KENNESAW STATE UNIVERSITY ORAL HISTORY PROJECT

INTERVIEW WITH SIMIN NASSERI

CONDUCTED, EDITED, AND INDEXED BY THOMAS A. SCOTT

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TS: The interview today is with Simin Nasseri, who is the 2019 recipient of the Distinguished Professor Award at Kennesaw State. Since our consolidation in 2015, she is the first from the Marietta campus (formerly Southern Polytechnic State University) to receive the KSU Distinguished Professor Award. So Simin, let's start with your educational background. I know you received a bachelor of science with the highest honors (equivalent to Summa cum laude) in 1987 in Mechanical Engineering from the Iran University of Science and Technology, a leading research university in northeast Tehran. Why don't you begin by talking about your undergraduate career and what attracted you to mechanical engineering? How hard was it to get into IUST? Did you have to take an entrance exam?

SN: It was very difficult to get into a good university. IUST is one of the top four public universities in Tehran, the capital of Iran. I had to take the competitive National Entrance Examination comprised of two parts. Part one was multiple-choice, and part two was written. They were on all high school subjects as well as some IQ questions, some technical ones, and so on. They were very difficult. That was the first examination after the closure of the universities for three years because of the Islamic revolution. So many high school graduates were waiting to take the exam. The chance of entering university was very low, especially in all engineering programs. That is why, the summer before the exam, I listened to my brother's advice and took the second high school diploma examination on medical sciences. I studied all the new subjects (such as biology and geology that I had not learned in details) in just 2.5 months, which usually takes four years to study, and I passed the exam.

In the Persian educational system, you have to select one of the three main categories of high school education from year 9. They are math/physics, natural sciences, and literature/humanities, including liberal arts, etc. I had selected math and physics as my high school area because I was excellent in math and physics and had won a big award on physics competition in middle school. I took the second diploma, but I noticed how much I loved math and physics and disliked other areas. I decided to become a mechanical engineer (ME). So I took the engineering exams and passed with a good score and got into IUST.

TS: It sounds as though you had to know what most people know when they get out of college just in order to get in.

SN: Exactly.

TS: You must have come through very good schools along the way.

SN: Yes.

TS: Were they public or private?

SN: They were private schools. Although my father was working in a bank, and we were a middle class family, my father managed to enroll us in private schools, very good schools, and that was the reason.

TS: Why did you choose mechanical among the different engineering programs you could have been in?

SN: I really loved mechanisms and machines and moving things. I was fascinated by those. I wanted to either select electrical or mechanical engineering, and I decided to go towards mechanical.

TS: You wrote a thesis as an undergraduate on "Designing a pneumatic robot with multiple degrees of freedom." Could you talk about the thesis and what attracted you to pneumatic robotics?

SN: We had a required internship for our ME bachelor degree, for which I selected the Universal Company (right next to our university). I learned so much there and got inspired by their newly purchased robots, which were used for painting and other things. I guess they needed another robot for the manufacturing division, so I started to work on a pneumatic robot, with the help of my classmate. We wrote a 300-page undergrad thesis for this robotics project, designing all the parts, designing the pneumatic circuits, and so on.

TS: Is that the way it worked in Iran that everyone wrote an undergraduate thesis? You don't usually think of undergraduates doing theses in America.

SN: Yes, we do have theses for our bachelor degrees too. I have actually brought my thesis here to show you. I haven't touched it for so many years, maybe twenty years, and when I was thinking of all the questions that you might ask, I just said, "Why not show my thesis to you?"

TS: That is a thick one!

SN: Yes, more than 300 pages.

TS: How big was the robot? And what is a pneumatic robot?

SN: It was designed to be large enough to carry heavy metal sheets and place them under a press machine. Pneumatic is a system which is operated by air or gas. We have hydraulic systems, which are operating with water or oil or something, but there are many mechanisms, which are operated by pneumatic systems, like the doors of buses.

TS: Did you have any mentors as an undergraduate?

SN: I had no mentor during college. My main mentor and motivator was my late brother Saeed who was a genius, someone who was studying to get his master's degree in civil engineering. He wanted to exit the country, so he had to take the military service. He was forced to go to the Iran-Iraq war and therefore lost his precious life. The National Entrance Exam was only three days after the passing of my brother, so you can imagine how I was feeling during the exam!

TS: Oh, my goodness! Sure.

SN: I was lucky to get into the university. My other mentor was Leonardo da Vinci! I truly adore him. When I was in middle school, I came to know more about the details of his life, and I decided to become exactly like him, an engineer and an artist. I became an engineer, and yet did some art works on the side. Finally my family, especially my husband (Mohammad Jonaidi) and my daughter (Yasmine Jonaidi) have been very supportive and encouraging.

TS: Do you still do artwork?

SN: More or less, yes, a little bit.

TS: Even in 2019 in the engineering programs at KSU, the student body is overwhelmingly male. What was it like back them? How did the revolution affect the university, and how did it affect educational opportunities for women in particular? Were you the only female in your program, or were there a lot of women there?

SN: Actually, there were not many women in the engineering programs, especially mechanical and civil. There were more female students in other engineering programs such as chemical engineering. The revolutionary committees tried to change the culture of the universities and set new unreasonable and dogmatic rules and policies such as segregating male and female students, and placing dress code and other things, but they couldn't prevent female students from entering the university and continuing their education. In Iran today, about 60 percent of students are female (except for some engineering degrees such as mechanical and civil). Unfortunately, after the revolution, many female faculty members were excused from their positions and many women lost their jobs. Female judges as well as women who held positions of authority in the government suffered

mostly. But to this date, women are the key contributors to any change or reform in Iran and are standing to get their rights.

There were very few female students in each engineering program (except maybe chemical engineering), and yet we equally studied the required courses and took hands-on labs such as casting, welding, machining, sheet-metal working, and auto mechanics. My three other classmates and I dismantled the engine of a Chevrolet and placed it back together! This gave me a sense of pride that women could participate in such activities alongside men partially at that time. This was for a mechanical engineering program that I was enrolled in. That is why I was trained to become a good practical engineer after graduation.

TS: When you say they were trying to segregate males from females, did you go to the same classes with the males all the way through.

SN: Yes, they were not able to achieve many of their goals, so we were able to continue education normally.

TS: I guess just doing my math, the revolution was in 1979, and you must have started your undergraduate education about 1983, if you had a typical four-year program?

SN: Yes, exactly, 1983.

TS: That wasn't long at all then, was it?

SN: No.

TS: You worked in private industry from 1987-89 for Universal Company. I was going to ask you why you went to work for the Universal Company, but I guess it was a natural progression from your internship.

SN: Exactly. Yes, they had an opening for which I applied, and they immediately hired me. So I can maybe talk about this Universal Company or Aabsal as they named it later on?

TS: Sure, tell me a little bit about the Universal Company. Was this an international firm or was it an Iranian-owned company?

SN: That was an Iranian private company. That is why it continued to work even after the revolution and during the war. It was a successful company.

TS: I know that they were a manufacturer of home appliances and that you worked for them as a die designer and deputy managing director of the die manufacturing

division. What exactly did you do in that job and what did you learn from that experience?

SN: That job was the highlight of my life and made me who I am today. I am very proud of the first industrial experience that I gained. I was asked to work in the manufacturing division under the supervision of a young and smart engineer (Mr. Shahriar Targhibi). I was assigned to be a manufacturing engineer and be in charge of thirty workers.

TS: Oh, really?

SN: Which was really difficult for me.

TS: I bet.

SN: Yes, however, since there was no office in the machine shop or manufacturing division, I was given a desk in the die designing office, which was under the supervision of an older experienced engineer, Mr. Mobin. I owe him a lot. He taught me so much. Even now, when in most cases, I complete a task free from any error and mistake, I recall how he was pushing us to always be careful and double check or triple check our engineering calculations and designs and create a perfect work that is flawless!

