

Evelyn Lamb: [00:12](#) Hello and welcome to the Lathisms podcast. I'm Evelyn Lamb. In each episode we invite a Hispanic or Latinx mathematician to share their journey in Mathematics. Today, we're very happy to welcome Marcelo Aguiar to the show. Hi, how are you today?

Marcelo Aguiar: [00:28](#) Very good, thanks for having me Evelyn.

Evelyn Lamb: [00:31](#) So can you start by telling us a little bit about yourself?

Marcelo Aguiar: [00:35](#) Sure, I was born in Uruguay, in South America. That's where I went to school and I did my undergraduate degree. I came to the US for grad school. I did my PhD at Cornell and I've stayed ever since then. I've been at various places around the country and now I am teaching again back at Cornell.

Evelyn Lamb: [01:02](#) And what is your research area?

Marcelo Aguiar: [01:06](#) I work in algebra and combinatorics, so those are two main areas within pure mathematics and I work at the interface between the two. I started more as an algebraist and over the years turned a little bit into combinatorics. But my research always combines notions from both areas. So it's all fairly abstract, it's pure mathematics, developing the theory, proving theorems.

Evelyn Lamb: [01:37](#) Can you give us maybe a little taste of one of the problems you're working on?

Marcelo Aguiar: [01:45](#) Well lately, maybe for the past few years, my research has been focusing on an area called hyper plane arrangements or an object called hyper plane arrangement. And this is one of the many flavors of higher dimensional geometry that occur in mathematics. It's maybe called discrete geometry as opposed to other versions of geometry than can be considered as more continuous.

Marcelo Aguiar: [02:13](#) And it's an area where one can study geometric objects from an algebraic perspective and also encounter applications to combinatorics so I like that aspect of encountering different areas of mathematics in one place.

Marcelo Aguiar: [02:30](#) Generally, it has to do with questions about high dimensions, higher dimensions, how a higher dimensional space can be split into regions in many ways and trying to understand that, trying to understand higher dimensions, which is something we can now visualize but mathematics has tools to deal with that, so this is one of the many ways in which higher dimensions arise in mathematics.

Evelyn Lamb: [03:03](#) And what inspired you to become a mathematician?

- Marcelo Aguiar: [03:08](#) I've always liked math, ever since I was little, maybe that became a little more clear sometime high school or middle school maybe when I encountered good teachers and interesting questions and problems and I saw that I had some natural inclination for that and that I was doing well. Not only that, some kind of taste for mathematics itself, but the fact that the conditions were given that I had good teachers I guess was essential. Then, going into college, I think it was very important to encounter really good teachers and a very nice atmosphere so a place where you could see people that were interested in research but also a place that was friendly and welcoming. I guess it was then that I started to think seriously about pursuing a career in mathematics. It is something that I didn't even know was possible when I was younger but at some point seeing people that were doing that at the university, that had in some cases studied abroad and returned to my country to teach us. I started thinking well maybe this is something I can do and then getting advice and support from those people eventually led me into this path.
- Evelyn Lamb: [04:44](#) And can you talk a little bit more about the mentors who helped you understand that you could be a mathematician?
- Marcelo Aguiar: [04:53](#) Sure. I think there are many. If I go all the way back I would probably have to go to high school when I had some really good teachers, geometry, high school algebra, things like that that make this interesting and were open and willing to talk after class and answer for those of us who were interested in going a little bit deeper into things, they shared their time.
- Marcelo Aguiar: [05:20](#) And so yeah, there were people at that level. And then my mentors at every level, at the undergraduate level, my mentor in Uruguay, Walter Ferrier, then at the graduate level, my PhD advisor, Steve Chase at Cornell. And then at the post graduate level, I guess Andre Joyal was also very influential. All people that I interacted with fairly comfortably and were knowledgeable and friendly and open.
- Marcelo Aguiar: [05:53](#) Other people like Louis Billera, Percy Diaconis, also people whose taste for mathematics I appreciate, I understand, whose demeanor I like. Just people that are nice to be around with. And those are the names that come to mind. So I guess I've been lucky, I've encountered many that were willing to help along the way and people that are very smart and people that I will always be grateful to.
- Evelyn Lamb: [06:31](#) So did you feel encouraged by your family to pursue mathematics as a career?

Marcelo Aguiar: [06:39](#) Yeah, that's interesting. So yes, my family was always supportive of my studies and I think they would have preferred that I stayed in Uruguay or I returned to Uruguay but they saw that there were better opportunities here and that my life some how took me this way. So, they understood. I remain in close contact with them. I visit often and once in a while they visit me.

Marcelo Aguiar: [07:14](#) So yeah, they never wanted to keep me from doing the things that I liked. So I am grateful for that because I think it would have been maybe natural for them both, my father and my mother, to try to drag me back home. But they understood that this was my life, my decision and that things were probably going to work better this way. So yeah, I am grateful for that too.

