The Big Picture

By Lila Marchetti
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Interviewee: Erin Mayfeild

Professor Erin Mayfield had always been a curious kid, whether she was investigating the outside world around her, or trying and problem solving new and different things in math. Professor Mayfield grew up in a household surrounded by strong women and smart family members. Her dad was a chemist while her mom was an actuary and pursued a field that was mainly dominated by men. This forced her to always look for the positive in things. Professor Mayfeild grew up with an older sister who acted as a role model for her. Mayfeild looked up to her and tried to do things with her whenever she could, whether that meant doing her sister's math homework with her or exploring nature. Professor Mayfield was exposed to a high level of math at an early age. Ever since she was a little kid, Mayfield would look at math as a series of problems and break things down to see the big picture. This attribute would help her later on when she began dealing with bigger world-wide issues.

Due to Professor Mayfield's love for nature and the environment, it didn't take long for her to realize what a serious issue climate change was becoming. Soon after, she realized that like a math problem, climate change is also just a series of problems that together would look daunting and impossible to solve to even the smartest person, but broken up and individually looked at, they are much more manageable.

When Professor Mayfield went to college, she knew that she wanted to make a difference in the world, and specifically focus on the issue of climate change. She earned a BS in Science at Rutgers university with the plan to follow her dream of solving the puzzle of climate change, one piece at a time. After she obtained her bachelor's degree, she earned a MS in Environmental Engineering at John Hopkins University and a Phd in Engineering and Public Policy at Carnegie Mellon University.

After college, she went on to begin her first job at an Environmental engineering firm, as an environmental scientist, to help figure out how to remediate hazardous waste. The firm also aided in land use planning and Ecosystem service valuation. Service valuation is the quantification of the value of something, by the market price. This was the ideal job for Professor Mayfield because she could utilize her gift for math to enact positive change in the world. This job also prepared her and gave her the additional tools needed to pursue her future career.

Soon after her time working at the Environmental engineering firm, she found her true passion as an environmental systems engineer. What the job entails is that she works as an interdisciplinary researcher creating mathematical multi-objective models of public policies to help decision makers and communities mitigate climate change. This job requires the ability to zoom in and focus on the little pieces, rather than looking at it as one giant insurmountable issue. Professor Mayfield's ability to do that is extremely valuable and she has carried it with her for her whole life.

One of the many results of Professor Mayfield's work is the model created to optimize sustainability and cost of a macro-energy system. This system focuses on creating cost efficient energy sources regarding the climate, air quality and more. The model created by Professor Mayfield is used to create a more sustainable, cost-efficient way to produce net zero energy systems. This will help the world have better access to sustainable energy sources, bringing Professor Mayfield one step closer to her dream of aiding in the fight against climate change.

Currently, Mayfield is a professor at Dartmouth College, teaching a series of courses including energy systems and data analysis. As well as continuing her research and as an environmental systems engineer. Professor Mayfeild described teaching at Dartmouth as "It is extremely inspiring to be surrounded by people who were asking questions and making a difference in the world."

Professor Mayfield talked about how her gender has impacted her career, and how even in academic environments she has always faced some level of skepticism based on her gender. Especially in engineering, which is a field mainly dominated by men. Professor Mayfield talked about how she worked with a partner on a project but did not get credit for the math portion of the study because it was assumed that the man in her group did all the math. Despite all the challenges that Professor Mayfield faced in her career due to her gender, she persevered and continued to have a successful career and make a difference in the world. During her career, Professor Mayfield has written numerous award winning papers on the topic of climate change and specifically how to mitigate the effects of climate change and carbon emissions.

Professor Mayfeild continues to apply her curiosity about the environment that she remembers having in her childhood to her professional life. By combining this curiosity with her interest in mathematics, she has pursued a career that she not only finds fulfilling but that is also positively impacting the world.

My name is Lila Marchetti and I am a 7th grader at Richmond Middle School. I am in the accelerated math program at my school and I enjoy learning about all aspects of math. I also enjoy cross country ski racing and I regularly participate in local and regional races. I love applying math to everyday situations, and I hope to continue pursuing mathematical questions and topics.