

Interview with Dr. Carrie Diaz Eaton, Associate Professor at Bates College in the Department of Digital and Computational Studies, and recipient of the 2021 John Jungck Prize for Excellence in Education.

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Could you tell us about your background, how you arrived in your current position, and starting the INclusive and QUantitative Interdisciplinary Research and Education (INQUIRE) Lab?

I have a BA, MA, and PhD degree all in Mathematics, but all interdisciplinary with life science. My theses areas were Computational Neurobiology and Evolutionary Theory. My first appointments were in environmental liberal arts colleges teaching mathematics and programming to life and environmental science students. However, I left to come to Bates College to build a new interdisciplinary and inclusive computational science and studies program called “Digital and Computational Studies.” This reflects a personal trajectory that has led me from environmental justice to a broader social justice perspective. The change also continues to challenge me in ways that I love being intellectually challenged.

What attracted you to mathematical biology?

I did a lot of math in high school. I wrote a little about that in a blog for the MAA here. But when thinking about my future, I wanted to save the world - I wanted to save ecosystems and animals. I thought to be in math, I had to study math for itself, and I was left in a bit of a crisis when I realized that I really didn't want to be a field or wet lab biologist either. It wasn't until I was in an evolution class until I realized that I study the biology problems I thought were interesting with the tools I loved to use - and I never looked back!

What is something exciting that you are currently working on?

Some of you may know that while I was on the SMB Education Committee, I worked to help found QUBES (qubeshub.org), a virtual center for math biology instructors. We offer free OER for math biology and free virtual professional development to adapt quantitative biology teaching materials. It is a great place to share, but also to get real data sets and case-studies to make your math teaching more engaging. Anyway, I've been taking a lot of my networks grounding from computational neurobiology and evolutionary ecology and applying it to think about insights about teaching and learning within the QUBESHub.org data ecosystem.

How would you describe your teaching philosophy?

I remember starting my job and thinking a lot about “rigor,” but frustrated when my students (never math majors) wouldn't always buy in and complete their homework. I was frustrated because I thought they wanted a song and dance from me, and I got the impression they wanted a taller professor, a whiter professor, a male professor, and an older professor. Well, I haven't gotten taller or whiter, I have embraced those things. I have gotten a bit greyer, and I've decided

it is worth it for me to find the really interesting problems and content that hook students into working harder because they want to, because it meets their goals as humans. I've also over the years refocused on something I forgot about when I was a newer teacher - creating community in the classroom and just enjoying BEING with students. I've been more intentional with that in this pandemic than ever before, and it's been really important.

What do you foresee as the biggest challenges in mathematical biology research and education?

I believe that the most important challenge will be ethics and social justice. I think STEM generally things of themselves as theory and science and independent of human bias or effect. But of course there are real biases and real consequences to these biases. I was shocked when Dr. Krystal Tsosie said that sovereign Native nations right's to govern their own data are repeatedly infringed on by organizations such as NIH and many science researchers. We know just from the work of many critical digital scholars that our obsession with big data and algorithms is a recipe for "Weapons of Math Destruction." Worse, we are blinded to these effects because "we" is not "we" but rather a limited representation of "we" with research power highly concentrated at institutions and within certain demographics such as white male, that are privileged to be unaware about the ethical and social consequences of our actions. One place we have seen this play out clearly is in COVID spread. How many models accounted for social injustice in ways such that it would predict the mass devastation in our Black and Brown communities?

Have you found any strategies to be most effective for integrating research and current events into the classroom?

If you attended Carl Bergstrom's talk, you know about Calling Bull (callingbullshit.org). I have been teaching with his curriculum for 3 years now, and it is a great way to bring in many contemporary issues. I teach it as a basic data science course with R that also counts as a quantitative literacy course. I really wish that every school taught this course! There is also a new instructor group here on QUBES <https://qubeshub.org/community/groups/callingbull> to share materials.

What is the best piece of advice you have received?

I remember at one point saying "Well - I don't need to do that for my job" and Dr. Elsa Schaefer encouraged me not to limit myself. That investing in myself would keep me marketable and mobile - and that has certainly paid off. It's a variation of what I've observed in my father - an immigrant from Peru with hardly a dollar to his name was never satisfied. It took him 18 years to get his degree in computer science and then he had to keep himself learning to survive the closing of tech start-ups and the dot com bubble.

What is the best part of your job?

I like helping young people find themselves and helping them make this world a better place.

What is the worst part of your job?

I did not know that academics work all year long when I signed up for this gig. I thought I was supposed to get the summers off.

Where is the best place you have travelled for work? And why?

I am so lucky to be able to travel and every place has been amazing - many of those related to SMB meetings, like Sydney! I just love practicing new languages and seeing new things.

What was your favorite part of the eSMB meeting?

I like that I saw new people participate that I have never seen at other meetings. All of my mentees this year were international first-time attendees!

What is your favorite way to spend a Saturday?

With my family!