I not only took care of various tasks in the machine shop, but also I learned how to become a die designer and produce new novel designs for dies which were needed for various parts of the home appliances. My designs were very unique and would make the designers and engineers astonished. They used to call me "the problem solver!" I got involved in lots of other projects and used my skills on machining, CAD/CAM systems, electro discharge machining (EDM), pneumatic circuits designing, cost analysis, production efficiency, implementation of AutoCAD, which was new in the 1980s, and so on.

TS: What is that, AutoCAD?

SN: AutoCAD is a software for drawing, for example used for engineering graphics.

TS: How did you get along with the workers in the machine shop?

SN: I was asked to increase the efficiency of die manufacturing and categorize all the factors involved. Furthermore, I was asked to create a model for production, in which faster workers would be rewarded and slower ones would be penalized! But to their surprise, I did not do this, because it was not in workers' favor. There were many skilled technicians, die manufacturers, and workers who were excellent in their jobs but were very slow. I not only found a way not to utilize the new policy, but also found another method to increase the workers' salaries

based on new meaningful formulas that I suggested. Maybe it was this—together with other reasons—that made some senior technicians and workers go and talk to the company's owner to not let me go, when I decided to resign and continue my education.

TS: Nice to be wanted! Were the workers people that didn't have college degrees for the most part?

SN: Exactly, yes, technical, welders, machinists, all of these, yes.

TS: Did the company come around to your point of view?

SN: I guess so, yes, they did. Eventually, they were convinced, and overall we came up with other methods to improve production. So overall they were very happy, yes.

TS: Why did you decide to return to school for a graduate degree?

SN: I have had a passion to learn more and more, and I noticed that I needed to improve and gain more knowledge. So I started my master's degree in the same university: IUST. I submitted my resignation letter, but they did not sign the letter for up to one month because they were really happy with my performance and wanted to keep me there. I remember that the new division chair was insisting that I stay because my university was just next-door, and I could work part-time. But I had another reason, and that was the birth of my daughter, Yasmine.

TS: What were you thinking at this time? Were you thinking, "I want to be a college professor," or "I want to get a master's, so I can go back to private industry and do a better job?"

SN: I was not sure at that time. I really liked teaching a lot, but I was not sure. I knew that in order to teach, eventually I had to get some higher degrees, and I could not do anything with a bachelor's degree. Even in private sector industry, someone with a bachelor's degree was okay, but even at that time it was much better to have a master's degree.

TS: I was going to ask about this later on, but I was surprised that you were teaching as an undergraduate. I mean, that really wouldn't happen here so much in America. Was that typical, to have people teaching as an undergraduate? Were you teaching whole courses or were you the assistant to a professor or what?

SN: Since I was a top student, I was asked by some of my professors to be a teaching assistant (TA). I would create lecture notes, prepare question sheets, and solve the problems selected from German and French books, which were translated to

English. I would translate them to Persian as well. A TA would also prepare and solve the design problems, which were very intensive. I still have some of those complicated design problems that I prepared for one of my professors (designing a forklift truck mechanism!). These were related to Statics, Dynamics, Machine Design, and Introduction to Engineering Graphics, in which I was excellent.

I was also teaching as a tutor extensively. I would teach to middle school and high school students. Sometimes, we would meet at IUST. These were all math and physics courses. Maybe that was one of the reasons that I became interested in teaching.

Besides, during my high-school years, I was selected together with one or two other top students to attend a class related to computer programming at a university, and then return and teach the whole class. Maybe this was the other reason. I was famous for making the most difficult concepts very easy, something that my current students also express.

TS: Were you rare in that you were fluent in English? Or was that the universal language?

SN: Yes, English was the second language, but some people like myself went to English classes from middle school. So my English was really good, and I was helping with some aspects of the job that were related to that. So these all together made me really interested in teaching.

TS: Great! So, you go back to the same university, but now you're working on a master's degree in mechanical engineering, which you completed in 1992. So three years on the master's?

SN: Yes. Right before entering university for my master's degree, I gave birth to my only child, my daughter.

TS: That would slow you down a little bit.

SN: Yes, so I didn't go back to school immediately. I took one semester off because of my daughter's birth, and it took about two and a half years to complete the master's degree because I was taking fewer classes every semester. Towards the end, I had to work on a project and write a master's thesis.

TS: That makes perfect sense. So you went back, and earned a master's. How competitive was it to get into graduate school at Iran University of Science and Technology?

SN: There was another competitive entrance exam for the master's degree. I took it, and I obtained the highest score amongst all the participants. The competition was very keen.

TS: Wow! Your master's thesis was "Analysis of blood flow through polymeric blood vessels." That sounds like something of interest to people in medicine as well as engineering. How did you get interested in biomechanical engineering?

SN: We had few faculty members who were highly experienced in all aspects of a master's thesis. The required skills were a strong base in math, good knowledge of engineering concepts, and knowledge of simulation and computer analysis, using various methods such as the Finite Element Method. My specialization for the ME degree was solid mechanics, but the available instructor was Dr. [Mohammad Reza.] Ektesabi, whose field was thermo/fluid science. Since an area of expertise of my co-supervisor, Dr. [Mohammad] Hagh-Panahi, was biomedical engineering, I requested a project that would contain both elements. We agreed on the analysis of blood flow through polymeric or artificial blood vessels via FORTRAN programming, which was amazing. These two professors were very sweet and supportive.

TS: Was FORTRAN relatively new at this time?

SN: No, it had been used for a long time. [Editor's note: IBM originally developed FORTRAN in the 1950s]. So I analyzed the blood flow through a blood vessel, and I simulated the blood flow as if there was an aneurysm in the blood vessel. I selected the specific polymer, which could be used for the polymeric blood vessel.

TS: That sounds like it has some medical applications to it.

SN: That's true. It was a breakthrough, and it actually opened the door for further research projects in that field.

TS: Would it be fair to say that you were more interested in applied research that had a medical application than in basic, abstract research?

SN: Exactly, I wanted to select something useful in the biomechanical or biomedical engineering area. This was amazing because I was able to further develop and improve my skills along the way in computer programming and numerical simulation and advanced math and these sorts of things.

TS: Okay, so you earned your master's and returned to private industry again, but it was not the Universal Company this time. In 1992-93 you returned to the private sector for Mahab-Acres General Partnership Construction Engineering Company as a design engineer, designing the mechanical parts of a dam and writing

engineering reports and computer programs. Can you talk about what you did in that job and what you learned from the experience?

SN: This was also another unique industrial experience. I was working with very experienced Iranian, and also Canadian, engineers and managers. Canadian engineers were helping us to build a dam on the Karun River, one of the main rivers in Iran. I got involved in important projects and learned so much about the mechanical parts of a dam, such as turbines and compressors. I did lots of engineering calculations as well as some programming in Quick Basic. I was the only person in that office with a master's degree. We were involved in project management, and I learned how to use Primavera, a package on project management. Furthermore, I gained more soft skills by working in teams of engineers. Also I further improved in speaking English and also in preparing English reports. I had attended lots of English classes during my middle and high school years. I was not yet 17 when I finished the Pre-TOEFL classes, so it was not difficult for me to communicate with the Canadian engineers. However, I gained more skills.

TS: This was a Canadian-owned company?

SN: Partnership. We had to design things together. Also we had to produce engineering reports, so overall I gained lots of knowledge.

TS: My father worked for the Tennessee Valley Authority, and part of my growing up was that he would take us on occasion inside the dams that he was working on. So we got to see all those turbines and generators and what have you. That was fun, growing up. It was always very impressive to see those big dams.

SN: Exactly.

TS: You worked for them in 1992 and 1993. Was the dam built by that point?

SN: The project was ongoing. We were taking a small part of the whole big project.

