

## **AirSpace Transcript Season 10 Episode 12: The Milky Way**

**Matt:** And if we read 10 books this summer, we get a free pizza.

**Emily:** Oh Matt!!! You're gonna take us out for pizza?

**Matt:** [laughs]

[AirSpace theme in then under]

**Emily:** Welcome to AirSpace from the Smithsonian's National Air and Space Museum. I'm Emily.

**Matt:** And I am Matt. We've brought you many episodes about movies over these seasons, but here at AirSpace we're also big readers, so welcome to the inaugural episode of the AirSpace Book Club.

**Emily:** For our first episode of AirSpace Book Club, we read *The Milky Way: An Autobiography of our Galaxy* by Dr. Moiya McTier<sup>1</sup>. Though it is nonfiction, we're about to get deep into this book, so if you don't want spoilers, you can hit pause and come back to this after you've read the book.

**Matt:** The Milky Way is irreverent, sassy, and full of interesting science, history, and folklore. We'll tell you all about it today on AirSpace sponsored by Lockheed Martin.

[AirSpace theme up and out]

**Emily:** Matt, you're a historian. You read a lot of books. I'm a scientist. I don't read a lot of books, but I read a lot. And this is a nonfiction book, but it's, it's got a really different vibe, right?

**Matt:** Yeah, this is, I would say like unconventional nonfiction. I mean, we have this genre of historical fiction that I think is kind of similar to what's happening here, where you'll have a character who's been invented, who lives through and can describe and help you understand a historical event, but it's fictional, it's told from their point of view, even though the things going on around them are real history.

This isn't quite that. It's kind of like it though, because it's taking this Galaxy that we've lived in our whole lives and that we're a part of, and in some ways we're looking at it all

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<sup>1</sup> <https://www.moiyamctier.com/the-milky-way>

the time, but never really seeing it. And it gets to tell us its story from its very beginning to its probable end.

**Emily:** Right, and this, this voice, this tone, the vibes that the Milky Way has really kind of gives a whimsical quality that I don't think a lot of popular science books have. And I think what I like about it especially is that astrophysics deals with really, really big things that in many cases are moving really, really fast and are really, really far away from one another.

And so to have this kind of whimsy that goes along with a lot of really hard science, I think is a really special way of trying to present this information to a lot of non-specialists. And I also think it helps because it kind of gives character or personalities to other things that are relevant to this story.

**Matt:** Yeah, and you know, this book isn't aimed at scientists or experts like us necessarily. I'm not a scientist, but I do history of science, right? So I know some of it. It's really aimed at people who are just general readers who might be interested in the galaxy that they live in. And, you know, it doesn't really dumb down the science or the history, which I think is pretty impressive.

But as you say, like, personifying the galaxy and having that sort of whimsical quality to the way that the information is delivered, I think makes it a lot more approachable than it otherwise would be.

**Emily:** Right. And to nobody's surprise, especially because it's our inaugural book club, we had to reach out to the author and meet her so that she could tell us more about the book.

**Moiya:** I am Dr. Moiya McTier<sup>2</sup>. I am an astrophysicist, a folklorist, and a science communicator.

**Emily:** This book is an autobiography, so it's written in chronological order, which I think most autobiographies are. And so this kind of starts at the Big Bang and goes through the Milky Ways life, through the Milky Ways perspective,

**Moiya:** I think we kind of nailed it in the title. It's called *The Milky Way: An Autobiography of Our Galaxy*, and that's exactly what it is. It is the Milky Way Galaxy

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<sup>2</sup> [moiyamctier.com](http://moiyamctier.com)

telling its own story from before it was even born when the universe started with the Big Bang all the way to what the universe is going to be like after it's gone.

And mixed in between our stories that human civilizations have been telling about space, about the night sky for tens of thousands of years. And so you, you really get a sense of the Milky Way's personality, or it's a galaxality in the book, as I like to say.

And what surprises some people is that it is a little bit sassy. It's pretty irreverent. So just keep that in mind.

**Matt:** It's organized in chronological order, but what I really loved here was that it's not just that story, but it's also interspersed with the history of how humans have understood their place in the galaxy and the universe over time, and the reasons why humans looked up at the Milky Way, and how they interpreted what they saw when they looked.

**Moiya:** Part of my inspiration for this book was what Astronauts call the overview effect<sup>3</sup>. You know, this idea that when you can see all of Earth at once, it really changes your perspective.

And you know, I've never been to space. I don't ever plan on going into space, actually. But I think that by spending years thinking on galactic size and timescales, and after spending two years pretending to be the Milky Way Galaxy, I have a bit more of that perspective.

And you know, I think reading is one of the best ways to get and give empathy as humans. And so why not let people have the opportunity to empathize with the galaxy through character?

