

Intro ([00:00:01](#)):

This session of the 2013 Adelaide Festival of Ideas was recorded by Radio Adelaide through the support of the Vast mid library, University of Adelaide, The University of South Australia library and Flinders University library. Welcome everyone. My name

Robert Phideon ([00:00:18](#)):

Name is Robert Phideon. I'm the chair of the Festival of Ideas and I'm and I'm an associate professor in English at Flinders University which is in fact, one of the sponsors along with Adelaide University of the Festival of Ideas. I like to keep reminding people a welcome to the Festival Art in today's session, looking to the stars in search of our place in the universe with a truly, truly sorry, stellar panel. I acknowledged that today we are gathered on the traditional country of the garner people of the Adelaide Plains. We recognise and respect their cultural heritage, beliefs and relationships with the land. We acknowledge that they are, that their continuing importance to the garner people living today, and we respect their elders and their past a bit of housekeeping. Before we get going, please switch off your mobile phones or at least turn them on to silent.

Robert Phideon ([00:01:19](#)):

Because the next thing I tell you, I can tell you is that the tweet handle is at at ADL FOI, hashtag. And so how you do that if you've just turned your phone off is a little beyond. Even me, unauthorized recordings of any kind are not permitted during the session. Today's session is being introduced, being interpreted by Icelands silence, always fill me with admiration then being audio recorded by radio Adelaide for broadcast and future podcasts. And now I'd declared session, open booking to the stars. A humanist walked into a room and didn't find an Englishman, an Irishman, and a Scotsman. He found that populated by people, fascinated with the furthest reaches of the universe, the future, the faith of the planet, that humanist is me. I am way out of my depth. That's what I like about the festival of ideas. And that's definitely what I like about the stars.

Robert Phideon ([00:02:22](#)):

All my humans concerns seem nothing to them. I spend my life with human concerns and that is strangely refreshing. I will find that they make no claim on me. It's a sort of cleansing thing. This is what I feel most intensely with nature. And particularly the stars are six speakers tonight. In fact, will take us to the stars in different and far better informed ways than I could from the literal to the figurative. So it's not all astronomy. There's plenty of information, the program and you are in, you're not here to hear me speak any longer. So I will not detain him with long introductions. We'll start a brief presentation from each speaker. And then we'll move on to question and answer. We might have some questions from the panel of each other, or we might go straight to the audience depending on how we go for time.

Robert Phideon ([00:03:10](#)):

And there is a, there is an almost certain risk that we'll we'll. We will take a couple of minutes extra to get through. So such a wealth of material. So I'll just introduce each of them now and then get out of your way. Ben Pederick will be going first he's co-founder of good morning, beautiful films. He has been making nature documentaries around the world for organisations such as national geographic USA, radio free Asia, and the nature Conservancy on environmental themes since 1996 in we'll start in a moment with brief film and then he will, and then he will throw to a few words from auntie Beryl, who is here this evening who is the real owner of the stories. Second will be full bland professor of planetary

science in the, in the department of applied geology. If you haven't got the photos in front of you, I'm working across the room it's a concept in science at at sorry applied geology at Curtin university in Perth.

Robert Phideon ([00:04:17](#)):

He knows more about the significance of primitive meteorites than nearly anyone. Certainly more than me then called Davies polymath of the Arizona state universities beyond center for fundamental concepts in science. He's a world renowned astrophysicist and a great public intellectual to whom then 2013 Festival of Ideas is dedicated. Then Christina Grecia is a leading consumer trends expert. Who's likely to be more figurative in our understanding of the stars than perhaps Paul might be who's particularly engaged in the, in the need to fit consumption to the natural rhythms of the world. She acts on the belief that to avoid trashing the star we're on consumers need to use our imaginations to understand their place better or naturally more rhythmically. And finally, Sean Williams is who is certainly Australia's ranking science fiction writer over 40 novels. I mean, how many of us managed to read 40 novels in a year, little and write them published internationally for him the stars, I've always been a creative space, a space where science and imagination can collide. So we'll start with a brief, we'll start with Ben. Pederick will introduce a brief film and the mission move on. Thank you.

Ben Pederick ([00:05:45](#)):

[Inaudible] Good evening, everyone.

Ben Pederick ([00:05:47](#)):

I just wanted to, to introduce a short film that conveys a story that Annie Beryl Carmichael, who's sitting behind you tonight and the AMPA elder from the Menindee lakes area. She's us to talk about the film once you played it. So it'll, I'm sure open your eyes and your minds. I hope you enjoy it.

Speaker 5 ([00:06:15](#)):

We're on the side of light Minnelli and light Mindy was very important to my people as much as it was to me. When we lived on a mission, they would come out here and go hunting. There were lots of a shelter out here. You can camp anywhere. Oh, people always said that we got two laws, one on the land and one up in the night, wow. Lying on the ground and on your swag and gazing up into the sky. Does the sky, the Milky way, a very prominent you can't mistake it. Then all there. They explained to us that that was carpet snake. We call him thorough. It was his duty to travel all over the country and plant, put the seeds there for the Plains. They decided that singing spirit up into the night sky for a certain monitors that are only for him and through his actions that we had an abundance of food.

Speaker 5 ([00:07:44](#)):

Another story with EMU EMU is up in the night sky with his foot in the coal sack. And when you see him sitting down, you know, that you can gather the eggs from middle of autumn rod through to Bab end the vogueurs. But after that, when you look up in the sky again, and you'll say like, just like Amy was starting to rise up, that's when, you know, you must unpack the egg they added. If we go at the wrong time. Well, that's not, we're breaking the law because these stories, when I'm talking better Nanda dam for thousands and tens of generations. So, you know, the simple messages that's imparted to us through the stars through the night sky, it's very meaningful, you know, often think with the, with all the stories up in the night sky, what do people still go wrong?