TS: But you had completed your part of it?

SN: Yes.

TS: Did you go to Australia after you left Mahab-Acres?

SN: Yes, I left Iran at the end of 1993, almost the beginning of 1994. I stayed in Australia until 2004.

TS: Why do you leave Iran, and why Australia?

SN: For two reasons: First, both my husband and I wanted to continue our educations. My husband got a PhD in structural engineering from Sydney University, and I got a PhD in mechanical engineering.

TS: He already had his master's?

SN: Yes.

TS: Was he in graduate school with you?

SN: No, another university. By the way, after working for many years for private engineering firms, he now teaches at Kennesaw State in the Department of Civil and Construction Engineering.

TS: So you both decided, "We're going to go somewhere else"?

SN: Exactly. One reason was to continue our educations. The other reason was our lack of hope that the political system in Iran would get any better. We wanted to experience freedom out of Iran. So we left our country at the end of 1993. I obtained a scholarship valued at 45,000 Australian dollars for the whole PhD candidature from Sydney University.

TS: Did you have any trouble getting out of the country?

SN: No, at that time it was still okay. It was for educational purposes and nothing else.

TS: Did you get the scholarship before you left Iran?

SN: No, I went there and applied.

TS: Why Australia? I mean, there are a lot of other places in the world, and Australia was a long way away.

SN: We had heard very good things about the Australian system, the culture there, and the multicultural environment and universities. Some of my husband's friends had already gone, and they encouraged us to join them.

TS: Okay. You went to the University of Sydney and completed your PhD in mechanical engineering in 1998. You seemed to complete the program in record time—two and a half years.

SN: I actually started my PhD exactly in January 1995. I finished it in mid-1997, but I had to wait until 1998 to attend the annual graduation ceremony. I actually broke the record in finishing the PhD candidature in just two and a half years. It was

common to take between three to six years. After finishing my PhD, I started to work as a postdoc from mid-1997.

TS: I understand that your support areas included micromachinery, biomedical engineering, polymer processing, CFD (computational fluid dynamics), and optical fiber technology. All of that sounds very complex and complicated to an historian! Your dissertation was entitled, "Dynamics of micromachinery in viscous environments." What did you discover, and what practical applications did it have?

SN: As you mentioned, my PhD degree was in the field of micro machineries. Micro machines are tiny micron-size machines, which perform very important tasks. Because of their size, they have practical applications. They can be used in places where using a larger machine is impossible, such as inside blood vessels. My aim was to design a machine that can propel in viscous environments with an aid of a micromotor. To do this, I had to call on my knowledge of both solid mechanics and advanced fluid mechanics.

TS: To what degree was your dissertation an extension of your work at Iran University of Science and Technology, and to what extent did it move in new directions?

SN: My master's degree thesis and the finite element subroutine that I had written from scratch, became useful for me. I did not use my master's degree program, but the simulation techniques and the methods for achieving convergence (which is a difficult process in numerical analysis) were helpful.

TS: Did you have any mentors who were particularly helpful?

SN: Yes. When I applied for PhD candidature at Sydney University, I came to know this professor from Vietnam, Professor [Nhan] Phan-Thien, an internationally recognized Rheologist. He was actually the chair of the Rheology research group from 1991 to 2000. I was fascinated by his achievements. I wanted to work under his supervision, so I went and talked to him. I started to work on the project that he had in mind, and that was designing a micro machine, which would propel in a viscous environment. That was a very tough project to do because it had some elements of solid mechanics as well as advanced fluid dynamics.

TS: What is the purpose of a micro machine that swims in a viscous environment? Is this for medical application? What exactly is it used for?

SN: Micro machines have lots of applications. They are used in medical or other industrial applications. One important application can be inserting them in the blood vessels, so they can carry medicine. The one that I was designing had a

micro motor that would give the propulsion to the machine to swim in the viscous fluid.

TS: Was it like a battery that made it work?

SN: Yes, sort of. Different systems are electric battery operated, or based on magnetism and other things. I specifically designed the machine, which could have the highest efficiency.

TS: That's pretty important if you're putting it in somebody's blood vessel.

SN: Yes. The design was successful. I designed five models. The optimum design model can be fabricated. Maybe it has already been manufactured by some other scientists by now.

TS: Wow. We talked earlier about your undergraduate teaching. Why don't you talk about the teaching that you were doing in graduate school both in Iran and later in Australia? How much teaching were you doing when you were working on your master's for instance?

SN: During my master's degree I was not teaching at all. I was mainly focusing on my courses because they were really heavy. Also my thesis took me more than a year to finish. That's why I was not teaching. I was teaching at Sydney University.

TS: During the PhD program how much teaching were you doing at Sydney University?

SN: It was very common in that system to be a tutor, but tutoring there is different than tutoring here. We were more involved, and we would do group teaching with main professors. Sometimes, rarely, we had classes of two hundred students, divided among professors and tutors. We also had problem solving classes, and they were exactly similar to classes that we teach right now. We had to prepare lectures, and we had to just solve all the engineering problems for students.

TS: You were doing extensive research for several years after you finished your doctorate before you came to Georgia. I know you produced a number of research papers while you were working on your doctorate. After your PhD, you continued as a research associate and post-doctoral fellow at Sydney University from 1997 to 2000, and then as a senior scientist from 2000-2004. Can you summarize some of the major findings of your research in those seven years?

SN: The main areas of research were computational fluid dynamics (CFD), biomedical engineering (soft tissue rheology, viscoelasticity and constitutive modeling) and polymer processing. The Australian Research Council (ARC) is a huge institute,

which supports creative research projects. It funded many of the projects that I worked on, and many of my colleagues also worked on projects supported by ARC.

TS: You used the term rheology—soft tissue rheology. What exactly is rheology?

SN: That is the science of non-Newtonian materials. I can maybe explain. A lot of things we use in normal life are non-Newtonian, like cream, shampoo, mayonnaise, and ketchup. Industry spends millions, millions, billions of dollars on these products. In order to design them, you have to characterize the mechanical properties of them. I worked on modeling the pig kidney and liver! I characterized their mechanical properties.

Pig kidney is very similar to human's kidney in terms of function and structure. Some of us would drive to a slaughterhouse sixty miles far from Sydney University to get fresh pig kidneys. We wanted very fresh kidney or liver post-mortem. We had to get them right away and then place them in a special solution on ice and bring them to the lab so we could just characterize the fresh kidney. We would bring them to the lab, and we would slice them using some jigs that we designed. We would place them under the sophisticated advanced rheological machines (rheometers) or another apparatus that we had designed/fabricated ourselves. We would apply all sorts of loads to see their behaviors. I also did the constitutive modeling using MATLAB, which needs extensive math as well as programming. Since my math base is very strong, I enjoyed that part a lot.

I also worked on lots of other projects related to polymer processing supported by the Commonwealth Scientific and Industrial Research Organization (CSIRO) and ARC. CFD, using parallel virtual machine (PVM) technology, was very difficult and intensive. I had to write all of the computer programs for a large computational problem from scratch using mainly C/C++ language. Sometimes, running a code would take days to finish, employing many computers, which would send signals to each other. Those who have written programs to be used on PVM platforms know how difficult they are.

Furthermore, I worked on an optical fiber technology related project, designing a new polymeric preform for drawing optical fibers for Redfern Optical Components Pty. Ltd, [which emerged in 1999] out of the Australian Photonics Co-operative Research Centre. I did the finite element analysis by writing new subroutines in the software called FASTFLO. It is a package on numerical solution of partial differential equations (PDEs) in one-, two- and three-dimensional regions. They obtained a patent by using the results of my simulation. For every hour of my simulation, the companies paid $500 to my department! This was in 2003.

In general, I can say that the projects were really intensive and difficult, and we all had to publish at least every six months, mainly in peer-reviewed journals. But I gained lots of knowledge and skills.