**Matt:** But I honestly, I think the Milky Way cares more about us than it wants to let on, because it's obviously paying a lot of attention to us.

**Emily:** It's paying a lot of attention to us, Matt and I think using the Milky Way as a character and as a storyteller in a way where it's personified. But it's really clear in sort of, shall we call it snark, the level of snark the Milky Way has, and how it sort of looks at how cute humans are. We're cute. We have cute problems. We have cute human problems that are nothing like the problems that the Milky Way deals with.

And there's, there's certain sections, um, where I was really just underlining these like really snappy little things where the Milky Way is talking about its hometown and, and

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<sup>3</sup> <https://www.theatlantic.com/magazine/archive/2023/01/astronauts-visiting-space-overview-effect-spacex-blue-origin/672226/>

says, “why bother making nice or even friends with a galaxy when I know I'll just end up eating it in a billion years? Have you ever bared your soul to a bowl of hard candies?<sup>4</sup>” I don't know why that one gets me so deep, but that one just gets me and like, it's so dry. It's so funny and it's so surprising that you get to the end of the sentence and you're like, how was that in somebody's brain? And I love that.

**Matt:** No, it's great. And um, one of the things that, uh, you learned in your interview with Moiya and that I first learned from reading the acknowledgements of the book is that a lot of that attitude actually came from her cat, Cosmo.

**Moiya:** And then I sat down and I thought about how old and big the Milky Way is, what it spends, its ‘time’ doing quote-unquote, right?

And I was like, why would it care about us? You know, it, it knows that we are insignificant and yet at the same time it's begging us to pay attention to it. And when I wrote that down in my notebook and looked at it, I was like, you know what that sounds like? That is a cat. That's my cat, Cosmo right there.

Someone who thinks that they are, you know, so much more important than me, but like needs me to look at them and take care of them. That's the Milky Way. And so that's the voice that I tried to impart.

**Emily:** One of the other things I really loved was the introduction of other characters in the Milky Way's life. And I love a nickname, and I know Matt, you and I maybe have nicknames for things that we come across on a regular basis in our work.

And I, I am using the example of things like Sagittarius A\*<sup>5</sup>, which Moiya lovingly refers to as Sarge in the book

**Moiya:** So for those of you who haven't read it, Sarge is the super massive black hole at the center of the Milky Way Galaxy, which astronomers call Sagittarius A\*. Uh, there's a linguistic joke in there that the, that the Milky Way makes<sup>6</sup>. But really the black holes here are a metaphor. It's, it's the physical manifestation of all of the self hatred that the Milky Way has for itself.

And this was me trying to work through my own emotions. Um, one thing that I learned to do in 2020 was give a name and a voice to the, the kind of darker sides of my psyche. I call it Carl, personally. And, you know, whenever I find myself doing negative self-talk

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<sup>4</sup> Pg 44

<sup>5</sup> <https://www.space.com/sagittarius-a><https://www.space.com/sagittarius-a>

<sup>6</sup> Pg 118

or anything like that, I, I sit down and I'm like, that's Carl. You know, we can, 'shut up Carl!' Sorry to all the Carls out there. But I wanted the Milky Way to do something similar with Sarge.

I personally have nothing against black holes. It just seemed like. A fitting metaphor because every galaxy almost has a supermassive black hole at its core. Uh, and I also know that almost everyone is dealing with these darker sides of themselves that they don't necessarily wanna share with the world.

**Matt:** And one of those characters is another Galaxy, Andromeda<sup>7</sup> that our Galaxy, the Milky Way, has a crush on. And what that really is is a way for Moiya to talk about the fact that the Andromeda Galaxy<sup>8</sup> and our galaxy are kind of destined to come together at some point. They're gravitationally moving towards each other and will combine at some point.

**Emily:** That's so romantic.

**Matt:** Yeah.

**Emily:** But there's other characters like Sammy and Larry who are the Large and Small Magellanic Clouds<sup>9</sup>, these two irregular galaxies, sort of in the same neighborhood as the Milky Way, but they're both these really sort of charming and a little bit funny characters.

**Moiya:** There are several cultures around the world, well around like the southern hemisphere that see the Large and Small Magellanic Cloud and incorporate them into stories as an old married couple, you know, this is part of the dreaming, which is a, a series of stories to indigenous Australians<sup>10</sup>.

They say that they are an old couple fishing in the stream of the Milky Way, and I wanted to bring in that like, old-couple-bickering element.

**Matt:** So, you know, in doing this type of work and personifying parts of the universe that we don't usually think of as having personalities and things to tell us this isn't really new. And to do this, Moiya drew on her background in folklore.