Ben Pederick ([00:08:55](#)):

I think I'd work that out. That story is a part of a series of films that many films, over a hundred stories that we've been working with Aboriginal elders across the Murray-Darling river to create. They'd been sharing their stories with us, and they understand that it's only through those kinds of participations that Australia can really learn about the wealth of culture that it has here. And over that four year journey of doing this work I've had the privilege to spend time with many different Aboriginal knowledge holders and, and teachers. I should also recognize that Annie Cheryl Buchanan, Guam elder is here with us tonight. She's also part of this project. And there's been times when my sense of human time has been vastly expanded times when I've been talking to somebody who's talked as casually about yesterday as about time before the last ice age, when they used to walk to Cambridge Ireland.

Ben Pederick ([00:10:14](#)):

And there's been nights where I've laid under the stars and people have shown me forms in the stars that I've seen on rock walls. And I've seen painted on bodies and I've seen sun and that are their own identities that are their own spirits. These are living around us in Australia and they immediately replaced Ryan and the panhandle and these very sort of hard to relate to Western European stories that still exist in my mind. And it started to make me realise that my relationship, not only to nature that I, you know, the, the terrestrial world, but actually to the universe, the cosmos, as I perceive it every night has been vastly limited at exactly the same time that we've learned so much about it through science and the work of people at professor Davis. We've seen to have blinded ourselves to the experience, the direct experience of including the stars in our understanding of ourselves. And I just wanted to you know, I'm very grateful that the festival of ideas has allowed us to share this story with you and allowed me to come here. But most importantly antiviral Carmichael is here tonight. And I think it's important that she's able to speak about those stories. So she's up at the bank and

Speaker 5 ([00:11:30](#)):

Thank you very much, Ben. Yeah, sorry. I'm happy if folks, it was not, not my doing, but unfortunately it was too hard for me to come back up with my just complaints and so on. So I took advantage of the fair safeties and Sydney, but I'd like to pay my respects to the elders of the traditional elders past and present of this land as well. The guy, people, we work very closely together. I work with a lot of the Aboriginal people from south Australia. I've had them come out to them in India, as artists, as well to work in my camps. And we built up a great relationship to the extent as a fan. They have some of their people from like Menindee moved over here to south Australia when Mitchell went up to Darwin. So that's how long ago the people disappeared from rim in indie.

Speaker 5 ([00:12:30](#)):

Like I went to South Australia and I was really lucky and fortunate to mix up with them in the last 10 to 20 years. So yeah, the stories are very important. And when we used to go at droving and lying on our swagger in the camp for her facing all that, and mama matelasse was look up in the sky and find the, find the pictures that we needed for whatever we wanted to do, you know? And, but the one I liked the most was I guess the six sisters, seven sisters up in NASCAR, the pledges, I'm not very good at the scientific names of the style, but like I know the pattern. So that helped me a lot. And so when we look at the night sky, when the seven sisters are up in, especially in light January after the new moon, we called the new moon, but the first quarter has gone down.

Speaker 5 ([00:13:30](#)):

It is time for the 6,000 sisters to go out and hunt the pokey pine, the kidney. And when they go hunting the pokey pond, we're angry for the poor me barn meat. So it's a two way thing and the link between the night sky and every no people. And that's been going on, like I said, for generations in general, but it's still very important to us today makes us think about that respect that we have for that animal. Never kill him. Beef ran Christmas time or before, because that's when he's nasty. He settling down the nest. So there's the range of stories up in the night sky. And eventually we'll probably get them all out in book form that I got one out now and it's called the story of the Southern cross and the Southern cross got in the sky. And once again, that's linking us to the night sky because of broader star in the Southern cross is even better and ever there is a possum and we tell the little children, when you go wander away from camp, you look and see where ever there is those broad star.

Speaker 5 ([00:14:45](#)):

And when you, if you lose track of time and you know, you get carried away doing things and you get lost, but you look back and find evidence and he'll guide you back home again. So there's all these things up there with meanings, for everything we do, whatever we do on land is done up there in the stars. And I get a bit shaky, I suppose, because I have, I keep thinking, I'll let you people then standing happy beyond that. I can't talk for too long, but I just like to say to Ben and his team as well, they did an excellent job. And we spent a lot of time. We may have turned around a few times, but we got going again and done everything right. And I'm here. If anyone asks me questions after or whatever that, just remember that the nod sky is our all new calendar.

Speaker 5 ([00:15:48](#)):

I guess I can say for us on top of the four seasons, once we got the four season on land and we got the others up the night sky for us. So there's all range of pitches and things to come out that we must get out for the sake of our children. And for the sake of our people who haven't heard the stories or down the stories of the night sky as well, the big fellow opened his eye in the morning and Molly on Molly on his Eagle Hawk, he wakes us up the Dawn. So there's things like that that we can pass on to the children. There's a whole range of stuff there, but I can't talk for too long. I'm sorry about that. When anyway, thanks very much for giving me this opportunity to be, to not

Ben Pederick ([00:16:47](#)):

It's, it's ironic really only that you couldn't make it down here because it makes you a little bit like you're up in the sky or anyway, we all have to look up. And it's not, it's not for me to speak about indigenous and traditional knowledge. So I just wanted to say that from my experience of this the vastness of the knowledge that exists in this country, and when I say vastness, I don't just mean geographical. I mean you know, chronological or, or historical. I mean, the, these are shared records of time that stretch back at least 50,000 years. And that reflect a sense of yourself in which the changing of the night sky as things actually change as stars have moved. I mean, that, that's, that's part of that, that, that clock that that people have existed with intimately until just, you know, 200 years ago, or it's still do exist with sorry, but was the prominent clock in this country.