TS: It sounds like you were engaged in some important research projects.

SN: I believe so. Many institutions outside the university supported us, including institutions in the biomedical engineering field as well. I was really interested in that field because that is how we design artificial organs. We first work on, for example, pig kidneys or other things like cows' brains, to be able to use polymeric materials, for example, with the same properties as human's brains.

TS: You also were a lecturer at Sydney University in 2003-04, teaching Advanced Engineering Materials, Aeronautical Engineering Computing (using MATLAB), Dynamics, and Statics. Those sound like advanced courses. I want us to talk about what MATLAB is because I know you have written a book on using MATLAB [Simin Nasseri, *Solving Mechanical Engineering Problems with MATLAB* (Linus Publications 2015)]. When were you first exposed to MATLAB? What is MATLAB anyway?

SN: I started to use MATLAB for my own research project, but this was after teaching MATLAB because I was asked to teach a course on MATLAB, which is a computer program. To me, it is the best computer language because it is user-friendly, and students can learn it much, much faster.

I had taught those courses, and when I was hired as a lecturer, I was able to go one level up and teach more advanced courses, like Solving Aeronautical Engineering Problems using MATLAB. I would just teach how students could use MATLAB to solve very complicated engineering problems.

TS: I guess MATLAB is a combination of math and lab?

SN: No, it is matrix laboratory.

TS: How long had MATLAB been around do you think?

SN: I think it was introduced in the 1980s, if I'm not wrong. [Editor's note: Cleve Moler, a computer scientist at the University of New Mexico, developed it for his students in the late 1970s; but it reached a wide audience only after 1984, when Moler joined with two engineers, Jack Little, and Steve Bangert, to create a corporation called MathWorks].

TS: You found that it was easy to teach and work with?

SN: Yes, yes. When I started to teach it, I just said to myself, "Why am I using C++, which is a very difficult language. Why not use MATLAB from now on?" I started to use MATLAB for my own research projects. I really liked it so much. To this day I'm using it for everything.

TS: Was a lecturer in the British system the equivalent of an assistant professor in the American system?

SN: A lecturer in the British system may be equivalent to an assistant professor in the American system. It seems that it is more difficult to get a lecturing position there than to become an assistant professor here. You have to teach before becoming a lecturer, you have to learn how to teach well, and you have to do extensive research at the same time to be able to connect everything you know, if you are teaching at a higher level. To become an assistant professor in the British system requires extensive publications and teaching experience. In most cases, one should start from the lecturing position (sometimes even assistant lecturer or associate lecturer), then go up towards the senior lecturer position and then assistant, associate and full professor. Unlike here in the US, that it might be easier for a fresh-out-of-the-college PhD graduate to get hired as an assistant professor, someone even with zero teaching and minimal research experience, at least maybe at State Universities. But in Australia and maybe Britain, one should gain lots of experience in teaching (at least through part-time teaching) before becoming a lecturer.

TS: Okay. You received your Professional Engineer designation in 2000 from the Institute of Engineers, Australia. What did you have to do to earn PE status? How important was it for your career?

SN: In order to obtain the designation, one should have many accomplishments related to engineering and science and should prove all the competencies that are required to become a PE. There are some exam-like interviews and other things such as competency reports. I did obtain my PE because I was not sure where I would end up: a university, a research institute, or an engineering company. I wanted to prove that my engineering knowledge was still fresh after many years of extensive scientific research, in case I wanted to get hired by an engineering company.

TS: It sounds like you were on the fast track at Sydney University if you wanted to stay there. Why did you decide in 2006 to come to a place called Southern Polytechnic State University in Georgia of all places, a long way from Australia?

SN: We just wanted to explore another continent, I guess, and also get united with the rest of my family here. Australia, as you mentioned, was so far away. Traveling to other countries was, honestly, very difficult. Although, it is a beautiful country, and it is wonderful to live there! But in 2004, I was invited to have a presentation at Georgia Tech. They had two openings. I wanted to save time, so I wrote about

all of my expertise and scientific projects that I had conducted in the past. In that seminar, many of the search committee members were invited. Unfortunately, I was not hired, maybe because my research experience looked "so diverse"! I only heard one comment from the chair of the committee indirectly that my research was so diverse. If I am not wrong.

TS: That was a disadvantage?

SN: I guess that was a disadvantage! I just guess they preferred someone who had worked on one project for many years rather than someone who worked on five or six projects, assuming that the first one would be more capable to bring funding and grants. Besides, I was not even a permanent resident of the U.S. at that time. We came to the US through my husband's work visa.

TS: Tell me was this your first time to Atlanta when you came to interview at Georgia Tech?

SN: No. I had visited Atlanta in 1996 to present in a mechanical engineering conference.

TS: That was held at Georgia Tech?

SN: Yes. I just evaluated the city, and I loved it. So maybe that sparked the immigration.

TS: When did you first know that there even was an engineering school in Marietta?

SN: I hadn't heard about Southern Poly. I only knew Georgia Tech. Georgia Tech was well known. When we decided to move, my husband actually got a structural engineering position in the US in 2005. He got the job in one week.

TS: How about that? Where was the company located?

SN: The company was located in Suwanee, Georgia [Gwinnett County].

TS: So you moved to the Atlanta area.

SN: Yes. We didn't have the residency yet, but we were supported by his work visa. We just purchased a house and decided to stay and then eventually applied for permanent residency. Then we became eventually citizens. Everything worked out.

TS: You came to Southern Polytechnic State University in 2006 as an assistant professor in the Mechanical Engineering Technology Department. How did that

job come about, and after all the research you conducted at Sydney University, what attracted you to a university that mainly had a teaching focus?

SN: I had an interview at SPSU in 2006, and I was hired right away. At first I was a bit reluctant because I was a senior scientist with extensive research background, and in the Mechanical Engineering Technology (MET) Department, there would not be an opportunity for research at all. But I was touched by the personalities of the group: Professors Norman Russell, Greg [Gregory M.] Conrey, Donald [D.] Horton, John Sweigart, and, most importantly, the late Professor [R.] Glenn Allen [Sr.], (who actually convinced others that a senior scientist was good to be hired for a very hands-on program because I had three years of valuable industrial work experience as well!) Later on, I was able to use my manufacturing engineering knowledge and help with manufacturing related courses that the department needed and improved the program a lot.

TS: How would you describe the campus culture in 2006?

SN: I liked working at SPSU. The culture of the university was really good, and one reason was that Dr. [Lisa A.] Rossbacher was SPSU's president. She is one of the professionals that I look up to and admire so much.

TS: Donald Horton—he just retired, didn't he?

SN: Exactly. I can say that these were wonderful colleagues, and I learned so much from them.

TS: By that time Zvi Szafran would have been at Southern Poly as vice president for academic affairs. Did you meet them when you were doing your interviewing?

SN: I'm not sure if I met Dr. Rossbacher at that time. I think it was common to go up to the provost level. But I met Dr. Rossbacher later on. She was invited to the opening ceremony in Novelis R&D Center [in Kennesaw] for which I designed a huge statue. After that day we got close to each other, and she has been very dear to me. I admired her and I appreciate what she did for us at SPSU.

TS: We may be getting things a little out of order, but why don't you talk about your community service and what you did for Novelis?

SN: It was in 2012. A group of engineers and directors contacted me in 2012 and asked me if I was willing to design a ten-foot-tall statue for their lobby. They wanted this statue to represent the mission of the company and show that they were involved in recycling aluminum. Novelis is the largest manufacturer of rolled aluminum in the world. I immediately accepted. I turned this project into something amazing, a statue in the form of a transformer.

