



## Science History Trail

DR CARLO CAPONECCHIA:

Good afternoon, everyone. Welcome and thank you for joining us over lunch today. I'm Dr Carlo Caponecchia, the Associate Dean Equity, Diversity and Inclusion in the Faculty of Science at UNSW. Really excited to be hosting today's event reflecting on our science history trail initiative, which was designed to increase the visibility of diverse scientists, redefine the traditional representation of a scientist by displaying these images and stories of diverse science role models throughout history. I'd like to begin by acknowledging Gadigal people, the traditional custodians of the land from which I'm joining our session today. And I'd like to pay my respects to their Elders past, present and emerging and extend that respect t

developed by our students. And you can see all of the 14 scientists here on the screen now. Of the 14 scientists included in the trail, today we'll be hearing the stories of four of them. Dorothy Hodgkin, Julio Garavito Armero, EK Janaki Ammal and Mary Anning as told by our ~~talented~~ student team. And so, let's get into hearing about these diverse scientists. But first like to introduce

was for scientists from more developing countries such as India and China and South America was to get them to travel overseas and to do the bulk of their work in these foreign countries.

But Janaki Ammal thought it was incredibly important that science, especially science related to the plants of India, actually be brought back to India and into the hands of Indian people. So, Janaki Ammal actually returned to a newly independent India in 1948 where she was appointed one of the leading positions in botany in the country. She became the head of the Central Botanical Laboratory of India, and actually led the organisation of the Botanical Survey of India, which is very important because it aimed to collect and survey native flora, and also allowed the Indigenous practices of people in India to be brought into the narrative of mainstream science. While she was in India, a number of Patriarchs in the field, of course, some of her new methods of scientific progress, that she was very persistent and tenacious, and made sure that all the new techniques she learned while overseas came into India and were adopted heartily. Another really important thing that Janaki Ammal did towards the end of her career is that she leveraged all of this influence that she had collected overseas to help with activism and the maintenance of important national parks in India. One of her most important pieces of work and that has been incredibly important to her legacy all throughout India is that she helped stop the destruction of the Silent Valley, which is a very large national park in one of the southern states of India. As she did she helped again to leverage the use of Indigenous practices and also highlighted the importance of matrilineal tradition. So, the role of women in land use. That was very important in more tribe like communities within India. Janaki's work which spanned over decades, and where she continued to embark on till the very end of her life. She ensured that India's practices of science were informed by the Indigenous people. And she passed away sadly at the age of 87. But during this time, she still worked in her lap, because there was nothing that mattered more to her than her work. Sadly, the Silent Valley in India but she helped to preserve was not yet declared a national park when she passed away. But thankfully, at the end of the very year in which she died it was. So, Janaki Ammal's influence span, not only throughout her life, but after she passed away.

CARLO:

Thanks so much, Divya. Such a great story spanning so many achievements. I noticed in the illustration of Dr Ammal that there's a number of flowers there and plant cell structures. Can you tell us about why those were chosen?

DIVYA:

Yeah. So, the plants that you see in the background of Janaki's image here are actually roses and magnolias. These specific plants are actually hybrids that she helped to work on throughout her career. In particular, this rose is a hybrid that she worked on while she was in the UK at the John Innes Institution. So, this rose as well as the Magnolia that's depicted are both actually named after her. And importantly, the rose species and Magnolia that she worked on while in the UK. Where

flowers actually still continued to bloom today. And if you were to visit the UK, you could actually see them still living.

CARLO:

many of us in a situation like that would be taken aback. You know often it seems kind of ignorant for someone to make an assumption like that. She realised that, at the time, it was an easy way for her to maybe get through this process that would otherwise be quite tough. So, she was just like, "Yes, of course, I'm a princess." And as a result of that, she was kind of enabled to get into the country even faster. And I thought, yeah, the story really highlights that under certain circumstances it's important to remember who you are and maintain your connection with your heritage, but also to kind of

CARLO:

Thanks.

Thanks, Jess. That's a really good summary and really interesting material. I noticed in the portrait of Dorothy that her hands are quite permanent. Was there a reason for ~~the~~ the illustration?