Ben Pederick ([00:17:49](#)):

And it's, it's a, it's a clock that we can we can all actually learn to read it's there. And it's strange one because the S the act of telling stories which has such a link to the way in which our minds retain information is also somehow perfect for ordering things as vast as the cosmos, as it spins over our heads. So there's got to be many things that are much more profound than ones that I could say now

that could come out of our engaging with that, that level of of living knowledge. Thank you very much. Thank you. An antiviral

Ben Pederick ([00:18:34](#)):

Feel blend.

Robert Phideon ([00:18:35](#)):

You can sit down, I think, yeah, I think it's the end of the day. All

Phil Bland ([00:18:39](#)):

Right. My name is Phil Bland. I'm a planetary scientist as a planetary scientist. We're interested in both the formation of the solar system and its evolution how planets have changed over time. So, so geologists basically study the earth and the earth system, planetary scientists are interested in all rocks, I guess in space, the whole, the whole caboodle actually just the link to Ben's piece. One of the things that I love doing, one project that I'm doing right now is we're trying to put a network of cameras all the way across Australia, so that we'll be able to image the whole night sky all the time, every, so some of those images are really beautiful because I, a lot of what I do you know, we'll analyze a rock in the lab, we'll get back a string of numbers, and then we'll try and, and say something about what that means.

Phil Bland ([00:19:39](#)):

But it's a joy to be doing the project. So the project that I do, where, where, you know, the data is in these incredible images that we get, and I do love that. So one of the things that we're going to try and do with that is basically make it available to everyone so that you'll be able to see what the cameras are seeing at any given time. Okay. So that's that one project now as a planetary size, one of the things we're trying to get at is, is how the solar system formed. So the way that we, the way that I'm interested in getting at that is using me, tries me, tries to the oldest rocks and existence we tries are if you ever hold one in your hands that's the oldest thing you'll ever hold in your hands, four and a half billion years old.

Phil Bland ([00:20:27](#)):

And there's actually grains in the tiny little micron size grains in them that are even older than that, that formed in the atmospheres of other, the stars, supernovae or the stars that contributed to the giant ball of Dustin gas that was there before our solar system formed. And one of the exciting things for me is you started out as a geologist, is that we still don't know how we went from a cloud of dust and gas to make terrestrial planets, which is what a geologist calls, planet, slave, Rocky planets, like mercury Mars the earth Phoenix. We, we still don't know how to do that. We know how the earth works in great detail. We don't know how we made the earth, which is like kind of a big hole. And no. So so one of the things that I'm trying to get out with obviously many, many of the thousands of people is answering that question is like, is how did we get a composition of the earth where we've got that beautiful balance between, between, you know, rock.

Phil Bland ([00:21:32](#)):

And that must fear and water. There's not 30 kilometers of ocean of Rover heads which you might've expected if a whole bunch of other processes hadn't happened. So that's part of the story and that obviously feeds into into life and, and, and life in the universe. And we know we've got you know, we've

got this one example of, of life on our own planet that seemed to pop up within a hundred or 200 million years of when there was so many impacts going on on the surface of the earth, that it was probably not an equitable environment before that time. So it was kind of life popped up pretty much as soon as he could is what is the ballpark information that we have, which gives optimist like me a feel that maybe, you know, maybe we'll get life on other planets as well.

Phil Bland ([00:22:24](#)):

And it's basically optimists that drive the all the missions to Mars and places like, well, Mars basically, because the reason why we keep throwing space probes at Mars and not Venus for instance, is because people think that there might be life on Mars. We want to test that. So NASA won't sign up to, we're looking for life on Mars with our beautiful new curiosity Rover, but that's basically the reason, but they're, they're in all these incredible missions to Mars to try and find things like that. So it's, it's, it's missions to Mars to try and find evidence of life now or missions other solar system objects like Europa, where we think maybe this life, or it certainly could be an equitable region where terrestrial life could exist. If you put some terrestrial bacteria under the ice on Europa, which is one of Jupiter's moons it would, it would probably be okay, so maybe it would also be an environment where life could have arisen.

Phil Bland ([00:23:32](#)):

And we might have answers to those questions within within a few decades. So, so speaking to someone who's kind of, you know, started out in this field 15, 20 years ago is exciting to be, to have the feel that, you know, we might actually be getting answers to some of these questions over my own career. They might be negative answers. They might be pessimistic answers very bad, but it'd still be very useful. And the other one that I've, that I'm very excited about is a bit outside my own specialty. It's kind of where planetary science meets astronomy. So, so astronomers recently, I've been doing some beautiful observations of of relatively nearby stars. So stars in our region of the galaxy to try and spot whether there are other planets around those stars. When I started out as an undergrad okay.

Phil Bland ([00:24:31](#)):

20 years ago we actually I was a geologist. We didn't even know if there were any other planets in the universe, apart from what existed in our own solar system. So as a geologist, that makes you incredibly important because you might be looking at the only example of a planet like the earth and you were in the universe. Now the, the astronomers have been looking at these are the nearby stars, and we've got evidence of, of almost a thousand other planets in in nearby stars in the galaxy. And this is, this is a field that's, you know, it's only 15 years old, really. So what's going to be found, what's going to be discovered over the next 10, 20, 30 years. It's just anyone's guess the goal is that in the end, what they found mostly now are, are big planets, like Uranus, Neptune, Jupiter sat, they have found smaller ones.

