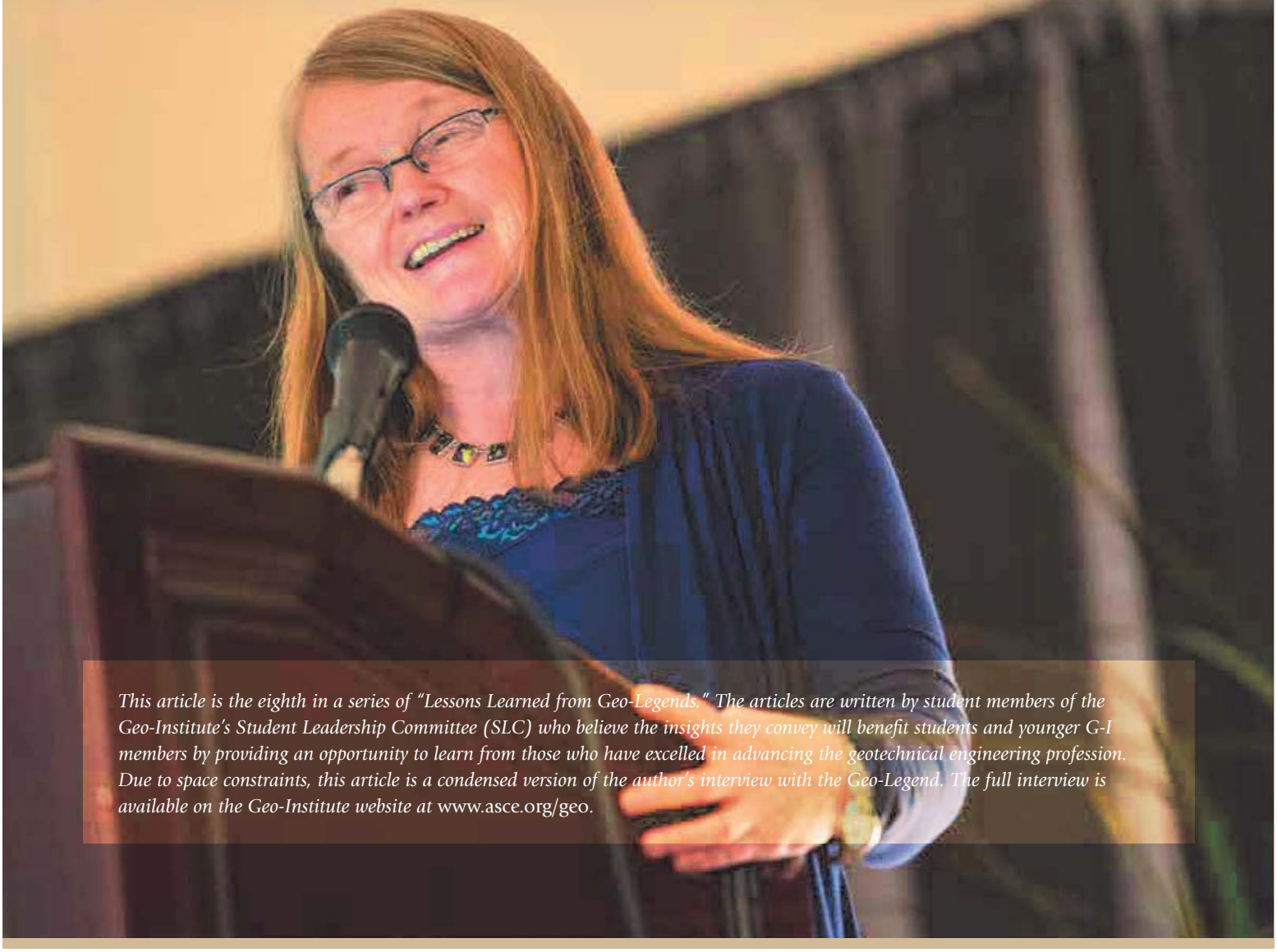
LESSONS LEARNED FROM GEO-LEGENDS:

SUZANNE LACASSE, PHD, F.ASCE, F.CAE, NAE

The More You Get Involved, the More You Learn

By Melissa Stewart, EIT, S.M.ASCE and Erik Jensen, EIT, S.M.ASCE



This article is the eighth in a series of "Lessons Learned from Geo-Legends." The articles are written by student members of the Geo-Institute's Student Leadership Committee (SLC) who believe the insights they convey will benefit students and younger G-I members by providing an opportunity to learn from those who have excelled in advancing the geotechnical engineering profession. Due to space constraints, this article is a condensed version of the author's interview with the Geo-Legend. The full interview is available on the Geo-Institute website at www.asce.org/geo.