Three students were trained how to start and accomplish a big project. The statue was mainly designed by me. I did the design, statics, and stability analysis. The students helped with preparing the CAD files extensively. One of the MET students, together with technicians in the Marietta NDT [Nondestructive Testing] Company, fabricated this giant statue. It consists of three hundred parts of aluminum and was manufactured by Marietta NDT. Now it is situated in a lobby of the Novelis R&D Center. This statue is a symbol of the connection between our university and Novelis, and every month, many people visit the statue and admire the level of knowledge and skills in design and manufacturing the statue. The owner of Marietta NDT, Daryle Higginbotham, is one of the alumni of the MET program at SPSU. So they agreed to manufacture the statue for us and for Novelis.

TS: In the engineering fields, those kinds of collaborations with private companies are pretty important, aren't they?

SN: Exactly. They became a really good supporter of our programs. They are giving scholarships to our students. They have hired lots of our graduates. They have internships and co-ops available for students. So after that we became even closer to each other.

TS: Were you thinking in 2006, when you joined the Southern Poly faculty, "I like scholarship, but really want to be at a teaching institution?" Or what was your thinking at that time?

SN: I accepted working in a teaching-only institution at that time. Maybe because I had done so much research that I needed a break for some time. I was very optimistic and hopeful that I could continue doing some research, and that's what I did. I started from 2007 to conduct some research, although the system was not very supportive of research. But on the side I got the help of three MET students to conduct research related to viscoelasticity and rheology, which was very nice.

TS: So when you say that the administrators were not very supportive, there was no real money for you to do your projects, and unless you brought in grant dollars, you had a heavy teaching load without a lot of spare time?

SN: Exactly. The teaching workload was heavy. We had to teach up to twelve credit-hours (four three-hour courses) with lots of preparations and lots of new courses.

TS: I think you taught fifteen different courses at different times over the years.

SN: That is true. And there were lots of administrative things and lots of professional development. At that time it was very important to show that we were active in learning and doing lots of service, participating in different communities. There was not much time to do research, so I focused my research on engineering

education. That was something that could be done at that time more than other research projects.

TS: Did you miss not doing the kinds of research you had been doing before?

SN: Yes, I missed it. I tolerated for a year or so. Then I started to conduct research. Together with my students, I made an apparatus for conducting some experiments. Also we did modeling, and we did computers programming using MATLAB to analyze the motion of particles moving in viscous fluids and so on.

TS: Well, I must say at first I was reluctant to look at Rate My Professors. But I've found it very helpful to get a sense of what goes on in somebody's classroom. I know that the comments are glowing about your classes, and that students say you are helpful, caring, and kind in your work with them. Could you talk about teaching? What were your favorite courses, and maybe your philosophy of teaching?

SN: Thank you! I can write a novel on these questions. I love the courses that I have been teaching so far, because I requested not to teach the courses that I do not like. The ones that I like are mainly related to engineering mechanics (such as Dynamics, Vibrations and Machine Dynamics), manufacturing (such as Tool Design, Advanced Manufacturing, and Manufacturing Processes) and MATLAB programming classes.

The first semester I entered SPSU, I was given the machining and welding class (the old MET 1321) to teach. What a great way to welcome a senior scientist! But I enjoyed it somehow because, during my undergrad program, I learned machining really well. However, I asked for a technician to help me with the hands-on part, and a few students thought that I had not even stepped in a machine shop! They did not know that I was the only person in the Universal Company resolving a machining issue that even the most experienced technicians were not able to fix!

I spend a lot of time on my courses. I have worked even up to seventy hours per week. I guess there are many faculty members working these many hours. I improve my courses every semester. I add new material, such as adding new technology or student involvements techniques. So I keep enjoying the classes and avoid boredom. I use new methods such as applied projects, computer programming projects, real-life examples discussions, peer-review evaluations, etc. From 2008, I asked my students in my Dynamics class to make mechanisms for a class project. They would not only explore the mechanisms and learn how they work, but also they would get trained on various specific manufacturing processes for fabrication of the mechanisms. These were used in subsequent semesters as tools for teaching the most difficult concepts.

I would also send my students in my Vibrations class to go to various engineering companies, learn how to do vibrational analysis, and come back and present in class. This is a completely applied method, which also connects the university to the engineering companies and ensures that what we teach is up-to-date. I also teach my freshman students how to present professionally. I went to Toastmasters International Club, and I teach how students should present in a professional environment, have vocal variety, eye contact, body gestures, and be efficient and punctual.

TS: You developed the first online course for the Mechanical Engineering Technology Department (MET 1311—Manufacturing Processes). How did that come about? Can you talk about your involvement in creating and evaluating online courses for SPSU and KSU? You also created the first Engineering Computation class using MATLAB. Could you talk about that?

SN: I am so happy that you noticed all of these. I really appreciate it. I was working in the MET Department, and many of the students were non-traditional students. Manufacturing Processes is a heavy course, a memorization-intensive course with maybe 20 percent or less problem solving. I noticed that offering an online course would be very beneficial for students. It was well received, and to this day, it is one of the courses that I teach. I also developed two other online courses for the MET Department (MET Orientation and Engineering Statics). My master's course, Advanced Manufacturing, is also an online class. All of my in-class courses have online components as well (course materials, quizzes, tests and even discussions) on D2L (Desire-to-learn). I am now developing more online courses such as Manufacturing Engineering for the ME Department.

For online classes, I spend so much time and encourage my students to be active in class. For the Advanced Manufacturing graduate class, students have weekly discussions, and they are expected to post their own ones and read other posts as well and write any comment that they might have. One hundred percent of students participate passionately and leave comments on other students' posts. They have written in their evaluations that this course has been unique in terms of students' involvement (which is difficult to achieve in an online setting). I have collaborated with a wonderful professor; Professor Phillip Waldrop from Georgia Southern University, and I have used some of the techniques that he uses in his online classes.

TS: Which is more time-consuming: online or face-to-face?

SN: It depends on the class. For online, graduate level classes are more time consuming because there are lots of components, lots of projects that I have to grade and give feedback, and lots of tests that have to be graded. I cannot have multiple-choice tests. So that's why it's very time consuming.

TS: Which is harder for you: to connect with students face-to-face or online?

SN: Actually, both of them are difficult because keeping students engaged in online classes is very difficult. If they don't get encouraged or interested, they just drift, and the grades go down. At the same time, in a face-to-face environment, there are lots of other problems. In general, to the eyes of many students, we professors should be smart like Einstein, funny like Jerry Seinfeld, patient and forgiving like Mother Teresa, and well-mannered like someone who teaches the etiquettes course to steal the students' hearts!

TS: I bet you are all those things to your students.

SN: I really do my best to know everything before going to class and to make the teaching fun. I respect my students and treat them like adults, and I try to have a special grace and charisma. My philosophy is that whoever teaches should love teaching and should be passionate about it. Hence, the teaching-learning experience will be effective. Also, I do believe that having an industrial experience has a huge role in the performance of the instructor because we can relate the course materials to the real-life examples.

TS: I bet. Well, I understand you have involved some seventeen students in research through directed sturdies or independent research projects. I know that is really time consuming, above and beyond the four courses a semester you were teaching when you came to SPSU. But work with individual students can also be very rewarding. Can you talk about some of those students and some of the directed studies that you did with students that led to maybe undergraduate research papers or projects?

SN: The projects have been in four different areas. One area is biomedical engineering. We designed finger and foot supports. The second is manufacturing engineering. We modeled drilling and milling various alloys containing aluminum and steel. The third is designing software using MATLAB Graphical User Interfaces (GUIs) for manufacturing related projects. The last is working on some engineering education projects with a couple of students. Especially for the biomedical and manufacturing engineering projects, my students and I have written book chapters, journal papers, and conference papers. The lead student was Kyle Castellano, an MET student, who is now at Auburn University getting his Master's degree in ME. I even worked with three MET students on a project related to rheology and viscoelasticity (from 2007 to 2013), in which we designed and manufactured an apparatus, did experimental analysis, and then modelled the phenomenon using MATLAB.