JESS:

There was indeed a reason. Dorothy was also disabled. She began experiencing pain on her hand at 24 and was diagnosed with rheumatoid arthritis, an autoimmune condition that affects the joints. Basically, the immune system ~~thinks~~ that the joints are invaders, and they start attacking the joints. An infection for years after her initial diagnosis triggered her first flare up and her condition gradually worsened over time causing crippling deformities in both her hands and ~~her feet~~ her feet has deteriorated to the point where she can no longer use the main switch of the X ray equipment required for her experiments, which is not ideal. So, in response, she had a longer lever for the main

is wired differently to most. It doesn't magically re

Australia. And that's a great reason for showcasing him. In fact, he's still on the Colombian currency. Is that right?

JUAN:

Yes, yes, that's correct. He was in one of the Colombian banknotes during that time. Unfortunately, not anymore because, like, I don't know, five, four years ago they changed all the Colombian notes like for different persons, but he was there for a really long time. Yeah. So, yeah.

CARLO:

Thanks also for pointing out, Juso frhat o frokro fns( f)7.e (t)-6 (r)-2.e (t)- 1 (h)-0.8 f-6.6 ( )10.5 (-6.l (o)-9.e( S



most identifiable dinosaurs today. Her work that she found were key to the acceptance of George Cuvier's theory of extinction, which claims that species could go extinct. And that work in turn paved the way for the acceptance of Darwinian evolution by natural selection, which I think was a key pivotable moment in human history was accepting evolution.

Mary really stands out to me. She overcame... Well, she didn't really overcome it, she was excluded from it. She faced barriers that were put in place to keep her out of the professional scientific world. But she did make a profound scientific contribution to them.

CARLO:

Thanks, Josh. Those really are really important contributions. I recall from our discussions through the project that we talked about how Mary didn't have access to textbooks. Can you tell us about what happened there?

JOSH:

Yeah, for sure. So, Mary Anning was educated in a class based system, which excluded all forms of science from lower education. And as a woman in the early 19th Century she was prohibited from attending university. So, she didn't have access to university materials. So, she made friends with the librarian at the local university, and would go into the library, borrow books, or textbooks, bring them home, and she'd hand copy the textbooks and use that information that she'd collected that way to compare them with her fossils. And that was the basis of a lot of her discoveries and a lot of her identifying new species.

CARLO:

Wow. That's fascinating. Things are a lot easier for students today, certainly don't have to hand copy textbooks. But I think it's still remains the case that you should be friends with the librarians. as I think we've found in this project. So, Josh, I wonder if I can ask you to just reflect on why we to focus on Mary Anning.

some questions for our panellists, I encourage you to add those into the chat. And ~~come~~ to those very soon.

But I guess I wanted to ask our students about why they wanted to join the science history trail and why they feel that it's important to have inclusive representation in science. I thought we might come first to you, Juan.

JUAN:

Yeah, sure. So, that's a good question. I think I wanted to join the science history trail project because I saw it as an opportunity to make my contribution into the model. So, I think sometimes it is common to feel concerned or upset about how biased ~~is the~~ standard image of a scientist can be. But most of the time I just stopped there. You know, like there's being concerned or upset or complain about it. So, being part of the project actually allow me to do something about it and sort of like get my voice heard.

SO, YEAH. CARLO:

Great. How about you, Jess?  
(BACKGROUND NOISE)

JESS:

(INAUDIBLE)

Apologies, I think, I was muted there. I joined this project because representation seeing stories were told from different perspectives, especially ones that have ~~not~~ historically ignored. Well, it matters a lot to me. Portrayals of scientific communities or the scientist often focus on members of traditionally privileged groups. And representation of diverse individuals is often relegated to an afterthought reusing ~~the~~ same few groups or people, or is based off and reinforces stereotypes. When you think disabled scientists, people usually think Stephen Hawking and not Dorothy Hodgkin. It doesn't accurately reflect the actual diversity within the scientific community ~~it~~ creates a falsely homogenous impression of scientists that is detrimental in the long run.