Phil Bland ([00:25:29](#)):

The it's basically just the instruments that they've been using. If when they use better telescopes, there'll be able to see smaller objects. The goal is that when we've seen a whole bunch of, of terrestrial size planets, we'll be able to image them. And even if it's just a pixel on a, on an image, we'll be able to get an idea of what the atmosphere is like at that point or for that planet. Now there's a wacky thing about the earth that we have an oxygenated atmosphere and there's me Fein in it. And there's things like that that is completely out of equilibrium with, with if we were a dead planet it'd be, it'd be all carbon dioxide. It'd be like Venus. So our atmosphere is basically shouts out that there's a biosphere on

the earth. And if anyone was looking from 50 light years away they'd be able to tell that there's a biosphere here. They wouldn't be able to tell what it was in detail, but they'd know that there was life. And the exciting thing is, again, is that in the next generation we sift through those other planetary systems. We might actually get an answer to that and he could happen tomorrow, which is kind of bonkers. So so that's my take, sir.

Speaker 7 ([00:26:59](#)):

Yep. Cool. Yep. Hello everybody. So does he work good? I'm director of the beyond center for fundamental concepts and science. I was in a state university and our motto is confronting the big questions. And one of the biggest questions everybody asks is, are we alone in the universe? And so I'm going to pick up where Phil left off the question about whether there is life elsewhere in the universe and in particular intelligent life is one that everybody thinks about. And I speak to you with no authority, whatever, except chairing a curious body called the settee post detection task group. SETI stands for search for extraterrestrial intelligence. And this is a program that started about 52 years ago. It's a heroic program, sweeping the skies with radio telescopes in the hope of stumbling across a radio message from ITI and the post detection task group is supposed to deliberate on what do we do if something is picked up.

Speaker 7 ([00:28:10](#)):

And so I like to say that if he T calls on my watch, I should be the Fest. And and then the question is what next the task group is a mostly collection of scientists, journalists. We've got a couple of lawyers, a priest, and a science fiction writer, and we meet from time to time. There's no budget, so we don't meet very often, but we circulate information quite a bit. And just in the last six months or so we've been considering a paper which has been published by a couple of Russian

Ben Pederick ([00:28:49](#)):

Molecular biologists,

Speaker 7 ([00:28:51](#)):

Basically claiming that if you look very carefully at the genetic code, the universal code that translates the language of DNA and to the language of proteins that are buried in the mathematics of this code is a pattern a message if you like from ETS. So this is sometimes called genomic SETI. This means that ITI has sent us a message, not via radio waves, but embedded in the molecular architecture of very own cells. So that's a bit of a wild one. So we've been evaluating that. So as you can imagine, all sorts of curious people get in touch with us, but it is our job to sort of figure out how will we recognize a message from an extraterrestrial civilization? If we saw one what do we do about it? If we do see one I could talk all night about this.

Speaker 7 ([00:29:44](#)):

I don't, I know we're limited to like five or six minutes. I just wanted to say that there is no lack of, as Phyllis explained, there's no lack of real estate out there on which life could form. Our galaxy alone probably has about 1 billion Earth-like planets, but just because somewhere is suitable for life, just because it's habit to bull doesn't mean it's inhabited seeing as we have no idea how life gets going. It's impossible to say whether it's going to pop up obligingly on all of these potentially habitable planets, or whether it's life on earth is still a stupendously bizarre fluke that may have happened at once in the observable universe. We have no idea on that spectrum and no way even to figure out how we can

figure out the likelihood that there may be life elsewhere. So whilst we're scratching our heads, the people with the radio telescopes are continuing to listen so far, nothing only an eerie silence. But of course the absence of evidence doesn't mean it's evidence for absence. So we watch and we wait and we think, and I just hope that in my lifetime, we get a bit of a clue as to where on that spectrum for, we are alone in the universe to it's teeming the life just somewhere on that spectrum. A bit of a clue would be nice to, to know in the next, however long I've got. So I'll stop there. Thank you.

Speaker 8 ([00:31:20](#)):

I'm not quite sure if I could make such a clever segue as the other presenters. So I'm just going to just be a bit go at my go rogue if I can. So my name's Christina, I'm a trend forecaster when people say what's that they think I do something with trains, and then I say, no, no consumer trends. And then I say, oh, it's about the future. And they say, oh, where's your crystal ball. So those are the questions I always have to deal with at dinner parties. I'm sure these illustrious spoke of also stories such as that. I started to realize my, my job is really tracking patterns, those patterns of consumer behavior and patterns of economic cycles. And, you know, every living thing has a life cycle. We've almost forgotten that, you know, we always keep thinking that the economic the economy would be on a constant upward trajectory, but that's just an impossibility.

Speaker 8 ([00:32:06](#)):

And so I just really realized that we weren't designing and living within the, or operating design of life, which was nature's rhythms. And very much that, you know, we study patterns because they're both the changing and the change lists. And to me, rhythm became to be seen as very fundamental to wellbeing. It was not just the keynote of life that actually is life. And people always speak about, oh, we're so disconnected from nature. But for me, it really actually isn't that it's more that we see nature as the it, rather than the us. And so we see people always in there taking pictures of glorious sunsets and almost saying, oh, need a bit more apricot here and a bit more violet here, or they want to take a picture of the ocean and there's some people, and they're like, get out of the way you're blocking the photo.