TS: For the publications and papers, did you have joint student-faculty authors?

SN: Yes, all of them. I really respect that. I highly value the work, and all the names are placed. Even if someone has only done literature review for me, that is part of the paper, and their names should be placed on the paper. Yes, yes.

TS: I know we had a big undergraduate research conference on campus this last year. Were you involved with that?

SN: Yes, we had three presentations. We had three abstracts, so one presentation related to manufacturing engineering and two posters, one related to biomedical engineering and the other on the software development for manufacturing engineering.

TS: And then I know you received a patent this year for finger and foot supports that you designed for patients with deformities. Could you talk about that?

SN: As you noticed from my life and background at Iran University of Science and Technology, and also Sydney University, I worked on biomedical engineering projects. I am interested in designing devices and supports for people going through any sort of disability, discomfort, or deformity, such as the ones produced by arthritis. So helping people with pain and suffering, and improving their lives, is one of my goals. I designed finger and foot supports with the help of my MET and ME students. They did simulation, 3D fabrication, and mechanical testing. These are composite supports made of polymer and inserted sheets of metal. The inserted sheet can be aluminum, steel, or carbon fiber.

The available supports in the market are very rough. They are not comfortable, they are not durable, and they are not re-sizable. The supports that I have designed and modeled with the help of my students are strong, but very comfortable and soft. They can accommodate any finger at any position. We call this a functional position, so the patients can do their normal life tasks while wearing the finger support.

TS: They contain metal, but they are still soft?

SN: They are made of a polymeric shell. The metal is inserted into the shell to give it the rigidity, which is required. For example, at the early stages of arthritis, it is important to keep the fingers straight, especially at night. Arthritis is very painful, and if these supports become available, people can wear them, and they can reduce the deformity along the way.

TS: Do you have a manufacturer?

SN: We are in the stage of contacting some manufacturing companies and checking if they can manufacture these for us. The university got the patent for me, so we have to identify the companies.

TS: Oh, because you did this on university time. Does the university own the patent, or do you share the patent?

SN: They mentioned that the profit is 50/50.

TS: So if you make some money, both of you are going to get part of the profits?

SN: Yes.

TS: I was just looking at a picture of the supports. I would think a lot of people could benefit from them. And then you mentioned earlier the statue you and your students made in 2012 for Novelis R&D Center in Kennesaw. So you are doing a lot of teaching, you are doing a lot of working with students on special projects, you are doing a lot of collaborations with people out in the community, and you have been recognized for your work as an advisor to student organizations. Can you talk about your work as an advisor?

SN: I have been the advisor to the Society of Manufacturing Engineers' student chapter since I joined SPSU in 2006. There have been nominations, and there have been awards. I received the Distinguished Faculty Advisor Award from the Society of Manufacturing Engineers in 2012. Just a few days ago, they informed me that I won the same award for 2019, one more time. This award is very competitive because it is national. Usually, they select two to a maximum of four faculty members from the whole nation who are advisers of these student chapters. I was also nominated for the People in Manufacturing Award by the Georgia Manufacturing Alliance.

TS: What all are you doing with the students to win the SME awards?

SN: SME chapter is very dear to me, and I spend a lot of time on this chapter. My chapter connects our students to industry and teaches them the various aspects of manufacturing, including how important it is for a mechanical engineer to know about manufacturing. We have lots of activities, such as tours, professional seminars and meetings, competitions, etc. I train and mentor my officers and teach them how to manage the tasks assigned to them with the highest efficiency. I even teach them how to interact with people and how to have a positive influence on people from industry when we do networking. I also spend time and write detailed recommendation letters to help them with internships and special research programs that they want to get in.

Besides, I even established a Car/Bike Restoration Team (Southern Poly Restoration Team), in which I would send the MET or ME students to Isettas R US to get trained. We had a blast on this project. Isettas R Us is a company in Kennesaw that specializes in restoring old Isettas. The Isetta is a microcar that BMW has been mass-producing at least since 1955. The company donated a

BMW 1957 Isetta car to my chapter that my students restored partially! They not only donated it, but also they allowed our students to go to their company and get trained. They would teach the students how to manufacture various parts, how to fix various things such as the transmission system, etc. So this was another achievement as part of this chapter.

TS: And didn't I hear that you were advisor to a Persian student organization?

SN: Yes.

TS: Talk about that. How many Persian students do we have at Kennesaw today?

SN: Oh, that's a new organization that we just established. I'm trying to recruit some officers for the organization. We have worked on some programs for this organization, but we haven't started anything yet.

TS: How many Persian students are there at Kennesaw?

SN: There are not many.

TS: In addition to mentoring students, you are known as a mentor to other faculty members. Could you talk about some of the things you do to help other faculty members?

SN: Yes, I help new adjuncts or sometimes my colleagues who would like to teach a new course (that I have taught before). I have sessions with them and go through the outcomes set by our departments, review the content thoroughly, give them my typical quizzes, tests or projects, etc. I ask them to come and sit in my class and get some ideas for using new specific teaching methods. I sometimes resolve the issues that they might have with their students, suggesting practical solutions. During the semester, I meet with them several times or send lots of informative emails, making sure that everything is clear for them.

TS: How did all that come about? Did somebody encourage you to do this or did you do it on your own?

SN: Oh, I think that is common for more senior faculty members to help the junior ones.

TS: But it seems like you are doing far more than most people.

SN: I don't know. Maybe one reason is that I have taught more courses. Some of us have been teaching the same two courses for so many years, but I have taught more courses. Maybe that's why. Yes, I'm willing to help others. I love helping others.

TS: Well, it sounds like you work about twenty-four hours a day to me. But in addition to all the teaching and advising and service that you're doing, I think you have published a book, a book chapter, some peer-reviewed journal articles, and several conferences papers from the time you joined SPSU/KSU. How do you find time to do so much?

SN: I just love my job and my students. That is why I spend so much time. I have learned how to be efficient and do multitasking, etc. I even write computer programs, which help me in grading some projects and tests. But, overall, I guess I spend a lot of time as it is obvious from my painful neck and right shoulder!

TS: Your book, *Solving Mechanical Engineering Problems with MATLAB*, came out in 2015. Who is the audience for the book, and why did you write it?

SN: The book was specifically written for the course that I offered in the MET Department (Engineering Computation). In 2008, I noticed that students were not able to use C++ in upper level classes if needed. I had used so many programming languages in the past and had found MATLAB to be very user friendly especially for undergrad students. I offered to replace the C++ programming class with an Engineering Computation using MATLAB class. At first it was not approved, but when I continued to insist, it was later approved. The course was so effective and useful that it soon became a required course!

Students were able to use MATLAB for other courses such Machine Design and even continue to use it after graduation and at work. I initiated developing the same course (with a different name) for the Mechanical Engineering Department. Currently, my textbook is used for these two courses at two departments.

It has a get-to-the-point nature, which does not have lots of texts. It has practical examples. It teaches MATLAB to someone who does not know it at all, and then teaches him/her how to use it to be able to solve the hardest mechanical engineering problems in all the areas related to solid mechanics and thermal/fluid sciences. It was written for junior and senior students, because it was first offered as a technical elective course. However it is now used by sophomore students. This fall 2019 semester, the textbook will be used in about ten sections by more than 250 students.

TS: You also have a *Tool Design Book* in the works. Who is the intended audience, and how far along are you with writing and revisions?

SN: I wrote my tool design textbook in 2007. I used seven textbooks and two CDs and lots of other resources because I wanted to make it very practical. I contacted many people for publication, however, I did not have any images to support the text, and this textbook is highly applied. Dr. Krishnaraj Vijayan from India offered to take care of all the images (create them in his lab) and publish them in

India. We first came to know each other from the time that I placed some Tool Design slides on the internet. We have worked on many projects and published book chapters and papers. But this task has been postponed. I believe there is a huge demand for this textbook, but we have been too busy to complete this task.