CARLO:

Thanks, Jess.

I also wanted to ask about how you all found the learning resources. So, it was quite a process to complete this project. And we had a number ~~of~~ resources through the library and assistance with academic skills writing. And that, I think, had a really important impact on the project. So, I wonder, perhaps, Divya, you could reflect on how you found those resources.

DIVYA:

Yep, I feel it was ~~not~~ really, really useful to have access to the librarians and also to have the process that we had in place of sending multiple graphs back and forth to kind of fine tune the work that we were producing. I think, as a student, a lot of the work we ~~do~~ independent. Like, yes, we have good luck on occasion. But most of our writing is rarely ever seen by anyone besides ourselves and those who are marking it. So, I think this project provided a really unique opportunity

for our writing to kind of be seen by numerous people and for us to have the opportunity to do it in a way that would ensure that like the public and that people who weren't necessarily familiar with the work we had been working on would be able to understand and to best communicate the ideas. I think this is particularly important because part of the reason I thought it was very important to do this project was to improve my science communication skills. I think, especially at a time like this, like what we saw with COVID, misinformation spreads like wildfire. It's really important that scientific information be conveyed to the public in like a way that is concise, without sacrificing the integrity of the work and what's actually being said. So, I feel like the access to resources for our writing was incredibly important in ensuring that we were maintaining the integrity of the work we were doing while still making it understandable and fun and easy to read. So, I definitely found this process of outreach and going back and forth incredibly useful.

CARLO:

Thanks, Divya. What about you, Josh?

JOSH:

Yeah. Much of what you said, the academic skills writing thing was fantastic. I think it was a really beneficial exercise to have works that were edited by someone who's not in my field. You know, many researchers are pigeon holed quite severely, we tend to edit each other's work. And it's good to be able to write something and have that writing looked at by an external source. It was a really, really good learning experience.

CARLO:

That's great. Thanks, Josh. And it's really great to hear that in addition to being able to showcase to the scientists, there were additional skills that you were all able to either develop or refine through this project. So, that's really great. I also want to just ask, reflecting on this project myself and working with you through the period that we worked on it, I found it to be really fun. And I wanted to ask you, what was your favourite part of working on the science history trail project? So, maybe, first back to you, Josh.

JOSH:

Thanks, Carlo. I think my favourite part of it was working with a group that wasn't in the same pigeonhole as I am. So, that was really nice as well to hear, meet new people and, you know, from different fields. And also the being able to read all of the other bios as well and really gain a better appreciation for the rich diversity that's historically been in front.

CARLO:

Jess, what was your favourite part?

JESS:

For me, it would probably be learning about the existence of scientists that I probably would have never heard of otherwise. Out of the 14 scientists featured on the history trail, I'd only heard of one breath-taking quote, Lise Meitner, and only in association with the atomic bomb. I feel like if I hadn't been involved, I'd probably never have learned about many of these brilliant scientists, including Dorothy Hodgkin.

CARLO:

And, Juan, what was your favourite part?

JUAN:

Right, yeah. I think I will second what everyone just said. I think seeing the project, what's definitely one of my favourite parts of it, being able to look at all these different biographies and learn new stuff. But I think on top of that, having the illustrations with every biography, so being able to actually do the face to the science and the contributions made by every scientist, I think it was very important. Because sometimes we might forget that scientists are also people, you know, -1.3 (o)4.2 ( b

CARLO:

Do you think that it's something that you'll be able to use in other, either other courses. Or, I mean, you're a PhD student, Josh, but you may be able to use some of those skills elsewhere?

JOSH:

For sure, yeah. I will be using them in the future. I think there's many situations where you would benefit from having more concise writing. Whether you'd be using, you know, published works, or professional blogging, or I think that there'd be a lot that the team would help.

CARLO:

OK, great. So, another question that we have is asking what the most challenging part of the project was. So, where was it? Difficult? What were some of the things that you found to be a challenge? So, maybe, Jess, you could have a think about this one for us.