(I to r) Melissa Stewart, Dr. Suzanne Lacasse, and Erik Jensen.

Dr. Suzanne Lacasse is the technical director of the Norwegian Geotechnical Institute (NGI). She completed her first degree, a Bachelor of Arts in French literature, at the University of Montréal, Canada. From there, she obtained an undergraduate degree in civil engineering at École Polytechnique of Montréal and then continued her engineering studies at the Massachusetts Institute of Technology (MIT) in Cambridge, MA before traveling back to Montréal to complete her degrees. She was first a lecturer at École Polytechnique and then a lecturer and head of the Geotechnical Laboratory at MIT prior to moving to Norway. Dr. Lacasse secured a short-term post-doctoral fellowship position at NGI, where she became a permanent employee in 1982.

While at NGI, Suzanne has held multiple positions and has worked on both the research and consulting sides until becoming the managing director in 1991. She held that position until last year when she became the technical director. On the technical side, Dr. Lacasse started her career studying and publishing papers on in situ and laboratory testing techniques. She then moved into offshore projects studying the effects of cyclic loading on the resistance of soil. Some of her main contributions to geotechnical engineering have been the development of practices for applying probability theory to hazard and risk assessment of geotechnical problems and working to improve the laboratory techniques used by industry resulting in data sets which can be used for more precise and physically accurate design practice.

Dr. Lacasse is an honorary member of the Norwegian Geotechnical Society and a fellow of many different professional organizations, including the Engineering Institute of Canada and ASCE. She is a foreign member of the U.S. National Academy of Engineers, and she gave the 37th Terzaghi Lecture in 2001.

Although Dr. Lacasse's formal education concluded with her PhD in 1976, she has never ceased learning and seeking out new opportunities to learn. Her multiple positions in a variety of countries have formed her into the engineer that she is today and make her uniquely qualified to talk about working internationally, maintaining diversity in life, and being a woman in the field of geotechnical engineering.

Q: First of all, congratulations on being the first female GeoLegend! How do you feel about that?

I chose engineering because I like the work a civil engineer does. Right now, I'm having the time of my life. I also like it when a young woman tells me that she chose engineering because of me, and that she feels she can make it in engineering because of my example. This "role model" is something I had never thought about, but I like it. I am thankful that I've been so fortunate and lucky throughout my career.

Q: Do you feel as though being a woman in a male-dominant field has hindered your professional development or progression at all?

I think that being a woman opens opportunities: you are more easily remembered, and get more rapidly known. A single woman in a large group of men is more easily noticed. I realize that I have had many advantages because I am a woman. So I don't think that it is difficult being a woman in a male-dominant world if you are ready to go for it. I believe that being a woman has helped me along the way. I've been teased, yes, but I've never felt that my professional progress was hindered in any way because I was a woman.

Q: Could you talk a little about the journey you took to get where you are today?

I come from a small village in northern Québec and was raised with lots of older brothers. They trained me early for a male environment. I learned to read by myself because I wanted to be able to do like they did. In primary school, my mother saw that in one month I had read 35 books, so she made me skip grades in school. My father was an engineer but he wasn't sure if becoming a civil engineer was appropriate for a woman.

He told me that I could study engineering only after I had completed a degree in classical studies: a more feminine career to fall back to. So I did just that, and completed the degree in Arts which I enjoyed very much. This degree has given me a tremendous advantage in that I love grammar and can write reports. It's unbelievable how many engineers aren't familiar with writing. My mother was Irish, my father French-Canadian, so I had two languages to start and that contributed also to open horizons.

Q: How was it that you ended up at MIT?

Well, that was the choice of Dr. Yves Lacroix, one of my mentors at École Polytechnique of Montréal. I had good grades. I was accepted at MIT, UC Berkeley, and University of Illinois, which were great places to study then. Honestly though, it was Yves Lacroix who one evening said "Take MIT." He probably believed MIT was better suited for me. It's closer to home, coming home for Christmas was important. I visited MIT and was very impressed, so I did not even visit the other universities. I was very fortunate, I had such good professors and fellow students at MIT.

Q: Did you have a favorite class?

Besides engineering?

Q: Let's include all of them, because I want the answer to be French literature.

It's probably true, but I don't dare say that in *Geo-Strata*. At École Polytechnique, I took a class on construction on permafrost. I had hoped to do an MS on Arctic soils and construction in the Arctic. But MIT's frozen soil project was just ending. The course on permafrost is perhaps the one that I remember best. I liked hydraulics very much as an undergraduate. At MIT, my favorites were soil behavior and experimental soil mechanics.

