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Melanie Dennis: Making Connections Through Mathematics

In a world of differences, Melanie Dennis, a Dartmouth graduate student, is using math to make connections. When we met on a cold wintery day at the the Dartmouth library, she explained the ways she does that. Melanie does research in a branch of mathematics called combinatorics. She described how she studies special kinds of graphs, called tree graphs. Melanie takes two graphs; one is familiar, one is unfamiliar and she compares them. She finds their similarities, and with that she deciphers the unfamiliar one. Melanie also studies knot theory. Knot theory is when you take two knots and try to find out if they are the same or different knots. What she does, is color each part of the knot a different color, changing colors at each intersection. When she is done, she counts the number of colors on each knot. If they have the same amount of colors, they are the same knot. Knot theory is helpful when comparing DNA, and in biology and physics.
In addition to research, as a graduate student, Melanie also teaches. As much as she loves research, Melanie admits to enjoying teaching more. She loves connecting with her students, and says that it's "amazing to see how much you can learn from each student". Her favorite part of teaching was having office hours when any student taking her class could come to her office and ask her questions about math problems. She liked to spend one-on-one time with them so she could understand how they thought about problems. She liked to see the connections and differences in their thinking, too.

Although Melanie always knew she wanted to teach, she actually went off to college thinking she'd be a Chinese translator. She went to Middlebury College and focused on languages. Melanie loves learning languages because it gives her an opportunity to talk with people she otherwise could not communicate with. The reason she chose Chinese was because it was a very popular language and so many people speak it. Melanie loves to understand how people in different cultures think about things and being able to talk in their language lets her do that.
In college she also took a lot of math classes and, at one point, Melanie got a job opportunity doing work related to knot theory. That job was pretty much the turning point of her career choice. So instead of a Chinese translator, Melanie is now a graduate student in mathematics at Dartmouth College.
As a woman in math, Melanie sometimes noticed times when she was the only woman in a room full of men. We talked a little bit about what that was like. Melanie said that sometimes since there are only a few women mathematicians, women in math might feel extra pressure to do well so they can represent all women. Melanie told me she reminds herself that she is here to do what she loves and represent herself.

The reason I chose Melanie Dennis to interview was because the paragraph she wrote about herself stood out. Hers mentioned playing with knots, algebra, and Chinese translating. She struck me as a fun, kind, and intelligent woman. And after meeting her, I found that she is all of those descriptions and an inspiring person to meet and interview.