PETE HORNER: Hello and welcome to another series of videotaped interviews with pioneers and pillars of the OR/MS profession, organized by the INFORMS history and traditions committee. My name is Pete Horner, I'm the editor of *OR/MS Today,* the membership magazine of INFORMS. I'm also the editor of *Analytics*, an online outreach publication from INFORMS aimed at the global analytics audience.

Today's guest is OR pioneer and pillar, Don Morrison, professor emeritus at UCLA. Don's remarkable academic career includes groundbreaking research in such diverse areas as marketing science and sports analytics. But perhaps his most important contribution may be his untold numbers of business school graduate students, who benefited from his award winning teaching and mentoring, over the last 50 years.

Don complemented his academic career with an extensive involvement with TIMS-- The Institute for Management Science. He was particularly active in the late 1980s, and the early 1990s, when he served as-- among other things-- President of the Institute from 1991 1992, as editor of the TIMS flagship journal, *Management Science*, and also as the founding editor of the journal *Marketing Science.*

INFORMS named Don to its inaugural class of INFORMS Fellows for his academic achievements and volunteer service to the institute. With all that going on, Don also managed to weave his lifelong passion for sports into his work in many interesting ways. For example, he was captain of the track team at MIT, while pursuing his undergraduate degree. And I understand he was named captain of the team. Being named captain comes as no surprise, but the fact that MIT could muster enough athletes to field a track team did come as somewhat of a surprise.

Finally, in a more serious vein, in the sports arena still, along with his pioneering work in sports analytics, Don has served for many years as faculty athletic representative for UCLA's intercollegiate sports program. And he has also served three separate, I understand, terms as president of the PAC 10, which is now the PAC 12 conference.

Don, thanks for joining us today.

DONALD MORRISON: Oh, great to be here.

PETE HORNER: Did I get most of that right?

DONALD MORRISON: Yeah, you got most of it right.

PETE HORNER: All right, thank you. Speaking of sports stats, I think a common interest to both of us, I understand that your interest in statistics was ignited, to some extent, by-- of all people-- a high school, junior varsity basketball coach. Tell us about that.

DONALD MORRISON: Well, even as a young kid I was in interested in batting averages, and things like that. But I played basketball in high school. Also ran track. In the 10th grade, on the junior varsity, at the end of practice, the coach would have us go off in pairs.

So you and I could be shooting free throws. And it's more fun to shoot than rebound for the other guy, so maybe I make two shots and miss-- and once you've missed, then it was your turn. So maybe you made three, and missed, now it's my turn. But we kept track.

So I was the best free throw shooter on the team-- I wasn't the best player, but I was a good shooter-- and I was very competitive about my free throw percentage. So I went to the coach and said, Coach Brownlee, I think you're getting a biased estimate of our free throw shooting ability. He says, what?

I said, yeah, every sequence ends with a miss, so it's disadvantaging us. He says, Morrison, if you'd put more of those IQ points into playing better defense, you'd get more playing time. And then I said him, but coach, don't you think it's an interesting question?

He did not think it was an interesting question. And interestingly enough, I hadn't had any statistics courses, but if you use Neyman Pearson approach, he was getting a biased estimate. If you use a Bayesian approach, he wasn't.

PETE HORNER: Thanks for sharing. That's fun-- I can't imagine too many people would have asked my coach that question. But thanks for sharing that. So you went on to earn an engineering degree at MIT. Why MIT, and why engineering?

DONALD MORRISON: Well, I was good in math and science, and people told me I should be an engineer. And it was a lot easier to get into college in those days. My parents, even though I was born and raised in Detroit, they were from Vermont, and their dream was for little Donald to go off to MIT. So I

applied Michigan, where I was a slam dunk to get in there, and MIT. And fortunately I got admitted.

I was a pretty good student, kind of a mediocre high school-- but I think I got in because I was captain of the track team. That MIT was getting a little defensive about the nerdy image, and so on. And of course, it was mostly men. And so my entering class, the theme was, "Educating the whole man."

