor that made equipment for doing this, and that was really in its infancy. In fact, it's really analogous to what we do in wastewater – our whole wastewater side of things was in its infancy, this small-flows collection and treatment technology. You either had a septic tank drainfield or you had a big municipal sewer system, there was nothing in between. And that's what our niche for wastewater.

Well, when I started looking at this fiberglass technology, it was kind of similar. It was really in its infancy. And I happened to hook up with a guy in Seattle that was doing work for Kenworth, making fan blades and some other things using this somewhat low cost closed molding process. I kind of learned with him and he's really kind of one of the fathers of that industry. So over the years, I really just continued to work on the composite side of things. Like our big plants south of here are pretty much dedicated to big large composite vessels and tanks and treatment units. And then we have the composite facility here that does really computerized injection molding of fiberglass components, and it's probably one of the most sophisticated ones in the country, in terms of fiberglass parts. So it's really been fun for me.

JB: It has been just fascinating to watch that part of our business develop. We went from this relatively prehistoric manufacturing method for making fiberglass parts, to some of the advanced I've seen in the fiberglass industry. Eric's got a couple robots deployed over there that are making fiberglass pre-forms. And he's got computerized injection systems that inject catalyze resin into the close molds and produce some of the best looking parts that you find in fiberglass. It's really been cool to watch.

CP: And how has your role changed over the course of the years?

JB: Quite a bit. [laughs] I think I spend most of my time dealing with business and people-related stuff now.

EB: Some of the key manufacturing people report to Jeff, who coordinates a lot with HR and manufacturing people.

JB: Our manufacturing manager reports to me. But we have all these people that do all the technical stuff, and honestly there are so many issues to deal with that it really precludes me from deploying any of my engineering expertise anymore. At least I know what people are talking about when we talk about engineering issues. We have a whole fleet of CAD operators and we've got a number of engineers dedicated just to manufacturing.

EB: We have a lot of other OSU grads too, actually. I had meant to look that up to see how many OSU grads we have, but we have a lot. We have a lot of Ducks and Beavers. It's kind of funny, during the Civil War, this room that we're in here right now, the Beavers will take one side and – this wall opens up – so the Ducks will be on one side and the Beavers on their side, it's a big huge party before the Civil War.

[0:55:15]

CP: Is there a line down the middle of the room, I hope?

JB: Oh yeah. One side is orange and black, the other one is green and yellow.

CP: What was it like building this company with your dad? You mentioned Terry Bounds as well, a fellow Beaver.

EB: Actually when Terry was using his garage in town, he was building controls, that's kind of where his expertise in the beginning was, was building controls – he designed and built the early models. Actually, Terry was one of my father's first students at UCC before Terry graduated from Oregon State, and then he came back to work at the county but, like a lot of students my father had, he became friends with quite a few of them. I remember Terry used to come out and help us buck hay when he was a college student here at UCC.

JB: What was the question? [laughs]

CP: I'm just interested – I mean, this is a family business – and you guys have been successful with your father's idea, more or less, and the two of you coming in at an early point. And just the whole development of the company is something that grew out of your family, more or less. If that's a question at all.

JB: Yeah, I think we've kind of found our niches along the way, so it wasn't like there – obviously, regardless if you're a family or not, as a business grows you encounter all the growth issues; you're going to have some head-butting.

EB: When you're involved deep in it, you don't really always even think about that. I remember early on, after the first few years, we kind of tried to get away and just look at the business as a whole from a 3,000, like "what are we doing? Are we doing the right things? Do we need to hire people?" All those sorts of things we would talk about. But on a day-to-day when you're working, you just do what you need to do, and you kind of fall into what you like to do. Like I fell into the manufacturing, the composites, and applied – I'm involved with plastic injection molding. That's just kind of what I like to do. And I was much less of a people person that Jeff was and Jeff was a lot better and, I think, a lot more out-going with people, and so that's kind of where he got involved.

Also, when we first started hiring people, it was funny because we played tennis and we knew all the tennis friends. And one of my best friends in high school, he graduated in mechanical engineering and he came back and worked for us, and it was a running joke for the first couple years that you had to be a tennis player to come work for us at Orenco. Because at one time, I think we had enough young guys to field a USTA team. We had eight guys – like a high-level USTA team. It was pretty funny.

CP: A question about community. Orenco is in Sutherlin and I'm interested in the integration of the company and the impact that it's made on the community.

EB: That's a really loaded question, isn't it? We haven't always had the best relationship with the city of Sutherlin, just because of the people that we've had to deal with. I think it's better now than it has been in the past; we've kind of butted heads with some city managers.