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<sup>7</sup> Andromeda does not have a nickname because the Milky Way is too much in awe of its crush to stoop to a nickname

<sup>8</sup> <https://science.nasa.gov/mission/hubble/science/explore-the-night-sky/hubble-messier-catalog/messier-31/>

<sup>9</sup> <https://earthsky.org/clusters-nebulae-galaxies/magellanic-clouds-large-small/>

<sup>10</sup> [http://www.aboriginalastronomy.com.au/wp-content/uploads/2018/05/Night\\_Skies.pdf](http://www.aboriginalastronomy.com.au/wp-content/uploads/2018/05/Night_Skies.pdf) pg 163

**Moiya:** I often say that these old myths and these, these folkloric lessons about how the universe works is just the other side of a coin to astrophysics, right? Like folklore and astronomy they are two sides of the same coin. And that coin buys us an understanding of the universe. I really do believe that.

And so in my mind, there was no way I could write a book that tries to teach people about the Milky Way and not also include these stories because it's, uh, these myths are another perspective of viewing the same truth. Um, so I needed to include those. It's also important to me as a science communicator very practically that I don't just give people information. I want them to understand how we arrived at that information.

And so in this book, there's information about like what is a spectra? You know, like how, how did we know what that is and the history of us discovering galaxies for the first time that's in there and you just have to go a little bit further back in that history to get to the myths, um, it seemed like an important starting point.

**Matt:** So obviously the life of a Galaxy has a lot in it. And there's gonna be a lot of stuff that humans don't know that the Galaxy knows, right? If the Galaxy knows everything about everything that's going on inside of it. But this is a book written by a human for humans. And so the Galaxy has to speak in human terms and to do that, you know, Moiya had to decide what was gonna be in there and what wasn't, and what science she was gonna present as the Milky Way.

[music button]

**Matt:** So Emily, obviously you enjoyed talking to Moiya, and you also have some favorite parts of the book that you've already kind of hinted at. What was your, your favorite part of the book or your favorite parts

**Emily:** So one of my favorite parts of the book was the end notes, and I say this as a person who doesn't read a lot of things with footnotes or endnotes because typically they're boring, there's too many of them, and they're distracting.

**Matt:** [laughs] ok

**Emily:** Moiya's book, *The Milky Way* had such a fun vibe in the notes section. It was the author speaking to us. It was Moiya speaking to the reader, not the Milky Way about, here's a paper you could go look up if you're feeling really nerdy right now and you really want the hard science, or here's a personal connection I have to the fact that the Milky Way just delivered to you right now. And sometimes they're just like even more personal.

And I think what I um, loved most is because there was, you know, maybe a handful per chapter. So it was really approachable. It wasn't like every other sentence, which gets me really distracted. But I also, because I was reading a hard copy book, I put a post-it note in the notes section, and every time I switched chapters, I would migrate the post-it note so I could easily flip back and forth.

Because once I first started reading the notes, I was like, 'oh, wait a minute. I'm gonna wanna read these in every single chapter.' And I found it to be really additive when I typically find notes and footnotes to be really distracting, and that was such a clever usage of communicating with the reader and really drawing the reader in, me being the reader, that I really, really enjoyed. It was kind of a fun like, scavenger hunt, even though I know where I was headed. I was like, 'oh my God, there's a note coming up. I'm gonna have to flip to the back. I cannot wait to find out what it's gonna be.' So I really liked that.

**Matt:** Yeah, I guess for me what I liked was I learned a few things here that I didn't know before, um, and that I hadn't even thought to think about. Like, you know. This book leads to a discussion of how a galaxy might end, right? And I had never really thought about the end of a galaxy or the fact that galaxies do eventually run out of gas.

And they can no longer form new stars. And old stars are getting older and things are just kind of,<sup>11</sup> you know, ending and collapsing and, and that, you know, there is an end, there is an end of the galaxy. And of course there's no real reason for us to think about the end of the Milky Way on a daily basis because it'll happen long, long after the end of our solar system and our Earth and everything.

So, you know. It's just something I hadn't thought about but was described so well here that suddenly I thought, oh yeah, of course, of course a galaxy will run out of gas at some point and not be able to sort of continue on as an active galaxy. I just kind of thought that the Milky Way would kind of be there for forever.

I should have known better, but of course I hadn't just, hadn't even thought about it

**Emily:** Well, because we spend so much more time talking about the fate of our Sun and what that's gonna do to the Earth that we never think about. The fate of things around our solar system, around our Sun, and what that's gonna do to us. And I think one of the other things I really like about this book are the illustrations.

I feel like when you read popular science, especially about space, you get a lot of really beautiful stuff photographs delivered from different spacecraft, different telescopes,

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<sup>11</sup> If you listen closely in this whole episode you get to hear Matt's dog, Luke, breathing in the background

which are amazing and really helpful to kind of illustrate some of the different ways things look in space.