And so my guess is my grades and test score put me on the bubble, and then they saw, oh, this guy's a pretty good athlete So I think that got me in. But it was a good four years.

PETE HORNER: Can you talk to us briefly-- I mean, I'm sure MIT was just crawling with important scholars and whatnot at that time-- any stand out to you?

DONALD MORRISON: Oh, I had some interesting professors. Anyone who's taken thermodynamics, there's the Keenan and Keyes steam tables. And Joe Keenan was still there-- he was this legend. And engineering wasn't as scientific or whatever, and Joe Keenan, he only had a bachelor's degree. So when I was there-- from '57 to '61-- a lot of the famous old timers did not have PhDs. The younger faculty did, of course.

Although I did not ever meet him, I knew about him: John Nash was a young math professor when I was a student there. And then he went on to do some amazing things in different ways.

But it was interesting.

They worked us so hard there. And I was running track, and I had a girlfriend 13 miles away in Wellesley-- and with no car-- so figuring out all the logistics. Sort of no free time-- so I don't think I got to know the faculty as well as I could have. Or I certainly didn't take full advantage of Boston.

PETE HORNER: Well, from there you went to Stanford. And the story I hear is you went there intending to be an MBA, or pursue an MBA, and you walked out of there with a Ph.D. in OR. Now how does that happen?

DONALD MORRISON: Well, I'm glad you asked that. Because I had a decision to make-- either go on in engineering, or get an MBA. So I applied to MIT engineering, and also to some business schools. Decided I was going to go the MBA route, and I was fortunate enough to be admitted to Harvard-- the dominant number one business school at the time-- and some other schools.

And I went into my statistics professor and said, Professor Duran, I have this decision to make. I'm going to get an MBA, and I've narrowed it down-- I'm either going to go to Harvard or Stanford. I want to go to Stanford, but I don't think my reason's very good. He says, what's your reason? I said, I just spent four years in Boston, and I've never been to California.

He says, that's a great reason. So I call home-- I have great parents. My father didn't say a lot, very good parents. So I told them what I was doing. He said, that's fine.

So my mother got on the phone. And she was pretty free with her opinions-- about my girlfriends, other things-- and she was convinced, MIT, Harvard, THEIR New England roots, of course I was going to go to Harvard. So I told her that I was going to Stanford, and her exact words were, how could you go to a place like that? And turn down Harvard?

But they'd never been to California. They came to visit me, and she never actually explicitly renounced that, but I could see her thinking, oh my, Donald, that wasn't such a bad idea.

PETE HORNER: believe you were part of the original cohort of OR Ph.Ds there. That must have been an amazing time and collection of talent.

DONALD MORRISON: I was able to exempt a few courses, and so I took Pete Veinnott's introductory to OR class, Herb Scarf taught a linear programming class. And I thought, I kind of like this stuff. And so I went in to see Jerry Lieberman, and asked about transferring into the OR program.

So I did. I joined. The original five, besides myself, were Art Geoffrion Bill Pierskalla, Bill Zangwill, and a fellow named Gene Durbin, who went to work for the Rand Corporation. So I had no illusions about being the sharpest knife in the drawer.

I got in there and had to play a little catch-up ball. But it worked out very well. But I had some great summer jobs. The last four were at Ford Motor Company-- two engineering type jobs, and two kind of MBA type jobs. And my last summer job had to do with Ford versus General Motors, and loyalty, and reliability versus styling, and so on.

And that combined with a three quarter sequence I took from Pat Suppes in took mathematical psychology, was the stimulus for my dissertation. And even though I was in the OR department, my thesis adviser was Bill Massey, a marketing professor in the business school. So that's how it all got tied together.

In fact, in choosing my dissertation topic-- as I say I may not have been the sharpest knife in

that drawer in there, but I had a lot of common sense. So I'm thinking, well, I could do a dissertation in optimization. But you know, George Dantzig and a few other people have done pretty well. Some in my cohort were doing inventory theory, and I thought, well, you know, Arrow, Karlin, and Scarf have done all these things.