JB: They gone through a plethora of city managers here, since we've located here. And some have been pro-Orenco and some haven't been quite as supportive as you would think, for being the largest or second-largest employer in town. But yeah, you know, we try to help. We have a lot of expertise here – engineering and otherwise – and when we see issues with their water system here or their sewer system, we're the first ones to go-

EB: "We'd like to help out. We live here." Sometimes, in the past, a lot of times they wouldn't even – which is kind of bizarre to us, I'm not sure what was going on – they had an operator at their treatment plant that was pulling the wool over

their eyes, the city, and they ended up with this tank full of sludge and they were getting in trouble. So they hired one of our operators, for like six months, to get it back under control. And we've offered to do some bioengineering for a lot of things, and sometimes they've taken us up a couple times, but we're hoping for better relations in the future with these guys. But, I don't know.

[0:59:59]

JB: There was a city manager a few years ago that met with us and said, "we really like what you're doing, it's impressive technology, we'd like to make Sutherlin kind of a showcase for some of the things you're doing." And we thought, "wow, this is great. A new manager is kind of seeing the light." And we got started on a few projects and it wasn't long before he – what happened to him?

EB: I don't know.

JB: He was gone. He either was terminated or left or retired or something.

EB: Yeah, small town politics are pretty bizarre to me.

JB: Fortunately, we don't really do a large percentage of our business in the local area.

EB: Very little and that may be one of the reasons why we don't have more relationship with the people that run this city, for example. We don't hardly sell anything around here. In Oregon, because we started here, we have a fair amount of sales, but Washington state and California dwarf Oregon in terms of our sales. And then we sell globally, like fifteen percent are outside of the U.S. So we're, I guess, less involved in the community than someone that sells ice cream and all their sales are right here. To this day, there are still a lot of people around who have no idea what we do or who we are, just because they don't see our product.

CP: Well, there have been some new applications of the technologies that you guys have worked with and developed for wastewater treatment. One of them in particular seems to marry a couple of interests – the engineering and designing piece and also the tennis piece – with the table tennis tables that you guys have worked with. You want to tell me how that came about?

JB: Well yeah. I guess it started with Motif, right?

EB: Yeah, I'll make a long story really short. We worked on a technology that allowed us to embed images in fiberglass. So for example, we make these little manhole covers that you'll see all over the country in people's yards. If you see one of those lids, you know that there's a tank underground or something underground that's involved with wastewater. Well, a lot of applications, especially in California, people will spend tens of thousands of dollars on really nice landscaping, and then they have this green lid which is not really ugly but it doesn't fit in with their landscaping. So we developed a way to put an image, like somebody could send us a photograph and we could embed that image in the lid. We have standards that are grass, bark, and rock, that blends in with the landscaping pretty well. And when we got that technology working pretty well, people started throwing out other ideas. I'm not sure where the ping pong table came from.

JB: Well, remember we started having some requests for college logos embedded in the lids. So we experimented with some images in the lids and realized, "hey, we can embed these images into any shape really," so we made some – didn't we make a table or two?

EB: That's right, we made some regular picnic table-size.

JB: And then decided to try to make some ping pong tables. And we went through a number of iterations before we landed on the current methodology. You saw the table at Reser Stadium – it makes a very nice table.

EB: It's kind of bulletproof. You couple probably have a couple three-hundred pound linemen jump up and down on it and it's not going to break.

JB: Yeah, it's a very commercial quality. Eric and I both really enjoy playing ping pong.

EB: If you're a tennis player you play ping pong. It goes with the territory.

JB: Yeah. So our tennis club has a couple tables there, and if we're not playing tennis we're playing ping pong.

EB: But the technology that we use to build these really large treatment vessels – we make some like 10,000 pound fiberglass parts all in one shot – is called vacuum infusion. And that vacuum infusion process is what we use to make the ping pong tables too. That graphic technology that we developed, along with the vacuum infusion process, we married together and that's how we were able to build the ping pong tables. And we can also build other things with graphics in them, if you want. We're starting a line of docks, like floating docks, that use can use on a river or lake or marina. So that's another thing outside the wastewater realm that we're trying to develop in composites.

[1:05:08]

CP: It sounds like there's an awful lot of opportunity in this spin-off that you guys are pursuing.

EB: Yeah.

CP: And you mentioned that one of the tables is in Reser Stadium, how did that come about?

JB: Actually, Heidi contacted, I think. Or no, you ran into somebody when you were up there once and pointed them to Heidi.

EB: Yeah, I can't remember how it came out exactly.

JB: Or no, it was the other way around. She contacted somebody at Reser and you happened to be going up the following weekend. And so, I think Eric just – did you show her some pictures?

EB: Yeah, I did. I showed a bunch of pictures. In fact, we had an image of the different Beaver logos.

JB: Yeah, that's right. So we already had some design ideas and they said, "yeah, we'd love to have one."