Evelyn Lamb: [08:03](#) And have they visited you in Cornell or anything?

Marcelo Aguiar: [08:06](#) Yes, a few times. Not very often because it's far and if I travel home it's one person and if they come here it's usually a few so it's more expensive but they have and I am actually hoping that they will visit me again soon. I have a home that I've been remodeling so, I am hoping when that's done that they can visit and stay there.

Marcelo Aguiar: [08:36](#) So yeah, that definitely happens.

Evelyn Lamb: [08:41](#) So you moved directly from Uruguay to Cornell, right?

Marcelo Aguiar: [08:46](#) That's right.

Evelyn Lamb: [08:47](#) And I'd imagine that's a pretty big difference. So how did you adjust when you first got to graduate school?

Marcelo Aguiar: [08:55](#) Yeah, so that goes a way back, but so at the beginning, you meet your classmates and so you make friends and there's a lot of work so you just focus on work. I think my recollection from those first months and years is that I was really struck by the beauty of Ithaca, where Cornell is and by how impressive the university was, the facilities and everything. And the teachers were good, the classes were good. So I was very happy with everything from the beginning. Maybe things were a little challenging but not so much, I was able to keep up with work and just focused on work.

Marcelo Aguiar: [09:34](#) I think it was a little hard to be away from my friends, my family, I do remember that. But over time you meet new people, you stay in touch with your old friends to the extent you can, and your family, and you just keep going. Yeah, it wasn't terrible at all. I think it was a good positive experience that I cherish.

- Evelyn Lamb: [10:00](#) So, I imagine, every career, every person in a career has their challenges when they're moving forward. How do you overcome your challenges in your career and in research?
- Marcelo Aguiar: [10:16](#) Yeah, that's a really good question, I don't think I have an explicit strategy to deal with issues. I don't think I think about it explicitly. I just try to plow through. But maybe one thing that is important, so our work in mathematics, when you work in especially in pure mathematics is research, that's the main focus of your work and it can be really abstract and really removed from daily life, from real events. So I think it is important to connect to people and to reality. I find that teaching and advising, working with students is something that grounds you and I find that important.
- Marcelo Aguiar: [11:09](#) Because it is important to feel that what you're doing is useful to other people and I guess advising and teaching is where you make a difference. So maybe I resort to that.
- Marcelo Aguiar: [11:30](#) Maybe also, just returning to basics by which I mean when we start I think most of us will do research in mathematics will tell you that we just like the subject, we have an appreciation for abstract reasoning and mathematics. I think it's useful to just spend a little time enjoying math, maybe grab a paper that you're curious about and you want to learn without feeling that you need to do something with that material.
- Marcelo Aguiar: [12:05](#) So just enjoying, appreciating rather than trying to get your hands on at any cost. So, yeah, so just sitting back and enjoying. Math has a lot to do with art, has many components in common with art, so I adopt that perspective of enjoying it. Like if you were watching a movie or visiting a museum and enjoying paintings or listening to music, so that's also something that can re-energize you when you're facing bad moments, moments when you don't feel too creative or too energetic. Those are the things that come to mind but I don't know. Maybe a third observer, someone who would see things from outside would have a better answer to your question.
- Evelyn Lamb: [13:02](#) And maybe to close, we can see do you have any advice for students who are interested in math and when they're starting out their education or early career?
- Marcelo Aguiar: [13:17](#) Well if they really like the subject then they should go for it, yes. Things are probably easy, you just have to ... well if you're lucky that you're in a place where you have good teachers and good classes to take, just go for that and math is something that requires patience and a lot of work so maybe that is one good advice that I can share. One should not think that we are born, that some people

are born knowing everything there is to be known, this is something really that, for most of us, that comes only after hard work.

- Marcelo Aguiar: [14:00](#) So that is definitely a necessary condition. You have to study hard, be patient and just keep going at it. Reach out, talk to other students, talk to professors, look for books, look online, there are many resources available. It is possible to do a career in pure mathematics and in mathematical research, so yes it is definitely something that anybody who is interested should keep in mind.
- Evelyn Lamb: [14:51](#) Well thanks a lot for taking the time to talk with me.
- Marcelo Aguiar: [14:54](#) Thank you Evelyn, it was fun.
- Evelyn Lamb: [14:58](#) Thank you for listening to the Lathisms podcast. It's produced by me, Evelyn Lamb and made possible by a Tensor-SUMMA grant from the Mathematical Association of America. Our music is Volvere by La Floresta. Lathisms is an initiative to celebrate the accomplishments of Hispanic and Latinx mathematicians. It was founded in 2016 by Alexander Diaz-Lopez, Pamela Harris, Alicia Prieto-Langarica and Gabriel Sosa. You can find more information about the project at Lathisms.org.
- Evelyn Lamb: [15:33](#) Join us next time to hear from another inspiring mathematician.