Now, this quantitative marketing area, this is pretty underdeveloped. So I'll play around in that little pond. And it worked out great.

PETE HORNER: would say so. You mentioned Dantzig - he was at Berkeley at the time. He wasn't at Stanford was he?

DONALD MORRISON: Yeah he was at Berkeley.

PETE HORNER: Did your paths ever cross, back in the day, or at anytime?

DONALD MORRISON: Oh, yeah, when I would go back and visit and Stanford, and so on, and I saw him there. Just think of how fortunate it was-- I took classes from Harvey Wagner, Jerry Lieberman, Fred Hillier, as I mentioned, Herb Scarf, and even the mathematician Sam Carlan.

So here's an interesting story. So I survived the first linear algebra class. So So now it's the survivors. And Sam teaches the second course. He'd come at 8:00 in the morning, and he'd say, oh, I was looking at this homework problem at breakfast this morning, they weren't too tough. So the mid-term comes, and one question is, diagonalize the following matrix.

Well, I couldn't diagonalize it. But there's a Cayley-Hamilton theorem-- I plug the thing in, and it couldn't be diagonalized. So he gave me extra credit. So now, I'm riding high. I'm at the top.

Eight questions, 10 points each-- I got 11 out of 80.

PETE HORNER: What happened?

DONALD MORRISON: Well, and I got an A minus. And you're thinking, well, Sam, must've really liked Don. No, the median was 13. So, but anyway, I had a great education at Stanford.

And you know, the one year in the MBA program was incredibly good, because I lived with the tribe that I was going to teach. So I was only 26 when I first started teaching, but I'd lived with the tribe. So that was good.

PETE HORNER: Yeah, that was a fortunate accident, I guess you might call it. Let's talk about your dissertation. Was it based on some of your work that you did with Ford? And how did you get into from engineering to marketing science? How did that all come together?

DONALD MORRISON: My summer job at Ford-- For was losing market share to General Motors. So this was the summer of 1963. And so I got some switching data that people turned into Ford, and they bought a Ford, or they bought a Chevy, or something. So I had a whole bunch of that switching data.

And so I thought to myself, my dad had an Oldsmobile, he had a Plymouth, but one next door neighbor always bought a Ford. We had other people on the street who always bought Chevys. So I'm thinking, OK, there's this hard core loyal, and then potential switchers.

So it was a pretty simple model. I broke it down, and I had the Ford, General Motors, Chrysler, and all others-- and there were the hardcore loyal who just zipped back. They didn't even think. And I actually had data-- in that era, Cadillac just dominated-- 87% of the people that re-bought a Cadillac never even considered another car. So that was pretty amazing. Not anymore.

So I found from 1960 to 1963, that with Ford and General Motors, the hardcore loyal percentages stayed almost exactly the same. But the share of the potential switcher pool went-- General Motors and Ford were about even in 1960. General Motors had a little advantage. And by 1963, it was two and a half to one in favor of General Motors.

So it gave them some insight, and showed that the hardcore loyal thing wasn't an issue, but it was attracting the potential switchers. And they actually had me give the talk to-- it didn't go all the way up to the CEO, but a couple of executive vice presidents were there, and I presented my talk to them.

And so I had a Markov switching matrix, and showed them what would happen in the long run. So they got, oh, this Morrison's a pretty clever guy. And so I took the switching matrix for 1963. Now they thought, well, we used to have 30% of the market, that's kind of our birthright to get that. And now it's down to about 22%.

So I showed them with a toy example how you did it. Then I did it with this matrix. Then they're thinking, yeah, this is a smart guy. But it showed that they were trending towards 18%. And then they said, we're not going to 18%! And I said, look, I'm sure you can fix some of these

numbers in the switching matrix. But if it stays like this--

So it was a good learning experience for me that my whole process I was doing, they thought it was pretty good, but once the numerical conclusion was something they didn't like, they didn't think the model was necessarily so great.

PETE HORNER: For the record, what was your thesis? What was the title?