EB: In fact, they've got all that game room, they didn't have a ping pong table. So it worked out pretty well.

CP: So all the football fans who watch this now will know where that table came from. Well one thing we're trying to do with this project is get a sense of where this state is at right now in the different regions that we're traveling to. You guys have been in Roseburg and Sutherlin for a long time, you mentioned that it was very much a timber town once upon a time in Roseburg. Obviously things have changed. I'm interested in your perspective on where Douglas County is at right now in terms of the challenges and the opportunities that it's facing in 2015.

EB: Wow. You know what, timber is still a huge part of this county and I think it always will; I mean, there's too many darn trees for it not to be. Trying to get to them to cut them is a huge controversy of course, but there's always going to be timber here.

We've seen, since we've been here since the early '70s – because it was probably in the '80s when they started diversifying, because of the lack of timber being cut – and there's been tons of companies that have come and gone. Bayliner, Alcan, Dell Computer, a whole bunch of different companies have come and gone. And the county has tried to entice these companies to come here, and I don't know of any major employers that have come and actually stayed. So we've always felt, you know, you need to promote the people that want to be here and that are already here. And the county has helped us, for sure – or we think so – because early on we think they were trying too hard to bring somebody from outside in, that didn't have roots here and didn't really want to stay.

Right now, I think we're kind of somewhat at a crossroads because we're back, we've lost – just in the last ten years – lost a bunch more companies that had been here from out of state. And something needs to fill the void for all the lost timber stuff. We need companies that are going to bring more people with education, because most of the people who go to Oregon or Oregon State, once they get degrees, what are they going to come back here and do? We need to have industry and things for those people to do. So it would be nice to get some people that want to come here to start businesses, rather

than just bring in some big conglomerate that's going to be here and be gone. That's proven that that's not a good long-term way to get business here.

In Sutherlin, for quite a few years they were going to bring this electric car company in, which we all just rolled our eyes when we heard that. And the county and the city here are all excited about this and we're just like, "God, not again."

CP: So it's a sense of crossroads then.

EB: Well I think so. I mean, right now it's kind of stagnant. We're just getting over a recession, this county is still lagging behind Portland and Eugene in terms of more job growth.

JB: Yeah, but the county's largest employer just announced they're moving their headquarters up to-

EB: Springfield. Roseburg Forest Projects, or it's just called Roseburg now. They're the largest employer in our country right? They have over 3,000 employees. They're moving their headquarters to Springfield because, lo and behold, they can't recruit-

JB: -recruit and maintain the talent they need here.

EB: For the office staff – you know, people with degrees. They're still going to maintain their manufacturing stuff here; they have too much infrastructure to move all that. But that's the kind of problem we have. We need to have a reason why young people out of college would want to move here.

CP: Well as we sort of close up a little here, I'm interested in the continuing connections that you guys have had with Oregon State. You mentioned you've hired a lot of Oregon Staters, has there been any, over the course of the years, any more going on in that relationship?

[1:10:00]

EB: Well, we continue to hire-

JB: His son goes there now.

EB: My son goes there, and my younger son graduates from high school next year and there's probably a good chance he'll go there. We've been hiring, in the last couple years, we've hired a number of Oregon State grads, engineers as well. My son is hoping to get into MECOP, I think, this year.

CP: Mechanical engineering?

EB: No, he's in computer or Electrical Engineering department. He's thinking about getting a double degree; some time ago they combined Computer Science and Electrical Engineering together, and he was trying to decide last year, "you know, I really love programming and I'm thinking about computer science, but I think electrical engineering would give me a broader education." Then when he found out that Oregon State's were together he was like, "perfect." So he's going to get an electrical engineering degree and definitely a minor in computer science or maybe even a double major, we'll see.

JB: And I have a son as well who has Oregon State on the top of his list.

CP: The last thing that I'll ask – and this is a question we're asking everybody for this project – is to reflect on where the university is right now. I gather you guys have been monitoring, at least, the change at OSU. It's been pretty pronounced in the last few years. Your sense of where OSU is headed as it looks toward its sesquicentennial in 2018?

EB: Well, all the new buildings that are going on are very cool, like they're keeping up, you know? When I was there, the buildings were old even then, when I was there. So it's really gratifying to see them – the intramural facilities, the new Kelley Engineering Building. When I was there, they had remodeled the Civil Engineering building, I toured through there, and they've got the building kind of cut away so you can see how it was built and how the utilities. They've done a good job.

The only thing – I have really mixed emotions about the whole football thing, because they spend mega money on football. And I understand, to get notoriety and publicity, that's why they do that, but I just think, gosh, it sure would be nice if OSU had a track team and a tennis team and the soccer team would get notoriety. I mean, how many people know that the number one or two guy in the draft for soccer was from Oregon State? Who knows that? Nobody. I think that's just such a bummer to me. And yet, we get a four star athlete coming to Oregon State and he's all over the paper. It's like, really? I mean, he's not even going to the NFL and we've got a guy that's going – I don't get it.