Q: So you finished your PhD, then what? How did you come to do the work that you're doing today?

When I got a faculty position at MIT in 1975, I thought I would be there for the rest of my life. MIT needed somebody to teach the lab course and to run the lab, and I always liked experimental work. I had 10 years working on in situ and laboratory testing and soil behavior. I remember a project on the sizing of containment areas for dredged material and working on levees along the Mississippi River.

Suzanne Lacasse with Ralph Peck

In 1972, I was at the conference in Purdue and my advisor, Professor Charles C. Ladd, introduced me to many people, one being the director of NGI at the time, Dr. Laurits Bjerrum. He said, "Have you considered coming to NGI?" I said I had to finish my doctorate degree first. He replied, "Finish your doctorate degree, and then come." Many years later, I applied for a post-doctorate fellowship. Again, no plans nor agenda. For a period of three years I had a position at MIT teaching and a research position at NGI. Many opportunities later, I became managing director of NGI in 1991!

In 1988 or so, NGI needed someone to concentrate on hazard and risk assessment. I had started to work on this topic for the French oil company Elf Aquitaine, now Total. Since then, risk assessment and risk management has become one of my specialties. Today I work on foundations on land, slope stability, and founda-

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tions offshore. The demand for hazard and risk assessment is growing. If I try to think of which project I liked the best, it is very difficult to select, because each of the projects are so special.

Q: It seems like you've done a lot of work in many different fields. What do you think is the future of geotechnical engineering?

I believe that good, high-quality sampling and quality testing in the laboratory will continue to be very important. Testing will become even more automated and wizards will be developed to help the technicians on how to run the tests. I believe that the cone penetration test will become even more universal than today. The cone will also be developed to measure even more parameters than today. I remember a lecture by Professor Arthur Casagrande, from Harvard University, where he made a statement on the standard penetration test (SPT). He said "I do not believe in a test where the result depends on whether the operator had a quarrel with his wife the night before, or whether he is having spaghetti for lunch!" I thought that Arthur Casagrande made a great point back in 1972! It was a lecture that proved very useful.

Q: I'm picturing the "What you had for lunch" correction factor table...

I think also that computational modeling will be more prevalent. Today, there are numerous different programs and I'm not always sure which program is best suited for different situations. Computer codes are becoming more of a "black box" than before. Code developers have to be conscious that they need to deliver a quality product that has been verified and re-verified. Big organizations like NGI will continue to have their own constitutive models and programs to maintain a competitive edge.

Research will continue to be an essential aspect of finding improved solutions. But then, research is best not behind closed doors, but in a cooperation between academia and industry. One aspect that I believe should be given more attention is instrumentation, performance monitoring, and the interpretation of the observations. We can learn so much from these, and sometimes, the observations just lie in drawers. It is obviously a question of economy. Someone has to pay to get the interpretation done.

Twenty years from now, risk assessment and management will become compulsory in the civil engineering curriculum, including communication skills and insight in how city planners and social scientists perceive risk, to give a few provoking examples. Industry is asking for this type of expertise and contributions.

Q: You've done quite a lot of work internationally between MIT and your projects at NGI. Can you talk a bit about the challenges of working internationally?

The main challenge when you're working internationally is that the soils are quite different, and the local practices which you might not be aware of are well worth studying and perhaps adopting. On the other hand, the input from your own experience usually brings insight in how to solve the problem. You already have much diversity in the soil types and practice in the U.S. I do not think that the biggest challenge for me was getting to know the varying soil conditions or practices. Rather, it was getting to know the culture in the different countries. Knowing the language opens many doors. Getting used to the Norwegian culture was not difficult, it was not too different from the culture in northern Canada.

I was endorsed to travel internationally several times in my career: the Netherlands, Houston, TX, and Pau, France. I seized all these opportunities, and never regretted it. I learned a lot from new approaches to solving geo-problems, not being too pushy in a new environment, and different types of personnel leadership. Many hesitate to accept assignments abroad, especially if they are long-term. I could have said no, but then I would have missed all the new experiences, new friends, and new projects arising from the new contacts. I believe that that experience helped build me to what I am, helped create a wider network, provided material for papers and new co-authors. One has to refrain from an attitude where it is easier to simply stay at home. Adapting to change is perhaps one of the most underrated qualities.

Q: Thank you so much for taking the time to sit and talk with us today. Do you have any final words of advice for students or young professionals?

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AUTHORS

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