DONALD MORRISON: I think, *A Stochastic Model for Brand-Switching Behavior.*

PETE HORNER: We'll get to your book, but that sounds a lot like your book.

DONALD MORRISON: Oh, it is. My thesis was the stimulus for the book.

PETE HORNER: OK, we'll get that in a minute. But my question right now is, at some point, you wanted to be an MBA. Then you got involved with marketing. You had a choice, after you get through all this-- your PhD and whatnot-- to go into industry or academia. You go into academia. Why?

DONALD MORRISON: That's interesting. So when I went to MIT, got a degree in mechanical engineering. I thought, I'm going to go back to Detroit and be an engineer, Ford Motor Company. Why not go to Detroit? They had the Lions, the Tigers, the Redwings-- where else would I go?

So then I had this MBA experience. And I thought, well. I'll go back to Ford Motor Company, but I'll be a manager. Then I switched into the OR program. And they actually had an operations research little group-- and I thought, no, what I'm going to do is go back to Ford Motor Company and I'm going to end up running this operations research group.

But then, by this time, we went back-- I'd been at MIT for four years, Stanford for three years, the campus sun is shining, I thought, you know, I kind of like it here. So that's why I decided I'd be a professor.

PETE HORNER: You spent, what, 20 some odd years at Columbia?

DONALD MORRISON: 22.

PETE HORNER: And then since 1988, or so, at UCLA. So that adds up to about 20 years of teaching.

DONALD MORRISON: No, close to 50.

PETE HORNER: Close to 50, excuse me. Yeah,

DONALD MORRISON: And I had one year of teaching at Stanford as a lecturer while my wife finished--

PETE HORNER: So then that'll put you over 50. Let's call it 50. That's remarkable.

What I was thinking here is much of your research and consulting seem to focus on marketing science, and then you were also the editor of that journal. What drew you to that? I mean, you mentioned some of this experience you had with Ford.

DONALD MORRISON: Yeah, I did have some exposure to marketing. My dissertation was related to that. And I was very fortunate-- *Journal of Marketing Research* was founded in 1964, Bob Ferber was the editor-- and so my first publication is in that journal in 1965. And it was founded-- it wasn't really against the *Journal of Marketing*, but they wanted a journal that had more quantitative rigor to it. And there were very few people in marketing with my kind of training.

So there was this journal for me, and I was pretty good in probability modeling, some of the statistics, and the ideas for my papers, in those early years, did not come from academic journals. So I'm at 116th Street and Broadway, I can hop on the subway down to 50th or 42nd Street, and I had a bunch of buddies in ad agencies, marketing research suppliers, there were still some corporations in Manhattan,. then And particularly the ad agencies, then, they had a lot of PhDs that were running research. Think Ben Lipstein, Lou Pringle.

And so I would have lunch with them. That was actually in the *Mad Men* era. But it was never on the accounts side, and I never had a three-martini lunch. But I had a couple two-martini lunches with these research guys.

But it was interesting.

And so everything, the stars all lined up for me. I had the appropriate educational background, I was in Manhattan, and I was connected to all these people doing serious statistical probability modeling in there. And so it was just phenomenal.

In fact, it's still going today. I'm a co-founder of a group called the Marketing Modelers group.

It's a great organization-- it has no revenue and no cost. Different ad agencies take turns hosting it, and they always alternate an academic speaker with an industry speaker. And I started that back then, and it's still going strong.

PETE HORNER: Well, obviously the big huge thing going on now, with the analytics and marketing, they look like they're made for each other. That's all you talk about-- knowing your customer, marketing the right thing to the right person at the right time, et cetera, et cetera-- the deluge of data we see today, everyone trying to make sense of it. That's a long, long ways from where you were back in the *Mad Men* days. How do you get your mind wrapped around that?

DONALD MORRISON: Well, one thing I'm kind of proud of is some of the models that I developed back in the '70s, or early '80s, are actually being used with these data now. Pete Fader at the Wharton School has kept that stuff alive.