Speaker 8 ([00:32:52](#)):

Not realizing that nature is in our guts, just as much as it is in the wind. So my work has really led me to focus on four rhythms, which are seasonal circadian title and Luna. And that very much fits in with everything that [inaudible] was saying earlier. Now, with this panel, they could actually speak about the natural phenomenon, but that is not my background. I actually read these rhythms and these patterns of energies as metaphor, archetypes, emotional abstract. So the seasons for me are all about acceptance and read that any which way that you will. But for me, I feel that within these patterns of energies are encoded wisdom so that nature's wisdom can actually become our very own wisdom. And so how that kind of relates to the panel tonight is obviously the lunar rhythm. And for me, I believe that the moon's energies can teach us three main things and they are reflection how to pace the importance of pacing and phasing.

Speaker 8 ([00:33:48](#)):

So in a sense that very few of us actually act as the witness of our lives. We're very rarely in the observer mode. If I asked you where the moon was in its cycle at the moment, probably very few people could say, but I'm sure this is a learned crowd, and I can see hands going up so I can hear 99% full tomorrow being full moon. Fantastic. And so most of us, you know, sometimes we sit there and think, how can all the mental frustration going on inside of us compare with the luminosity of the sky, but we very rarely

placed our consciousness there. And I think also Australia being a very adolescent country, we're always about the new almost in a way always want to, we're great at like doing say 2014 new year's resolutions, but haven't yet put to bed the past of the failed of 20 13, 20 12, and 11 all the way back or Mr.

Speaker 8 ([00:34:33](#)):

Worth being alive. And because we don't build in periods of contemplation and reflection in our lives, we, it's almost like we're always impulsively reacting rather than contemplating and responding in a considered kind of way. And so I think it's so key in regards to, especially my work, which is so much about, you know, music actually comes from the space in between the beats and it, to me, innovation and creativity and intuition lies in that still gap between the thoughts. But most of us really place ourselves in the stillness to be able to accept that when I look at pace I'm from Adelaide originally, I've been away for 13 years. I came back last year, almost thinking that I wanted the pace of life, the quality of life that Adelaide always speaks about, but I came back and to me it was almost a bit alien, like in the wet, the fact that everybody was running around with coffee cups to their lips.

Speaker 8 ([00:35:20](#)):

And I'm like, what is this, you know, phenomena? And I'm one of those people, if you don't have time to drink your coffee, you just don't have time for coffee. And it seems that like who was being paced here, it was like out of pace and out of sync with the environment. And it is one of those things where you meaning actually comes by infusing whatever we're doing with its appropriate pace. And there's a wonderful Italian musical form called dumb. And I apologize to any Italian Italians in the crowd call. It will temple just though which I think I have totally just butchered, but it actually just means the right tempo. And we can look at it both in the subjective and objective interpretation objectively it's 66 to 76 on the metronome, and it's the scale and the beat of the human heart. But when we actually look at it as subjectively, it actually is intuition.

Speaker 8 ([00:36:08](#)):

The, the piece of music is played at the rate garnered by the own, the musician's own intuition. And most of us almost have, have lost the right tempo of living where corporate life is dictating our rhythm more than natures. And I think we've also lost the ability to connect to time through sensation. It's all about time through a digital artifice and we've lost actually the movement of time through the sun and the moon and almost just to be almost dictated to by the iPhone. And so finally, when I look at also phasing, very few people know how to run their long-term objectives, their future in parallel with short term objectives. And that really, if you think about a car and it gear change, you can't go to first to fifth overnight, just as the moon doesn't go from, from new to fall. There's actually a process we have to go to go through.

Speaker 8 ([00:37:00](#)):

You've got to be 39 before you're 40. You almost have to fail before you've actually succeeded. And I think when I look at the moon and when I gaze up to the stars, what it actually teaches me, it's almost like it's an inherited blueprint of energy management in a way. So it's not the time management that's being promoted to us to prioritize and do all of those things because that's really just a routine. It's actually a rhythm that we're actually after. And so it's one of those things where, when I kind of gaze gaze to the moon and what it kind of teaches me is that there is a rhythm to all things. There's, there's an air and there's a flow. That's really all the moon actually is it's, you know, the distinct waxing and waning within an unchanging cycle. It's the expansion and the contraction it's building up to us.

Speaker 8 ([00:37:42](#)):

There's more light in the moon, more energy for ourselves, as well as there's an adequate contraction. And a bit, when we look at the seasonal rhythm, sometimes I feel in that light, we want to live the summer of our lives consistently. We don't always know how to retreat and hibernate and learn from the harvest. So I think really what the moon is really teaching us is how to reflect how to pace and how to phase. And really just to close this by saying, you know, that we cannot break the rhythm of nature, only ourselves against them. And so it's so important to live in the rhythm of the lives, the seasons, the tides, you know, the moon and our 24 hour body clock, because within that is the answer to all things because we do exist within the patterns of nature. Thank you. Thank you. Thank you.

Speaker 9 ([00:38:30](#)):

Now I'm going to stand up for two reasons. That's okay. Cause I wrote a speech because I don't trust myself, speak off the top of my head as well as my colleagues here. And also because I have a writing related injury I might ask is killing me. Apologies. there's often a talk of two cultures divide between science and the humanities. And this is something that comes up occasionally for science fiction writers like myself to someone once asked me how I do what I do because maths and sciences, right brain and writing is left brain or whichever way round it is. And I don't pay attention to that kind of graph. To me, it's all part of the human experience. Just different facets of a wonderful spinning Juul. I love science. I also love writing. And to me, there's no contradiction on my 11th birthday.