But what I love, what Moiya did here in this book is that there's illustrations that are kind of peppered throughout the book that are a little bit silly, maybe a little bit cartoony is a good way. And I say that with, with all kinds of admiration. They're cartoony in the best way possible, but they really help. To me, they really helped cement the sort of whimsy of the prose and the kind of character in the prose.

**Moiya:** The illustrator is Anna Marie Salai. She's actually my oldest friend. And when my editor was like, I think we should have some illustrations here to show people what the Milky Way looks like.

It didn't even cross my mind to have someone else, like the, the chance to have both of our names on a book cover, overruled everything. And she was perfect to work with. She took my very loose, uh, starting point of ideas and kind of ran with it. How do you tell someone how to personify a cartoon of the Milky Way Galaxy?

The way I did it was like, 'take the Flying Spaghetti Monster, but make it more science<sup>12</sup>.' And she did it.

**Matt:** Yeah, and I love the idea of, you know how Moiya actually sort of started the conversation and, and worked with her friend to figure out what the Milky Way galaxy should actually look like in this book. It's, it's so fun and personal.

**Emily:** I always love talking to authors about what they wish they could have done with the book that they were working on that they weren't able to do, or what is it that they were inspired to think about that maybe is gonna go into the next book project. And so we were talking to Moiya about how she was feeling about the book a couple years since it being published, and whether or not there was anything that was still kind of like stuck in her brain of 'Oh, I wish I could have been able to.'

**Moiya:** My biggest regret actually is that maybe a few months after the book was published, we finally got the picture of the event horizon around Sagittarius A\*<sup>13</sup>, and there's a line in the book because we had already seen the event horizon around a, um, was it, M87<sup>14</sup>? There's a line in the book where, where the Milky Way goes, 'and you

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<sup>12</sup> You just have to check out the book to see these, but it's an accurate description

<sup>13</sup> <https://eventhorizontelescope.org/blog/astronomers-reveal-first-image-black-hole-heart-our-galaxy>

<sup>14</sup> See our episode for on black holes <https://airandspace.si.edu/stories/editorial/airspaces4ep4>



haven't taken a picture of Sarge yet. Like he's too sneaky.' Ugh. And by the time the book, it was just, uh, the timing was terrible. So that's my one big regret.

But everything else I think still stands. I don't feel the need to update it because this isn't meant to be 'here's the cutting edge of astronomy research,' it's meant to be a little primer.

**Emily:** I think the one thing I wish the Milky Way would've revealed to us was a little bit more perspective on, I'm just gonna call them extraterrestrials, should we call them that? I wonder what the Milky Way's point of view would have been if it wasn't just talking to humans. Right?

The Milky Way isn't gonna reveal the answer to us about whether or not we're alone in our galaxy, or whether or not we're alone in our universe. But I kind of was curious about how the Milky Way's voice or perspective would've changed if it was alluding to the possibility that there was other life in the universe

**Matt:** Yeah, well, you know, the way that the Milky Way puts it at one point about the question of whether humans are alone in, in the galaxy or in the universe, or if there's other intelligent life it says, 'that's for me to know and for you to hopefully find out.' And I took that as, you know, the 'hopefully find out part' as well of course, there's other life out there and hopefully one day you'll actually figure out how to find it.

**Moiya:** I found ways to just put the fun things that I wanted to talk about in. The last chapter of the book is all about the secrets. One conceit here is that the Milky Way knows everything, it knows all of the science, but humans don't.

And so there's this chapter about the secrets that the Milky Way is keeping from us because it likes to see us struggle, uh, and like, work hard to learn.

**Matt:** Moiya is working on writing a second and a third book, so we will be keeping our eye out for those. And who knows, maybe the, the Galaxy or some other, you know, stellar entity [pauses, chuckles] will be able to tell us about that question of, of life on other planets, on in other galaxies or wherever it might be.

**Emily:** And we plan on doing more AirSpace Book Club. Maybe next time it'll be sci-fi or something a little older, maybe a little vintage moment, or maybe both. Who knows?

Is there a book you'd like us to read? Send us an email and tell us a little bit about it.  
[AirSpace@si.edu](mailto:AirSpace@si.edu).

*AirSpace theme in and under*

**Emily:** AirSpace is from the National Air and Space Museum.

It's produced by Jennifer Weingart and mixed by Tarek Fouda, hosted by Dr. Matt Shindell and me, Dr. Emily Martin. Our managing producer is Erika Novak. Our production coordinator is Sofia Soto Sugar, and our social media manager is Amy Stamm.

A big thank you to our guest in this episode, Dr. Moiya McTier. For additional content, photos and more follow AirSpacePod on Instagram and X or sign up for our monthly newsletter using the link in the show notes.

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