But you're right-- there's so much data on individuals, various groups, the kind of segmentation you can do. And it's interesting, just the term "analytics"-- I've been around TIMS, ORSA, INFORMS since the mid-'60s. And periodically they'd have these PR initiatives-- we want people to know what OR is. It's not the operating room. Or what management science-- well, management isn't a science, and what is it? And so on.

Now analytics are so hot, and it's a lot of the stuff we were doing then. But, with these big data sets, if you do it correctly, and if you have some kind of underlying theory going about it, then I think it's amazing. And people have different opinions on this.

But some people think, you can just throw the kitchen sink at it-- every possible regression, every possible principal components. You know LSRN doing all this stuff. And I kind of think, my view, is that's like arming a baby with a straight razor. Because, like in the Bible, it says, seek and ye shall find. And if you do that, you will find some very interesting-- and maybe even highly counter intuitive relationships. But it may just be statistical noise.

And so, I'm not knocking that at all-- and one of my colleagues, Mike Hanssens co-founded a company called Market-Share that's doing that kind of stuff. And the company's going gangbusters. So, yeah-- but I'll tell you for the young people today, I had incredibly rigorous analytical training. But when I was using the computer, it was the IBM 80 column cards, and if you had one typo in there, the program didn't run, and all that kind of stuff.

But I'll tell you today, the young people-- they better have very, very good computer skills.

PETE HORNER: I was going to ask you, now given the current environment, the crazy demand for data scientists and business students that have some quant background, what's your best advice you give to business students today? And where are their opportunities? How do you see that?

DONALD MORRISON: Well, you know the Anderson School at UCLA is thinking about a one-year master's degree in marketing analytics, or maybe just analytics. And I think for people who want to do that, and if they have the appropriate undergraduate education, then something like that may be a better route than a full MBA program.

Now, you're not as apt to end up as the CEO of a major company, but how many regular MBAs are going to end up as a CEO?

PETE HORNER: Well, you see all these program sprouting up from not necessarily the well-known business schools, but they're trying to fill that demand from the marketplace.

DONALD MORRISON: And I think it's a smart thing to do. Just like a plain vanilla undergraduate liberal arts degree, it doesn't lead to any particular job. In the same way, a plain vanilla MBA may be better than that-- but when you're going out in the job market, you need to bring something to the table, something specific that you can do. Oh, well, you know I know a little marketing, I know a little finance, I know a little accounting. And they say, well, yeah, good for you. Next.

PETE HORNER: We mentioned your book earlier-- *Stochastic Models of Buying Behavior*-- 1970. Now, talk just briefly about how that came about, and how it was received at the time. And with that cutting edge stuff?

DONALD MORRISON: Yeah, it was very well received. So it's Massey, Montgomery and Morrison-- and Bill Massey, he's not much older than I am, but he was the dissertation adviser for Dave Montgomery, who's my contemporary, and myself. Dave's Ph.D.'s from the business school, mine's from the OR department. And so the book is really based on the work that I was doing. And so it built from that, and then Dave's dissertation, and then Bill added a little bit at the end, and so on.

But it was cutting edge, and it sold 3,000 copies. Now you might say, well, 3,000 copies. But a typical University Press book sells way less than 1,000. So MIT Press--

PETE HORNER: You had a best-seller on your hands.

DONALD And so, Dave and I and Bill, we actually even made a few little royalties on it.

MORRISON:

PETE HORNER: Was it a fun process? Or was it a grind? Or was it just something you wanted to get out there?

DONALD MORRISON: It was a fun process. I think MIT Press came to us. After Dave, when he left Stanford, he was an assistant professor at MIT. So I think he got MIT Press involved with it.

And look, a lot of the chapters, two of the chapters, are right out of my dissertation. At least one chapter is right out of Dave's. I wrote a general chapter on the statistical methodology, and Bill added something to it. And it was, yeah, I guess I'm patting myself on the back, but it was used in virtually all the doctoral seminars related to quantitative modeling, Markov chains, stochastic processes. So, yeah.