TS: But it's still in the works?

SN: Still in the works, yes. Hopefully, we will finish.

TS: Great. Well, when you got to Southern Poly in 2006, you had engineering technology programs, but you didn't have the straight engineering program in mechanical engineering. In August 2009, the Board of Regents approved BS degree programs at SPSU in electrical, civil, and mechanical engineering. Did you play a role in the transition from engineering technology to engineering programs?

SN: The Mechanical Engineering program was introduced without any consultation with the mechanical engineering technology program's members. So I had no role in introducing the new ME program.

TS: You stayed in the Mechanical Engineering Technology Department until Spring Semester 2016. With your research focus, I would have thought that you would have moved immediately into the new mechanical engineering program. Was there a reason why you waited until 2016?

SN: The MET program was there for nearly fifty years, a popular program with very high enrolment. The graduates of the program have been very successful, landing key engineering and management positions in industry. I loved my own program and I believed in it. The ME program was not well established at that time, and it was very new. So I decided to stay in the MET Department.

In summer 2015, our former dean, Dr. [Thomas R.] Currin, asked me to move to the Mechanical Engineering Department. In fact, he asked me if I was interested in chairing the ME Department. However, I mentioned that I was more interested in being in contact with students, teaching and conducting research. I mentioned that I did not like the administrative work.

TS: Good for you.

SN: Furthermore, my personality demands reform and huge changes, which might not be acceptable under the current system, which was used to specific routines and procedures. So I continued to teach the MET courses until the end of 2015, and then started to work for the ME Department in 2016. But I still teach one of my favorite courses for the MET Department every summer, the Manufacturing Processes!

TS: So you moved shortly after we completed the consolidation of SPSU and KSU.

SN: Yes.

TS: How would you describe the difference between mechanical engineering technology and mechanical engineering?

SN: This is a very sensitive question. I can say that our MET program is nothing close to other MET programs in the nation because most of the faculty members, such as myself, had a good base in science and engineering, and, before we arrived at SPSU, we weren't experienced in teaching mechanical engineering technology. We had taught the normal mechanical engineering courses. So the MET was very close to a typical ME program. The main difference is more hands on classes, so it has one or two less math courses, such as Calculus III. But it has some very useful courses, such as Tool Design, 3D printing, Instruments and Controls using PLC's [Programmable Logic Controllers], and other courses that are really helpful to students [in the workforce].

TS: So it is more hands on than mechanical engineering?

SN: Exactly.

TS: But our mechanical engineering classes are still more hands on than, say, Georgia Tech's, aren't they?

SN: Not a lot different. The labs we have, say in courses like thermodynamics and fluid mechanics, are typical labs for all mechanical engineering programs.

TS: So the curriculum is much the same wherever you go for mechanical engineering?

SN: More or less.

TS: So, in fact, there is not a lot of difference. But in the minds of students, isn't it true that the mechanical engineering program is growing much more rapidly than the mechanical engineering technology program?

SN: Yes, this is what happened. The enrollment in the MET actually declined, and the enrollment in ME rapidly increased. So that is why we now have an Engineering Technology Department comprised of mechanical engineering technology, electrical engineering technology, and so on. The enrollment went down, unfortunately, and I say, unfortunately, because I can say that that program could be morphed into the ME program. We could establish ME on the basis of that well-established MET program. In 2014, I officially proposed the Manufacturing Engineering program, and Dr. Currin approved it, but for some reasons it did not become fruitful.

TS: Does it make it easier to gain a professional engineering license if you have gone through ME as opposed to MET?

SN: With MET, I guess you have to wait up to seven years working as an engineer under a PE. With ME you can apply for the PE after four years. In Georgia, of course.

TS: So if there is not a lot of difference in the curriculum between ME and MET, it makes a lot more sense for the students to be in ME?

SN: Yes, although there are drawbacks for each of them. If students want to continue their education, not many universities accept graduates with MET degrees.

TS: So if you want to get a master's degree, get a BS in mechanical engineering?

SN: Yes. At the same time, those who are graduating from Georgia Tech, or a typical ME program, without learning how to do machining or CNC programming or knowing advanced Engineering graphics, instruments and control using PLC and other things, are not easily hired by engineering companies. The local engineering companies prefer to hire MET graduates because they know the hands-on part as well.

TS: When I interviewed Tom Currin in April 2018, he talked about how SPSU's engineering technology graduates didn't need much training on the job. So they made money for their employers almost immediately, whereas the graduates of places like Duke or the University of Pennsylvania may need a year and a half or two years before they earned their salaries.

SN: That is correct, yes. That's why our MET program was a little bit higher than normal METs. We not only focused on theory, but also we focused on hands-on skills as well. So the graduates were equipped with both theory and hands on knowledge and skills when it came to hiring.

TS: Well, just a few years after you got here, in October 2010, the Engineering Technology Center opened up. That's a beautiful building, I think. How did that affect what you did and what you could do with students?

SN: It is convenient to work in the Engineering Technology Center. I actually helped with some layouts for senior design labs, together with a couple of my colleagues.

TS: I was wondering if faculty was involved in designing the building.

SN: Not completely everything, but just a few aspects of senior design labs. Now the building has smart podiums, large whiteboards, and technology for recording lectures, which is very nice.

TS: Were you in the K Building before then?

SN: Yes, very good memory! Yes, we were working in K Building. Everything was really old.

TS: Yes, it was one of the original 1961 buildings when the campus opened.

SN: But because we have so many students now, and so many faculty members, the Engineering Technology Building is not enough to meet all our needs.

TS: You've outgrown the building?

SN: Exactly. It is not enough to accommodate everyone and everything.

TS: Is there a new building in the works?

SN: We have heard that a sister building is going to be built, but no news yet.

TS: The Chancellor's Office announced its plans to consolidate SPSU and KSU on November 1, 2013. At that time, Chancellor Henry M "Hank" Huckaby said that the name of the new university would be Kennesaw State University, and KSU president Daniel S. Papp would be president of the consolidated institution. When did you first hear about the consolidation of KSU and SPSU, and what was your reaction at the time?

SN: It was really shocking. I guess we came to know about the merger at the end of 2013, and it became official in 2015. Of course, we were not happy because we would lose the name of our university. We had mixed feelings, and we were not sure what would happen in the future, but eventually everything went well.

TS: At least, the name was preserved in the Southern Polytechnic College of Engineering and Engineering Technology.

SN: That was the good part, that they kept the name for the college.

TS: Southern Poly, of course, had a reputation in the state and the nation. Were you worried that after the name change, it might be more difficult for students to find jobs and things like that?

SN: Exactly, yes. The MET program, for example, was, I think, the second largest department in terms of enrollment in the whole SPSU. We were fearful as to what would happen. But, eventually, everything went well. I'm just sorry that so many people in administrative positions lost their jobs.

TS: Administrative, like secretaries?

SN: Even deans and directors.

TS: Oh, you are right. You lost your president and vice president for academic affairs.

SN: We lost Dr. Rossbacher, exactly.

TS: In terms of faculty, I know some people left because they were concerned about the uncertainty of everything and where they would fit in with the new university.

SN: That is true.

TS: Nobody was fired from a teaching faculty position, were they?

SN: I don't think so.

TS: Obviously we didn't teach mechanical engineering on the Kennesaw campus.

SN: Yes, I'm not sure what happened to people, say, in the math departments, because we had a math department on both campuses.

TS: I know our KSU physics people were ecstatic because we didn't have a BS in physics, and Southern Poly did. So they were very happy with the consolidation, I think. By the way, on which Operational Working Groups (OWGs) did you serve?