Speaker 9 ([00:39:16](#)):

I stepped out into my grandmother's front garden in rural south Australia cow. Specifically, if anybody knows cow with the stars on a clear night are just amazing and looked up at the sky. It was dusk at the time. So I wasn't expecting to see very much, but at exactly that moment, a shooting star raised across the sky and suddenly split into three fragments before vanishing into the deepening. And what I learned at that moment was this, the sky always surprise you. And it always pays to look up just in case. Let me just describe myself in those days. I was an avid reader, not just of science fiction, mainly in the form of doctor who novels back then, but also Agatha Christie. And I didn't know it then, but I'd been hooked on the drug that lies at the heart of both genres, which is mystery in both science fiction and crime novels.

Speaker 9 ([00:40:03](#)):

There's often something to be solved in crime. It's stereotypically a who done it. Whereas in science fiction, it's a, how or why done it, why something works. But the question is the same. Something has happened in the world around us. And we as detective scientist, people want to understand it in the 30 years following my limit birthday, I saw sundogs over the Hudson river on my first trip to New York. I watched a comment rise over west beach in Adelaide, here with my new family. I teared up while staring at the steering to the old telescope in Sydney observatory at the Galilean moons. I enjoyed the rings of Saturn with a friend from his balcony and Surry Hills in Sydney. I stood in the woman of a restricted zone and gaped an amazement at a total eclipse, actually on that occasion, two minutes after the eclipse I proposed to the woman I was seeing at the time he responded, I don't answer trick questions, which was a bad sign. It didn't work out.

Speaker 9 ([00:40:55](#)):

I say all this, not to boast about the things I've seen. I'm no more remarkable than anybody else. And that's my point. Really? We all look to the skies of inspiration, wonder and beauty. We are touched and we share these moments with other people. Astronomy is a community accompany, a communal

experience pursued by everyone, enjoyed by everyone for everyone we admire. We ask questions. We confront mysteries. Sometimes we find answers. You can say the same thing about literature and storytelling, the other great human pursuit. And this I think is where science fiction comes in. There are many mysteries in the universe that we haven't solved yet. That doesn't stop us about what it might be like to solve them. How the world might look when we have solved them, what it would feel like to be the one who solved them, what further lists mysteries might lie beyond those solutions.

Speaker 9 ([00:41:44](#)):

Science creates hypotheses and test them science fiction and creates hotter pie hypotheses based on those hypothesis, creating narratives, not intended to represent the real world, but to place the world against a mirror of our current understanding and see what image it reflects. Science fiction is focus on science as an important human endeavor ignores neither. The good nor bad consequences of that endeavor. It is neither consistently triumphal nor damning, so different from historical fiction or fiction set in an alternate version of the present day in different countries, through different social mores or sensory different eyes. Because at its heart, it's aims at the same as science and literature to put humanity in the environment we inhabit to put, I'll start that again, to put humanity and the environment we have me inhibit in context each other. This is why I write it down because this may be hard to accept if you've used science fiction solely through the lens of Dr who and star wars ignoring a century or more of evolving literary traditions, but even the basis Saifai populus.

Speaker 9 ([00:42:43](#)):

And I've written. Some of those asks the valuable question. What if you may not like the answers, but by paying attention to the question, we can see we are all staring up and outward and exactly the same way, whether we're 11 or 46 or 68 or 92, you don't even need eyes to do it. You just need to use your mind. There are plenty of imaginative and unlikely antecedents for theories currently experienced bored by science creation and the big bang ancient astronauts. And panspermia, although that might still be considered science fiction these days, I would argue that science fiction is busily creating Edisons for new scientists, new science, waiting to be on waiting to unfold. Once the current theories are established or discarded, just like science, some of the science fiction written today will also be discovered discarded. And that's not the fault of either science fiction or science, because we can only see so far.

Speaker 9 ([00:43:34](#)):

We barely glimpse the shapes behind the wondrous veils before our eyes. And if we don't accept our mistakes, we might as well close our eyes and stop looking altogether, which is where I would argue being a irritating hard-nose atheist, that religions are losing the race for the future of the human race. We wonder we pick it mysteries until they unravel. We move forward. There's some benefit in sitting still and meditating, but when everything else is moving and changing around us in chaotic and unpredictable and beautiful ways, that's a dangerous evolutionary strategy. My 39th novel comes out next week. My 83rd short story with it, it said in a world where Mehta transmitters have rented planes, trains, and automobiles that relevant. And at the same time opened up the stars to all humanity, because why send a rocket when you can beam yourself right up to orbit, which is where I want to be, which is why I'm in favor of a space administration center right here in Adelaide fingers crossed that will happen one day.

Speaker 9 ([00:44:25](#)):

I've imagined all manner of outcomes from humanity ranging from, for the hotel, from the hopeful to the catastrophic. None of which I anticipate actually occurring. I put humanity in cosmic context that I fully expect to be a more or less, no relation to actual scientific discoveries. Well, there were a couple of times I've been right, such as certain types of extreme exoplanets, which I was writing about a long time ago in which I bombarded poor Phil here with Elliot, trying to take credit for them. Sometimes I've labored for months over research. Sometimes I've hand waved with vigor to distract from the fact that I don't know what I'm talking about. Sometimes no one knows because the journey that both literature and science are taking jointly or separately, can't be answered with 100% certainty. What is our place in the universe? It's the biggest question of all part of me is still 11 years old, staring up at the sky in amazement. Wondering if we'll ever answer that question, determinately, ignoring the adult I am now who knows that if we ever do, I'll be out of a job. Thank you.