PETE HORNER: Sports analytics-- you were out there-- I want to call you a pioneer in this area, and I think you were, long before anyone ever heard of *Money Ball* or any of what we hear today. Can you tell me a little bit about that, and some of the work you did in that area?

DONALD MORRISON: OK, my first one-- I grew up in Detroit, Red Wing fan, big Gordie Howe fan, and so on. So watching games, I noticed that about one minute left in the game, if a team was down by one goal, they'd pull their goalie. So I'm thinking to myself, well if you get down one goal with 59 minutes left, you're not going to pull your goalie, could be you're most apt to be down by two. But you're not going to wait until 10 seconds, because not much can happen. So there's got to be some best time.

So I thought, well, you get the Poisson process with goal scoring this way. Then you pull your goalie, your rate goes up, but the empty net goes up even more. And so I developed the optimal time to pull the goalie, based on the Poisson scoring rates.

Well, I can get the scoring rates for-- because most of the games, it's six on six-- so I just made the assumption that a power play was like an empty net. Not a bad assumption-- may not have been true, but I did that. And so, I wrote the paper, and I told John Little about it, at MIT. And about every two years, I would go up to MIT from Columbia, and give a talk. So I was scheduled to give that talk at the OR center.

So about 7:00 in the morning, John Little calls me at home and says, wear a blue shirt. I said, why do you want me to wear a blue shirt? He says, you're going to be on TV.

And in those days, before color TV, the white shirts weren't so good, they liked to have a blue

shirt. And so somebody in the *Boston Globe* or somebody heard about this, because they sent a seminar-- and they taped it. I gave the talk.

So I had a little fun with that. And then, *Fortune* magazine-- not anymore-- they had this little thing called Potpourri, and the US in the elimination round was down one goal to Finland-- and this is 1980 Olympics-- pulled the goalie, got a tie, and got a point that help them get into the medal round. And so they wrote about this, and my paper. And a guy in the National Hockey League read that, and sent me two years of data for every time a goalie was pulled, and what happened.

So now I had the data, and I got the real rates on that. Revised the paper, and there were some replies and rejoinders and so on. And so I started that in the mid '70s, so I guess you could sort of say I was one of the pioneers in analytics.

But I sent the paper to the Knicks and the Islanders-- no response. One of my colleagues had an aunt that worked with the Boston Bruins, no response. But when I got out here, I met Bruce McNall before he was convicted of his con scheme, and gave him a copy of the paper. He gave it to Rogie Vachon, who was the general manager of the Kings, and I think the Kings actually used it a little bit.

PETE HORNER: He was a goalie, too, wasn't he?

DONALD MORRISON: Yeah, Vachon was a goalie.

PETE HORNER: Did-- author of *Moneyball*-- Michael--

DONALD MORRISON: Oh, *Moneyball?* Michael Lewis.

PETE HORNER: Michael Lewis. Did he reference you or credit you or anything?

No, but there'd be no real reason. And *Moneyball*-- I've not done really anything serious with baseball. Although it's interesting that, even before *Moneyball,* most statistical analyses would say a man on first, with no outs, generates more expected runs than a man on second with one out. So even if the bunt works, it's going against it. But still, people do it all the time.

But once Sabermetrics came in, and Billy Bean-- yeah. Basketball is doing it now. I actually

was down in the Lakers' headquarters-- Mitch Kupchak's a good friend of mine. You know, he actually has an Anderson MBA. He got injured, had a long rehab-- he's a smart guy. Got about 80% of an MBA and then finished up in the off season when he went back to playing. But anyway, of course, the Lakers need more than my help to get back.

But it turns out that their head analytics guys is a former Ph.D. student of mine.

PETE HORNER: Most of the teams do have analytics guys--

DONALD MORRISON: Oh, they do, yeah.

PETE HORNER: Yeah, it's commonplace. But you were there-- you were there on the ground floor. You also served, as we mentioned earlier, the president of the PAC 10, now the PAC 12. I'm just wondering, did you ever try to apply some of your analytical knowledge and some modeling to, let's say, scheduling or some other problems that could've been addressed?