JESS:

Challenges. OK, challenges. I guess the biggest challenge would mainly be making sure to keep on top of my coursework in addition to like meeting like the deadlines and stuff. I mean, they were incredibly supportive. The staff were incredibly supportive during the entire ~~process~~ but I still did struggle quite a bit. Because, well, coursework doesn't stop for the history science history trail, so.

CARLO:

So, it's about managing time.

JESS:

Yeah, time management. Considering I am very much time behind, that was easier said than done.

CARLO:

Does anyone else have a quick response to that one about the challenges? Divya.

DIVYA:

I think I also just struggled to like fit into the lead count. I think, especially something like this where you get really excited about the scientist ~~that~~ you're researching, it's really hard to manage things like a webcam, or a cash account. I noticed the first draft of my biography, I think it was like 2,000 words or something, and the final was meant to be down 500. I think that again really reiterates the importance of having access to those academic skills workshops and access to the librarians and people to read our draft, because it helps you to learn how to cut your work without feeling like you're cutting off your own arm. I think I'm someone who ~~also~~ struggles with separating my work from myself. And I think having other people read it and give that perspective helps you also to prioritise, which I think is really important for science communication. But often you want to get across a very important message and don't have much time or space to do so. So, I think, yeah, one of the major challenges was learning just how to write for an audience in like a condensed and

You're still on mute, Juan.

JUAN:

Yes. Sorry, I had a problem with the internet. Yeah. So, I think one of the most challenging parts of the project, in my case, was actually finding resources to read. So, like to provide the information

CARLO:

Thanks, Divya. Yeah, I think we've got time just for one more question before we wrap up. So, maybe some brief responses to this one. And that is, how do you like to see the project evolve or expand in future years? Do any of you have some thoughts about where we could go to next with this? Acknowledging, of course, we didn't quite get to do it in the way we wanted this year because of COVID. Does anyone have some thoughts on that? Juan.

JUAN:

Yeah, no. Well, of course, absolutely being able to see this in person, I think is the most obvious one. I think the original idea of having the different illustrations around campus, and like people being able to scan the QR codes and go through their biography, I think is definitely something good. I think expanding on that, I don't know how likely would it be, but it would be really cool to not only focus on like a university thing, but maybe like go beyond that. So, I don't know whether that's something possible. But going to different places in like in the city or maybe museums, or things like that, I think it would be something really amazing for the project. And I think it will maximise the impact and like the amount of people that can actually get to see this.

CARLO:

Great. Thanks, Juan. I think those were really great ideas, and certainly things that we'll be exploring and coming to you all to have some input in as we expand into the future. So, unfortunately, we've reached the end of our time today. I'd like to thank everyone for joining us here on the panel and our audience members as well. I want to really thank our panellists for sharing their experiences with us today, and for sharing the research that they did. And for, you know, to also congratulate you for standing up and being leaders in diversity and inclusion at UNSW and UNSW Science. Our session today is being recorded. And it'll be made public and shared with everyone who registered for the event. If you do have a spare a few minutes, there's a link to a feedback survey that will be made available for you as well. And we'd appreciate any feedback that you have on today's virtual event, and indeed on the science history trail. And we hope that you can take a look at all of the bios and illustrations that are in the trail. I note also that there were some questions that we didn't get to, and the EDI team will endeavour to answer those questions and can make those responses available. Because obviously some people are wanting to know about sharing of resources from academic skills, for example. So, we'll make sure that we come back on those issues. And so today we shared the stories of for scientists that are included in the science history trails. And we've mentioned, you can learn about the remaining 10 scientists and download the full set of our science history trail posters, which will soon be available. Posters that can be printed and displayed by following the link in the chat. And, of course, I'd also like to acknowledge, as displayed on the screen now, all the other students who weren't part of our showcase today, but all of the other 10 students who also did a great job similar to Josh, Juan, Jess and Divya in researching the scientists that are featured in our history trail. So, congratulations and thank you to all of them. If you'd like to watch any of our previous inclusive science series, you can do so on our science EDI website, which is also linked in the chat. Thank you for being with us for your questions and for your interest in this really exciting, important and fun project. And I hope you have a great afternoon.