Robert Phideon ([00:45:29](#)):

When I look up, there's going to be a Mo RO roving microphone for questions from the audience Q two. But in the meantime I need perhaps to get in with a quick preemptive apology. Paul Paul Davies does have won't won't eat if he doesn't leave by about 10 past. So he may have to leave. People were absolutely finished. And so I'm going to start by asking the question. In 1999, I found myself in a chemist shop in south London. I was working on a PhD in English at the time I had a bleeding thumb and I wanted a band-aid. They didn't know what I was talking about. I didn't know the word that they needed, which was sticking plaster. Right? My question is let's look for follows from the city. The city city stuff is how would we start that? We, any ideas at all about how we would start to communicate if someone answered

Speaker 7 ([00:46:27](#)):

Back? Oh, it's now first thing, the last word betrays SETI is a listening program, not a transmitting. So it means that we are scanning the skies with radio telescopes. Is there any radio traffic out there that could not have a natural origin? Just occasionally as a CUNY, people will transmit, but it's not been done on any systematic basis. It is more symbolic or to get young people interested. So it's a listening program. And so the question is supposedly we were pick up a signal and then we're faced with the issue. Do we reply if so, what did we say and who speaks for us? Those are the sorts of things that this task group deliberates on. A lot of people if you say we run, we ran a competition on this in Arizona. Give us a message. You know, what, what should we say to ITI?

Speaker 7 ([00:47:22](#)):

What's the most important thing? Well, of course you immediately recognize that ITI is not going to speak English not going to understand. And I think it's all about sport or politics or any of that stuff. What would we share? What is there in the universe that we would have in common where they truly alien mind or an alien civilization? And the two things just about everybody's agreed on is we wouldn't be communicating with them if they didn't have radio technology or, or laser technology. In other words, they would have an understanding of the laws of physics and the laws of physics are of course, mathematical relationships. So they would have an understanding of mathematics and fundamental physics, and that provides a common basis in which we could begin a conversation. And so my feeling is if we could only just say one thing, but have to be something that would be meaningful would betray our level of understanding of fundamental physics.

Speaker 7 ([00:48:21](#)):

And so what I would send is in this program mean anything to maybe one or two people here the reciprocal of the fine structure, constant in binary. So this is one of the fundamental constants of nature. You'd have to put it in binary because otherwise it wouldn't know what basic arithmetic it's a number that you measure experimentally. It's a pure number. It doesn't depend on our system of units. And it shows that if we understand that that number is significant, we understand quantum mechanics and electrodynamics at least so just in that one number, we immediately give something about our level of scientific development. And we've got a common basis to build on no point in sending the football scores or other things. So all that's out of the way or music.

Robert Phideon ([00:49:04](#)):

Yeah. So, so the fact that stint Tindall Cruz fielding a date fine league will not be a particularly useful people. No, I don't think he ever has either actually. So do we have some questions from the floor and and, and you will need to speak into the microphone. So have, has, can someone, no. Oh, sorry. We found, we found one conveniently close. Thank you.

Speaker 5 ([00:49:29](#)):

Oh Cheryl Buchanan, I'm from the Goleman nation in Southwest Queensland. It's just not a question, but an observance and anyone can comment on my observations. I've been on this planet for quite a few years. I'm now an elder in my community. What really astounds me is the the intellect that that we have in this country. And with that intellect is this incredible arrogance that people have. And it's the arrogance that there does not ever seem here. I am listening to this coming, being quite excited by this this discussion. There's never any acknowledgement of the fact that this planet, this place here in particular, Camara Australia had visitors from another world outside our planet. Those are recorded in cave paintings, throughout many nations in this country that the traditional knowledge holders of those stories are never acknowledged and respected at all.

Speaker 5 ([00:50:49](#)):

And whether it's in the field that you're in, whether it's in the field of science, where we're talking about water matters and the connectivity between land and water, you know, now, and then they say, oh, the traditional knowledge holders. And they have all this amazing information, but it's always an afterthought. It's never put in the front upfront as bank people. Who've lived here in thousands of years. And that young woman, she probably does not. She was a black fellow in another lifetime because all of her talk is absolutely intrinsically inherent with the way that our people think.

Speaker 5 ([00:51:34](#)):

And it's that sense that you have to have, you know, a balance of life and that you have to accept the world that you live in. And I tell you within our communities, you know, the one thing that always just astounds us is that when people will ever get to understand or get to the point where they can actually accept the world that they live in the world that they're born in, you are in this beautiful country here, and yet you still not cannot accept the reason that this country has. You still don't know it at all. You don't know the land, you don't know the waters, you don't know the sky. You don't know the sea in it, all of those people for the last 200 years, who could have helped you who asked them the questions he gives them, who gives them the authority. He gives them respect.

Robert Phideon ([00:52:41](#)):

Okay. Thank you. Anyone want to respond to that? It's the question about, I guess, intellectual humility, which you learn more of as you grow older? I think I hope, I think, I think I just I'd like to support what Cheryl was saying in terms of that as a Western sciences, a lot that I'm very proud, partly achieved, and yet it it tends towards a sense of only one looking out perhaps, and always considering itself as some kind of solution and you know, provision provide solution. But in the time that I was being, I've been working with indigenous people in Australia and the time I've worked with indigenous people around the world it's very clear that the Western tradition of knowledge is actually far from a solution on, in most of the corners in the world where it has sort of waded in with not knowing, oh, I don't, I would like to find out how does this work and in the process breaking whatever it is that it's seeking to discover. So I understand and respect what Cheryl was saying. And I think, you know, in, in going to the stars and understanding the stars, it would be good if we didn't continue to repeat that exact pattern of arrogantly. Assuming that our intellect is a passport that forgives us all our mistakes, sins and misdemeanors cool science itself is not

Phil Bland ([00:54:16](#)):

It's done in a reductionist way. We, we focus on, on small problems because that's the only way we can get to the big problems. But, but as an endeavor, as an individual, the things that I live about are not the little, it's not the little tiny bit that I'm interested in. It's not the little bit that I managed to do in my whole career or my whole life. It's being part of a global endeavor. And that endeavor is not is not alien or different or, or distanced from from the universe, from our world. It's the most intimate bond possible with it because we're trying to explore it with our minds in the best way we can and the most in the most detailed way that we can. And if you, if you sit down with a with a scientist and actually find out what makes them tick, as opposed to, you know, read in the media about some of the latest gossip or the latest problems with with this or that theory or emails released or whatever if you actually sit down with someone and find out about what makes them tick, it won't be not some bolts.