DONALD MORRISON: Oh, I put some of the ADs and the staff in touch with people who do scheduling. Who's the-- an INFORMS guy at Carnegie Mellon's done a lot of that.

PETE HORNER: Jonathan [INAUDIBLE]?

DONALD MORRISON: No. Anyway, doesn't matter. But you see, I was president three times. Now, a faculty athletics representative is always the president. Now, I like to think I did some good things in my presidency. But it rotates-- I think my third or fourth year I was president, it was my turn. And then my 13th or 14th year.

But I only did it for 20 years-- but we added two schools, and the rotation would have put a brand new faculty rep as the president. So they said, Don, would you do it? So that's a record that may never be broken, because now there's 12 schools. And for someone to do it three times-- even if they did it in their first year, then the second time would be the 11th year, and the third time would be in the 21st year.

PETE HORNER: You mentioned faculty athletic rep-- what exactly does that mean? And what does that entail? And why did you spend so many years doing it? You just retired from that, last year.

DONALD MORRISON: The official responsibilities are that you make sure that the school abides by the NCAA bylaws, and that all the athletes who compete are academically eligible. Now at UCLA, we really do

have a culture of compliance. We want to do it the right way. More than half of our head coaches were elite UCLA athletes-- they really think about the whole institution, not just their sport.

So I didn't really have to be a policeman. At some schools, you would have to be. And that freed up a lot of my time to get to know the athletes, mentor them, help them with graduate schools, with jobs. So I could-- we don't have that much time-- but I could tell you some amazing stories.

One, a three-year starter on the offensive line had never considered a Rhodes Scholarship, and I convinced him to apply. Nagged him until he did, and he got it. I helped some people, obviously, get into business schools-- but medical schools and law schools. So that's the most rewarding part, and I still keep in touch with them.

In fact, just recently, I had a very in-depth conversation with Earl Watson, who played 13 years in the NBA, and so I know quite a few people in the NBA and the NFL. It's really remarkable. And I was 75 with 20 years in, and you know it's kind of like an entertainer on stage-- you want to leave the stage when they still want one more song, or one more thing. And I thought--

PETE HORNER: And apparently there's no OR angle to this, except what you mentioned-- stressing education is an important part of what you were doing there.

DONALD MORRISON: No, it's a big part of my life, but it's not so much connected with OR.

PETE HORNER: I know time is running out, but can we just talk briefly about your family? I know that your wife's been quite involved with you, you had supportive parents. Can you just talk briefly about your family, and the support and where some of this academia--

DONALD MORRISON: Oh, look, I was very fortunate-- two biological parents, very supportive. My father had the same job, we had this same neighbors on each side. You know, I had pretty much a stress-free--

PETE HORNER: This is in Detroit?

DONALD MORRISON: Detroit, yeah, when Detroit was thriving. And then in graduate school, I met Sherie, my wife, and she's a world class immunologist. She was on the medical school faculty at Columbia. She's now a professor of a joint college and medical school department at UCLA. She's had a

very lucrative patent. She's really an amazing scientist.

I had two daughters-- they both ended up with UCLA MBA degrees. One of them lives literally across the street from us, with two of our three grandsons. The other lives across the country in Connecticut. But they've had very good business careers. I've got two great sons-in-law, three healthy grandsons. So, yeah, everybody's doing well. So I feel very blessed in that sense.

PETE HORNER: Teaching doesn't always, in my opinion, get the accolades it deserves. And not just in the OR community, but in general. You've spent, as we discussed, 50 years teaching business grad students. I don't want to say, "what's the secret," but what was your philosophy? What made you so successful?

DONALD MORRISON: Well I think, I was a good teacher of MBA courses-- the basic statistics operations, research, and marketing research classes. But my real passion was the Ph.D. students. Now, I think the MBA students liked me, but they didn't want to be me. They wanted to be out in industry, and so on. Where the Ph.D. students, they want to be me.