SN: I was not on any OWG committees. I was a member of some university committees, when there were some discrepancies between the two universities' policies and procedures. For example, I was a member of the Senate, and there were many policies that would not match. We had lots of discussions to resolve issues. However, overall I came to know new people from the other campus and enjoyed working with them. As I said, everything went well at the end.

TS: Well, I know, it was disconcerting for people on the Marietta campus when all this started. And, quite frankly, nobody on either campus was consulted on the consolidation ahead of time.

SN: You're right, yes.

TS: I guess, a major argument for consolidation was that we could save money by eliminating duplication in a lot of administrative offices. So I'm sure it was hard for those whose positions were eliminated. And yet, while a lot of SPSU students were angry at the time, consolidation didn't seem to hurt recruitment of new students, and the enrollment in the engineering programs has just been out of this world in the last four years.

SN: You're right, yes.

TS: So somebody out there must have been happy to be part of a consolidated university.

SN: Yes.

TS: As I understand it, one of the big concerns for people on the Southern Polytechnic campus was tenure and promotion and a perception that they were going to have to do more research after consolidation than before, whether they had support for it or not. Do you think that is an accurate assessment?

SN: Yes, that was one thing that everybody was mentioning, what will happen and whether we are required to do research. Some of us, like myself, had no issue.

TS: Well, you were already doing a lot of research.

SN: Yes, but some of the older professors were really concerned. They had lots of industrial experience, so they were not involved in lots of research, and they were really concerned.

TS: So they basically signed up to do work at a teaching institution, and they were doing a lot of practical things with industry, but they didn't sign up to do scholarship?

SN: Absolutely, yes.

TS: So has that worked out, do you think?

SN: Those professors mainly either retired or stayed in the ET program, which is still doing more teaching than research.

TS: Right, and really the truth on both campuses is that we have always been evolving towards greater research expectations. I am afraid that people that want to spend all their time teaching and helping students haven't been happy with the transition.

SN: You're right, yes.

TS: So things don't stay the same, do they?

SN: Exactly.

TS: Okay, you received KSU's 2019 Distinguished Professor Award, the highest faculty award at KSU. You are also the first from the Marietta campus to receive

the award. It honors one faculty member each year for excellence in integrating teaching, scholarship, and service, and for achieving a reputation in the scholarly community beyond our campus. What does the award mean to you?

SN: This award means a lot to me! For me, it is like getting to the top of a beautiful mountain after so many years of hard climbing and lots of sacrificing, tiredness, even frustrations, and disappointments along the way. One should notice how difficult it is to achieve lots of accomplishments in the three areas of teaching, research, and service all together.

Someone might want to know what I did to earn this award. I was an experienced and capable scientist and had conducted extensive research for many years, maybe more than others because I kept working on various projects related to mechanical engineering. Each of them was new and challenging and required new skills and tools. After coming to SPSU and the limitations that I had for research, I continued my research and wrote a textbook despite having a heavy teaching workload. Modesty aside, my students have always been appreciative, and their evaluation comments have been amazing. One of my students in the Vibrations and Advanced Dynamics class wrote that I have achieved the nirvana of teaching! This to me is equal to winning a precious award!

I included twenty-one support letters for my promotion package to full professor, seven from academia and industry, and the rest from my students. Interesting to say, no letter was required for my promotion in 2017! I have served on thirty departmental, college, and university committees, maybe more than most of other faculty members. I believe that I have worked really hard and have continuously tried to improve my department, college, and university. I introduced lots of new things for which I did not get any recognition internally. Therefore, I am very happy and very proud to have won this award. I am very grateful that your questions are so clever and detailed and so courteous as well.

Anyway, I placed the distinguished professor award news on my own LinkedIn page to inform my colleagues and students. So many of my current and former students wrote very nice statements for me, and they also wrote that I truly deserved the award. This was very heartwarming. Many of my students and colleagues emailed me and congratulated me. My former and current colleagues wrote very kind comments. Even my favorite Ph.D. supervisors, Dr. Phan-Thien, and Dr. Lynne [E.] Bilston (from Sydney University), and also our former SPSU president, Dr. Rossbacher, sent me very supportive texts and congratulated me, which made me really happy.

I think you won the distinguished professor awards in 2008, if I'm not wrong?

TS: Yes, you've done your research too.

SN: So you know that it's tough to get this award. It is not easy.

TS: Did somebody nominate you for the award or ask you to apply for it?

SN: They made it open for people to apply, so I just applied. But the chair of my department reviewed my 70-page package and added his own letter.

TS: I think I saw the letter from Tom Currin.

SN: Yes, and I had so many support letters from academia, from industry, and the people that I collaborated with, from Novelis, and from Professor Philip Waldrop at Georgia Southern University. He is a wonderful friend and colleague. We are in connection through the Society of Manufacturing Engineers as well. He actually takes care of all the SME chapters in Georgia.

TS: That's amazing. It is obvious from listening to all the things that you've said today that you couldn't possibly have done more than you've done. It sounds like the achievements of two or three people instead of one.

SN: Thank you so much.

TS: Why don't we wind up the interview with a few general questions about, first of all, the Marietta campus, Southern Polytechnic campus? You have been here thirteen years now. How has the Marietta campus changed in those thirteen years—the faculty, the students and so on?

SN: Overall, things are fine, and I am happy to be part of this community. I can say that the Marietta campus in 2006 had a warmer environment, and we had lots of faculty gatherings in which faculty would mingle and exchange ideas or simply celebrate various events. Now, the faculty members feel pressured to accomplish one hundred tasks in a single day, and there is a lot of bureaucracy, which reduces the overall efficiency and increases the total time spent on any task. The faculty workload should be evaluated by higher-level officials and be optimized. Salaries should be reviewed and adjusted. The people that I have worked with are smart and hardworking, whether from the Marietta campus or Kennesaw campus. Yet faculty members should be empowered and encouraged to thrive and succeed, not to compete and take over from one another. Anyway, at the same time the system has lots of new exciting things.

TS: Are you still on the Senate?

SN: Not this year, I served last year in fall 2018.

TS: Are any of these things being discussed in the Senate?

SN: They have been discussed, but nothing has been done, unfortunately.

TS: And you didn't want to become an administrator and solve these issues?

SN: That's why, maybe. I believe that administrators have to value faculty members for what they do. We have to empower them. We have to encourage them.

TS: And you think it's less so now than it was thirteen years ago, at least there is not the collegial atmosphere to the degree that existed then?

SN: I think not. I have heard from people that they feel that they have to compete and take over this and that and keep impressing others. This atmosphere is not very positive. But, at the same time, this system has lots of new, exciting stuff that I like overall. Everything is good.

TS: I have heard of morale issues on both campuses. I'm sure that a lot of people have those opinions. So, what has kept you at KSU for your thirteen years?

SN: Being with my students, encouraging them to go above the standard level set for each class, helping them succeed (even after graduation), and mentoring them along the way, are what keep me at KSU. I would love to use these skills to teach more students and also invent—continue my research projects and invent things that are useful, especially for people to make their lives easier. I am someone who can design novel things and help my society and world, so I plan to keep teaching and doing research.

Interaction with smart and hardworking people is also another reason for keeping me here. For example, getting to know you, a wonderful historian, and a KSU distinguished professor, is an honor for me.

TS: It's an honor to get to know you too. The most rewarding about the oral history project is to meet people all over campus that are doing a lot of neat things.

SN: I would like to thank you for giving me this wonderful opportunity. This is like a dream come true—for my story to be published and read by students and other faculty members. Hopefully, it will inspire and encourage them and teach them that they should never give up and should try to enjoy what they do as well.

TS: So your long-range goal seems to be to keep doing the things you're doing. Is there anything that you wanted to talk about that we haven't?

SN: I think we mentioned everything, and I thank you one more time. It was so wonderful.

TS: And thank you very much.

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