Exploring space through science and culture

For Benjamin Pope, his research is more than just about the science, it's about creative and cultural self-expression. Let's find out more about him!

Can you tell us about what you do?

I'm an astronomer: I use physics to study planets and the stars they orbit, and in particular I develop technologies to make better observations. This includes hardware – optics, detectors, and telescopes – and software, writing code to do statistics and data analysis. What I study can be quite varied and multidisciplinary: one of my most recent publications involved tree ring experts and archaeologists. We used radiocarbon dating on tree rings up to thousands of years old to study the effect of the sun on the Earth.

What drove you into this field and how did you get to where you are now?

I've always been interested in science, but in the sense that I'm curious about everything. In high school I was mainly interested in cultures and thought I would be a humanities scholar. However, in university I found I was getting more personal growth out of the sciences and I could see a world opening up to me that I really liked. The initial hook, and what remains my interest, was high resolution imaging, spectroscopy, and the idea of being able to see things that are not visible to the naked eye.

I did some research projects during my undergraduate that didn't work out. Part of the issue was I didn't have enough self-discipline. It took me a long time to understand what research was: you don't know the answers in advance, and you need to be persistent and self-motivated over a long term.

However, after my honours project I reached escape velocity. I did my PhD at Oxford and a post-doc at New York University with NASA funding. I was about to start working on the James Webb Space Telescope in Baltimore when COVID-19 happened, and like many others, I lost my job.

Benjamin Pope

Discipline: Astrophysics

Organisations:

- School of Mathematics and Physics, The University of Queensland
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Degrees:

- Bachelor in Science (Honours) in Physics
- Master in Science in Astrophysics
- PhD in Astrophysics

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- Planets

Social Media:

- Twitter: @fringetracker

Prize: Queensland Young Tall Poppy Science Award winner 2022

I ended up in Sydney, then received a grant to go to the University of Queensland, and I've been here ever since.

Who inspires you?

Though it was in university that I realised I wanted to do science, my interest began with a wonderful and inspiring man, a high school teacher who had a PhD from the University of Cambridge. He was a physical chemist, who ran a Viking and Hieroglyphics Club at the school and had travelled the world. He was a great, well-rounded role model. The science he did was as much a part of his self-expression and deep interest in the world as his cultural interests.

In university, I did a summer project with a professor at the University of Sydney who was full of energy and sporty, he loved to cycle and rock climb. He also had cultural interests, liked science fiction and fantasy and travelled. He became another example of the type of person that I aspired to become. I don't know if I can be or am this sort of person yet, but I want to try.

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Through your research, how have you been able to continue to pursue your love of culture?

You don't do this job for the money – you do it because you want to be here. In my research area, I get opportunities to travel, live overseas even, work with diverse people from all over the world, and be immersed in a variety of cultures. It has affected my outlook and I think our society would be better if people got to have these experiences, to know what it's like to be an immigrant, and what it's like to be in a country where you don't know the language.

Another area of my research is studying naked eye stars. On the ferry the other night, some people were looking at a cluster of stars called the Seven Sisters and their neighbour Aldebaran. I told them the stars' names and explained how my team measured their mass for the first time. These stars are also hugely important in many cultures from around the world, and I loved to be able to contribute in a small way to understanding things people have wondered at for thousands of years.

Another cultural connection was made through my tree ring research. Using that data, my colleagues were able to pinpoint the first date of a European settlement in the Americas. The settlement was only previously documented in the Viking Sagas.

Do you have an important moment in your career that you often look back to?

I like to think the most best project is always the next project. A good chunk of my research has been quite narrow and technical recently, but it's been building towards enhancing the resolution of the James Webb Space Telescope. We are trying to do this by building a computer model of the imperfections in telescope optics and the detector electronics at a very fine level of detail. We expected mirror misalignments to be our problem, but now we know the main issue is the detector chip that the image is focused onto.

A negative framing of this problem is that the instrument doesn't yet work and that everything is tough and this can be very discouraging, but the positive framing is that we will solve it. I just have to figure out how to solve it and this is what my career feels like it's building towards.

What is your hope for the future?

I hope that people can keep seeing the joy in science and that there is work and education available for people to understand the universe in a scientific and creative way. It's important that people can understand the beauty of nature and relate to it in a personal, cultural and scientific sense. So many problems we have right now are symptoms of a society that doesn't believe in the value of science, and doesn't internalise it as a method, as a beautiful thing, as an art form, and as something to be interested in. That's why I love people who are amateur astronomers, birders, botanists, and so on. It gives me a lot of hope that people will continue to relate to the natural world.

You won a Queensland Young Tall Poppy Science Award. How did this benefit you?

I won the award in 2022, so I haven't seen all the ways it will benefit me yet. However, in the long run, I think it will be good for my career and for bringing funding to my research. At this moment, I am simply glad for it. I enjoyed meeting the Minister, the Queensland Chief Scientist, and some of my peers. It's nice to see these kinds of awards. It's sitting right here on my desk.