JB: I actually, I'm a little concerned, looking further into the future, about the brick and mortar of what's going in to, not just Oregon State, but any university. Certainly I think it's necessary to have modern facilities, but also I think folks need to recognize that it's really possible to get an education, and be a functional technical expert in a number of subjects, without really having left the comfort of your own bed. And my son brought this up to me last year, he said, "Dad, I can do this online" – my son's really into programming – he said, "I can take this six-month intensive computer course, and they'll guarantee me a job of \$80,000 a year or more, or all my money back. And I don't have to go anywhere, Dad."

EB: Well you know, you have a lot of CEOs espousing that; espousing that you don't need college.

JB: The UnCollege guy, who's talking about that. I think that it has to be recognized and acknowledged by folks at the university that people, the opportunities are becoming more and more. And before we sink \$20 million into a new building, is this the best way to deliver the education to these new students?

[1:15:03]

EB: Yeah, that's probably a good point. It reminds me of the cable companies, they're realizing that a lot of people are starting to get all the stuff streaming, and if we don't get on board – I heard on NPR this morning, they're like, Comcast is going to get into the streaming service, but they're going to cannibalize their own cable service by doing that. But if they don't, they're gonna get left behind, right? And education is kind of the same way. I personally, it would be cool if Oregon State would offer more online stuff. I'd be interested in some of that stuff; I've looked at courses and been like, "I'd like to take that."

JB: Well, you took an online course from Utah a few years ago, didn't you? Organic chemistry?

EB: No, I took that at UCC. Yeah, a few years ago, my old professor was retiring – taught organic and I'd never taken that – so his last year he was teaching, I'm literally a three-minute walk to the front of UCC from where I live, and it was an 8 A.M. class, so I was like, "perfect, I'm going to take organic."

CP: You're the first person I've ever heard say that they took organic chemistry for fun. [laughs]

EB: Yeah, the students who were in there, when they found out what I was doing, they looked at me like, "you're freaking crazy." But I just liked it. The labs especially were really fun; memorizing stuff was not fun. But in composites, you're dealing with organic molecules, with polyesters and epoxies. So it was just really interesting. You get to learn about compounds in drugs. It is just scratching the surface, first year organic chemistry. But to me it just was really interesting.

CP: I'm also interested in knowing – the two of you are in industry and you're networking with other folks in industry – the sense that you're getting about the quality of graduates in engineering that Oregon State is turning out these days. Obviously you've hired plenty of them, so it must be pretty good. But we get numbers about national rankings and that sort of thing, but on the ground, the kind of talent that's being produced by this university.

EB: Well I think it's quite good.

JB: Yeah, fantastic.

EB: Really, you don't expect people to come here and hit the ground and start doing stuff, right? They need to understand all the basics and everything, and I think they're getting that grasp of how electronic circuits work and just the basics. It's not different when I graduated. When I got out of college it was like, "yeah, I know all this stuff but I can barely tie my shoes."

JB: In our world, application is for us to teach. The fundamentals is where the university comes into play. So we've got engineering grads from quite a number of different fields of engineering, but here they're either doing manufacturing, electrical or civil/mechanical kind of work. So if people come to us with a good fundamental knowledge – that's really mostly taught in the first two or three years of school – and they have a good work ethic, we can mold them and turn them into fantastic employees.

EB: Yeah, to come to work here – technical people, trying to get them here – first of all, they have to have the technical background to understand, so we can train them easily. But second of all, one of the most important things, is trying to get them to make sure they want to live and here, they're not going to work here for a year and then take off. That's a real risk of hiring people right out of college. If you're single and twenty-three and you come here, its like, "am I going to be able to find a spouse in Roseburg, Oregon?" Or "what am I gonna do for nightlife?" That's, for us, just as important or more important than finding someone who can technically do the job. Because that's happened a number of times, hire somebody and have them leave six months or twelve months later, and you've invested all this money and training.

CP: That's really interesting. That's a different set of challenges than a lot of other places.

EB: It is. And you think about big companies, like Boeing, you're going to bring in 500 engineers. And they know a bunch of them are going to leave after getting a couple years' experience, right? And they can afford it and probably plan for that. But we have twenty-five engineers and we can't have that happen very often.

CP: Well, Eric and Jeff, I want to thank you very much. This has been very interesting and I want to wish you and Orenco the best in current and potentially future endeavors in a lot of different directions, be it ping pong tables or docks or whatever else may come next. Thanks guys.

[1:20:09]