Brenda Dietrich brings hands-on approach to ORIE

February 21, 2018

Brenda Dietrich appreciates beauty and precision wherever she sees them, especially if they serve a practical purpose.

Brenda Dietrich M.S. ’83, Ph.D. ’86 appreciates beauty and precision wherever she sees them, especially if they serve a practical purpose. They are what drew Dietrich–the newest addition to the ORIE faculty–to math as an undergraduate at the University of North Carolina and to its applications in OR during graduate school, and they keep her happy outside of work.

“I spend most of my free time on fiber arts–starting with the fleece off of a sheep, cleaning and organizing it and then spinning it into yarn, then dyeing it, and weaving or knitting it into something useful,” she said. “I find it very satisfying.”

True to her title as the Arthur ’59, M.S. ‘61 and Helen Geoffrion Professor of Practice, Dietrich is bringing this hands-on approach to her new role in ORIE, informed by a long career at IBM, from which she retired at the end of 2017. “I was always planning to return to academia ‘in a few years,’” she said.

As a few years turned into 33, Dietrich pursued her interests in integer programming, mathematical optimization, resource allocation, and the synergistic use of machine learning and optimization, especially as they apply to physical systems. She did so while taking on many leadership roles at the company, including Vice President positions related to Data Science and

Business Analytics. For more than a decade, Dietrich also headed the Mathematical Sciences Division, where she led a team of 90 researchers through a time of growth and engagement. "We had a significant impact on many aspects of IBM's business," she explained.

Asked to highlight other examples of projects she remembers with pride, Dietrich pointed to managing a small, cohesive group that worked on scheduling, inventory planning, and forecasting for IBM manufacturing; leading the writing of a ten-year technology outlook in 1995–at the beginning of mobile phones, the public use of internet, and open source–that was remarkably accurate in its predictions; filing a patent (one of more than a dozen to her name) on "pro-active" planning that allowed plans to be monitored and updated as needed at a time when most planning processes still ran on schedules; and, in the 1990s, addressing the so-called "implosion problem," which determines what can be built with the parts on hand, with software that found use throughout IBM manufacturing, in the company's consulting practice in Asia, and in addressing staffing questions.

Such varied and deeply grounded practice in the field made Dietrich the department's "dream candidate," said ORIE director Shane Henderson. A member of the National Academy of Engineering, as well as an IBM Fellow and INFORMS Fellow, "she has tremendous experience working with industrial partners and on collaborations bridging multiple organizations," he said. Add to that "a strong practical outlook, a top-notch background in Operations Research," and "cheerfulness and an open mind," and she was a shoo-in for the job.

Now Dietrich is ready to pass on her decades of experience. "My initial focus is on strengthening the connections between the department and industry and expanding the opportunities for graduate students to work on and be exposed to usage of OR in industry," she said. For example, she plans to create an internship-based course, which will also continue to keep her working on problems posed by companies. "I like applying OR to real problems, and I hope to teach others how to do this," Dietrich said. "But I also like using real problems as inspiration and motivation for new research."

The professor's future studies may combine aspects of machine learning with more classical optimization. She also hopes to explore how users implement the recommendations provided by OR-based applications, based on her observation at IBM that product managers frequently modify engine-generated forecasts before entering them into a sales or inventory planning process. "Why

do they do this?", she asked. "Do they know something that is not captured in the data or the model? Are they right or wrong? And how can what they do, and what actually happens, be captured and used to improve the forecast?"

Henderson, for one, is looking forward to Dietrich's contributions. "We are delighted to welcome back one of our own," he said. "As one of our graduates, Brenda has a deep knowledge of ORIE's past and present, and her career and credentials superbly position her to help shape ORIE's future."

Other Articles of Interest



CFEM's End of the Year Post: Happy Summer to All!

JUNE 20, 2019

We had so much fun catching up with old friends at Kingston Hall last Thursday. Over drinks and beef patties, incoming CFEM students celebrated the end of their first year and discussed their current... Read more

Cornell funds projects in NYC visioning initiative

JUNE 6, 2019