PETE HORNER: And you had 18?

DONALD MORRISON: Well, I supervised 18 doctoral dissertations, and they've all done well. Eight of them currently have endowed chairs at major universities. And what I'm even more proud of is-- I guess I have the no-jerk rule in terms of taking on a Ph.D. student, and these students now range in age from probably 72 to early 40s. Every single one is with their first spouse. So I'm very proud of that.

I like to think that Sherie and I had combined careers and family and so on, that-- I don't take full credit for the no divorces-- but I like to think that--

PETE HORNER: You screened them carefully, or something happened.

DONALD MORRISON: And was a good role model.

PETE HORNER: And they were happy, obviously, in their life and in their marriage.

And just to wrap up with a couple of things, looking back on your contributions to the field, what stands out to you? What are you most proud of, in terms of what you've done? And

you've done quite a lot.

DONALD MORRISON: Number one, by far, is how well my Ph.D. students have done. You know, I've received some awards, and got some recognition, but nothing-- and it just goes exponentially. Because my Ph.D. students have their Ph.D. students who have their Ph.D. students-- so my academic family tree is very bushy with lots of accomplishments.

PETE HORNER: That would be interesting to make that.

DONALD MORRISON: So that's what I'm most proud of. And I think, in terms of teaching probability and statistics, I think my engineering background helped. I was very good at getting the intuition across. For example, in multivariate statistics, I'd bring in a three-dimensional oval rock. And before I got into eigenvalues, eigenvectors, multivariate, normal principal components, I'd pass it around, and then say, guys, the next few weeks there's going to be some kind of complicated algebra, but everything you need to know is contained in this rock-- the principal axes, the ratio of the lengths, and so on.

And I think there are not too many advance statistics courses where people bring rocks into the classroom. And I always tell them that if you see it, you own it. If you only memorize the algebraic equation, you're not even renting the concept. So I think that's what I'm proud of in my teaching.

And I'm also proud of the number of key positions I held at TIMS and at INFORMS. I put in a lot of time and effort, I think I did a good job. But I enjoyed it. Worked with good people.

PETE HORNER: Any memorable-- your year, year and a half or whenever you were president of TIMS, any stand out?

DONALD MORRISON: Yeah, I remember the year. It was the last year of TIMS before the merger. You know I think-- actually the two things I most remember is working closely with Mary DeMelim. I just adored her. And when I was the founding editor of *Marketing Science*, Judy Larivee who lived in Rhode Island, was the copy editor-- you know, it was a lot of paper and pencil in those days. And I had the greatest conversations with her about the Red Sox, about the Civil War, I really got to know her. Unfortunately she died of cancer at a young age.

And in fact, they asked me to write a little tribute to her in one of the issues. Which I also did for Jerry Liberman. So those were memorable for me -- the people.

PETE HORNER: You have many, many memories. Obviously, you've enjoyed a wonderful life, a wonderful career. You seen do have done amazing things, and a number of things. But everyone's got a bucket list-- is there something out there you still want to do? Like a book to write, or a place to go, a person to meet? What haven't you done that you would like to?

DONALD MORRISON: What I should do, but I won't do, is write a multivariate statistics textbook, because I think the way I teach it would enable a much broader group of people to really understand and be able to intelligently use the material. But I'm 76 years old, I still have to work on my golf game, and so I'll not do that.

But I think, as you said, I've had such a good life. I've got no regrets.

I would like to someday shoot my age in golf. And-- this won't happen-- I always wanted to have a probability distribution named after me. The well-known Morrison distribution. But that didn't happen.

PETE HORNER: Well, we're just about out of time. One last question-- how would you like to be remembered?

DONALD MORRISON: I think, if I could be remembered as being a good husband, father, a colleague, and a mentor, and someone who always tried to be kind and do the right thing, that would be great. These things, to me, mean much more than various awards that I've won. So that's how I'd like to be remembered.

PETE HORNER: Excellent, well let's end it on that note. Thank you so much, Don, I really enjoyed our conversation.