Phil Bland ([00:55:43](#)):

It won't be reductionist. It won't be distanced. It'll be, it'll be big picture and it'll be, it'll move you. And and I think it's worth finding out what it really is that new scientists, rather than rather than reading in a newspaper,

Speaker 8 ([00:56:05](#)):

I just would like to just say, like, you can't actually understand rhythm from the mind only through the heart.

Robert Phideon ([00:56:13](#)):

You can say another sentence. It's got to come all the way down here. No is when we were, when do we make the effort effort to stop looking when we, when we haven't found the bar biospheres et cetera.

Phil Bland ([00:56:30](#)):

Yeah. To a, to a favorite science fiction movie of mine, which is there, which is this incredibly overblown thing that H G Wells was did call things to come. And and there's a great bit, right at the end of that, where the two main parts is there's this incredibly kind of bold visionary guy. Who's looking to the future and his poor friend who's, he's been dragging around for donkey's years. And and basically the guy says, you know, that it'll always be the next horizon. They'll always be another adventure. And it

might be that, you know, that in the end we do understand that universe is in, is in as close and detailed and beautiful way as we can, or it might be that there's always a, another horizon.

Speaker 7 ([00:57:21](#)):

I think the gentleman was referring specifically to how long should we continue to put resources into a radio search kids 52 years? It's only an eerie silence, and this is often asked. And the first point to make is that there's virtually no taxpayer money goes into it. It's almost entirely privately funded. Secondly, it's a tiny handful of people doing it. Those, they support a big industry of researchers doing peripheral aspects of astrobiology. And the third point is that I would never have expected them to succeed so far. If you talk to a SETI optimist, like Frank Drake, who began this program in 1960 and based on no science, cause I've explained, we have no idea what the numbers but what would he think will be the number of communicating civilizations of the galaxy of this time? And he says, well, maybe 10,000.

Speaker 7 ([00:58:15](#)):

And if you take that number and I think it may well be zero. But if you take 10,000 hours, where, how far away is the nearest communicating civilization likely to be several hundred light years. And so let's take a round for girls thousand light years, if your civilization over there thousand light years away, you don't see earth as it is now, but as it was a thousand years ago, there weren't a radio telescopes. Then they may have super-duper instruments. Like Phil was saying, you might they might deduce that there's life on earth. And I often imagine that there may be some SETI enthusiasts on this planet and they go to their government saying we'd like some money to transmit that planet over there. Cause we know there's earth on it. And we think there's life on it.

Speaker 7 ([00:59:03](#)):

And we think maybe any millennium soon they will have radio technology. And I know what the answer would be, you know, come back when you know, they're on the air and we'll give you the money and they won't know we're on the air for another 900 years or so. And then their signal to come through us. So really is a very long-term venture. But the truth is even now, it's very hard to get young people to take up this particular enterprise. It's just done by old folks. Basically they're all retiring. So it depends. I mean, I hate to do this cause I get ticked off, but I read a whole book about, you know, what do we do next? It's called the eras islands. And it's very much depends on the nature of the message. So if it is simply that we get indirect evidence for alien technologies, there's not a message, but we just did use on the basis either had an of radio waves or some other physical clue signature that there is no natural explanation.

Speaker 7 ([01:00:03](#)):

Then it is one of these profound discoveries. We're not alone in the universe, but we can't say very much more about that. And I often say it would be the, for a week, the media will be full of this momentous discovery and then people we'll get back to the cricket and baseball and so on. But over a period of centuries, it would seep in just like a Copana because his announcement, the earth is going around the sound didn't change the price of beer, nothing really changed. But at the same with Darwin's theory of evolution, really nothing changed. But our sense of where we fit in to nature and our place in the universe is profoundly changed. And that will be the case. If it was a message full of technological and scientific information, all bets are off because even something as simple as showing us how to gain control over nuclear fusion as a power source, you might think, well, that's great gift from ITI. This is how to solve your energy problems immediately with these stabilize, the world stock markets transform

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the economists of many countries. Whoever had this knowledge would suddenly have a huge amount of power. I can imagine warfare just had just one piece of altruistic information like that could be very destabilizing. So I think between those, those two extremes, again, there's a spectrum of possibilities.

Phil Bland ([01:01:25](#)):

The one thing can, we can be really sure of, I think

Speaker 9 ([01:01:27](#)):

Is it will change science fiction in the same way that the collapse of the Soviet union changed thrillers forever.

Robert Phideon ([01:01:35](#)):

Well, on that wonderfully confident prediction. I'd like to thank, thank all our guests. It's been a fascinating session. I think about imagination, about evidence, about discipline, about intellectual humility. And I guess my answer to the last question is I, I'm not a physicist, but I think we should be looking for these things because they are interesting because I, because they are interesting to be honest. That's what exploration is. That's what looking to the stars is about. So can you join me in thanking our fascinating guests?

Intro ([01:02:25](#)):

This session of the 2013 Adelaide festival of ideas was recorded by radio Adelaide through the support of the vast mid library, university of Adelaide, the university of south Australia library and Flinders university library.