

## Stepping Through

By Sora Shirai

Hanover High School

Interviewee: Dr. Petra Bonfert-Taylor

Imagine there was a black door in front of you. Out of curiosity, you open that black door. But there is a gray misty fog hindering your sight and no matter how hard you squint your eyes, you can't see past it. If you continue to walk, you might see an ethereal landscape that you could only begin to imagine in your dreams, or you might enter into a world of darkness. Some people might decide that they don't want to take the risk and are perfectly happy ignoring the door. Others might decide to leave the door open and wait until the fog has cleared so that they can see what is beyond before they choose to enter. But Petra Bonfert-Taylor chooses a different path. Even if nobody's walked through the door before, even if there is no map to help guide her once she's entered, Bonfert-Taylor steps through the door.

Throughout her life, Petra Bonfert-Taylor has stepped through not one, not two, but various doors. Even as a child, Bonfert-Taylor loved taking things apart and exploring the world of mechanics behind how things work. In 11th grade, having learned English since 5th grade and some French as well, Bonfert-Taylor decided to go on an exchange program in Canada for three months. Furthermore, after having finished her Ph.D. in mathematics at the Technical University of Berlin, when her PhD advisor asked if she wanted to go to the University of Michigan for a year for a postdoctoral position, she said yes without hesitation. She moved to the University of Michigan three weeks after the phone call, met her future husband on her first day there, and she's stayed in the U.S. ever since. She still has the return ticket to this day (though it might be a little bit too old now...). For several years, she worked as a professor at Wesleyan University. There, she again challenged herself to try something new.

At the time, the concept of Massively Open Online Courses(MOOCs), free online courses that anybody can enroll in as long as they have access to the internet, had just been thought of. Having grown up in Berlin, Germany where students can learn for free at most public universities, she was surprised by the incredibly high tuition fees at colleges in the United States. Unfortunately, educational disparities, other than those financial, exist all around the world today. So even though there were no instructional guides Petra Bonfert-Taylor could follow as she created her first online course, she decided that she would try. She hoped that her attempt would help lessen those disparities just a little bit and that even a few extra people would gain knowledge from her course.

Almost solely on her own, through trial and error, she worked her way through and created her first course. The first week after publishing the course was stressful, receiving many comments and emails about all the little mistakes she missed and needing to fix them. In addition, with the discussion forums filled with anonymous people, some didn't comment

on the content itself -- but rather on how her eyes were pretty. But one day, she received an email from a student in Africa who did not have much access to education. In the email, the student expressed their gratitude to Petra Bonfert-Taylor's class. Since then she has received many other emails from around the world thanking her for her class. She says that she enjoys every minute while teaching MOOCs, but it is a special experience when she receives these messages. They help to motivate her to continue contributing towards a future in which education is more accessible world-wide.

Since then, she has added a series of 7 MOOCs on C-programming which currently have learners from 194 different countries. For this work, with her colleague Rémi Sharrock from the Institut Mines-Télécom in France, Petra Bonfert-Taylor recently won the 2019 edX Prize for Exceptional Contributions in Online Teaching and Learning. Their C Programming with Linux course had over 170,000 students enrolled and was the first cross-institutional Professional Certificate program on edX, a popular platform for free online learning. In addition, she works as a professor of engineering and an instructional designer at the Thayer School of Engineering at Dartmouth college.

While Bonfert-Taylor seems to jump into new opportunities easily, pursuing mathematics wasn't always easy. As a high schooler Bonfert-Taylor became the first girl to ever qualify for the German training team for the International Mathematics Olympiad. However during her time there, one professor said, "Of course there aren't any girls here. They aren't good enough!" In addition, when she was trying to find a PhD advisor, another professor said to her, "Women just aren't as good at research since they are not as playful as men are. You need to be playful to be a good researcher." Multiple times, comments like these made her wonder if she didn't belong in the mathematics community as a woman. Now, several years later, prejudices still exist. She says that "As women, we need to fight a little bit harder." But to anybody interested in pursuing a career in mathematics, she says to "follow your dreams" and "don't let anyone stop you".

I asked Bonfert-Taylor what she imagined herself doing 10 years from now. She answered that 10 years ago, she never would have imagined herself to be doing what she does today, so she can't even start to imagine what she might be doing 10 years from now. Petra Bonfert-Taylor won't stop going through doors. She'll take every opportunity given to her. She says that she's able to step through the door even when she doesn't know what's behind it because, "stepping through one door often opens a world of new unexpected opportunities. You never know what you may find behind that door that may unexpectedly advance prior goals that have seemed unreachable to you."

Now, it's your turn to step through the door.