

Natasha Mitchell ([00:00:00](#)):

Welcome on a Saturday, I should say Saturday morning. Well done for coming out and avoiding the Saturday shopping. Good crowd. Thank you. Hello, my name is Natasha Mitchell. I'm from ABC radio national, where I'm a science journalist and presenter of a show called all in the mind. And just to let you know that we are recording today's event for possible broadcast, so feel free to be responsive and a little bit rowdy, a little bit noisy. Guffaws laughs the lot it's all welcome. It translates really beautifully to the wireless and it works well for our event here today, as well. And look with, with the headline topics of sex, knowledge and society for our session this morning, we are in for a rollicking ride. I mean what's more important than sex knowledge and society in our lives. And for you perhaps in that order, I have to say that when I was an undergrad student, I studied engineering and engineers like to look at the world through pragmatic eyes.

Natasha Mitchell ([00:00:58](#)):

Engineers are problem solvers, but sometimes the problems that get solved, they get solved in a particular way, depending on what the engineer sees or doesn't see, or perhaps what they don't want to see. And as a woman in engineering, I had this palpable sense that there were different ways of seeing and experiencing the world of defining and solving engineering problems. And let's face it at the heart of engineering problems are human problems and there's no one solution to the mess that is humanity science on the other hand makes some different claims. I think we'd agree about the world in its pursuit of knowledge. It cast itself as impartial and empirical objective in its quest for truth and knowledge. It's about shining a candle into the darkness as some people like to describe it. And the argument is that there's no place insights for the messy personal lives of science for gender or agendas for the way people have been brought up for the cultural and political views of scientists, their persuasions and predilections.

Natasha Mitchell ([00:02:05](#)):

It's all irrelevant. Truth is out there and it's just waiting to be on earth or research. And that's the conversation that we're going to have today. Sex knowledge and society. We've got three absolutely terrific guests. Let me introduce you to Simon Blackburn, who is professor of philosophy at the university of Cambridge and fellow of Trinity college, Cambridge amongst his many books are Plato's Republic. How to read Hume. Lust truth, a guide for the perplexed. And I must say that when I started all in the mind, a little book of his called think was very important and useful to me. He writes in a beautifully accessible way. I highly commend his books to you. And he also has a long standing connection to Australia. He was an adjunct professor at the AMU for many years, and Simon did wonder whether he might need a codpiece or something like that for session.

Natasha Mitchell ([00:02:59](#)):

So if anyone's got a spare, feel free to share it. Karen Green is associate professor of philosophy at Monash university where she's head of the school of philosophy and bioethics. And I gathered that Simon was a tutor at some stage at Oxford to Karen Long time ago. She has a new book out this year with Jacqueline broad, a history of women's political thought in Europe, 1400 to 1700. And I also enjoyed one of her other books, the woman of reason, feminism, humanism, and political thought. Let me also introduce another international guests. You might've caught Londa Schiebinger presentations yesterday. She's professor of history of science at Stanford and directs the Clayman Institute for gender research. She's the author of a whole series of influential books, including the mind has no sex. Nature's bond bonding, bonding, natures body, gender in the making of modern sites. And, and also has

feminism changed sites amongst many others. And there's also another book she's got out called Edna tautology, the making and unmaking of ignorance, which is a gem. I have to say. I really enjoyed that one. So please let's give them a warm welcome. [inaudible]

Natasha Mitchell ([00:04:21](#)):

We're going to run this as a discussion and then we'll come to you for conversation and questions as well. I thought I'd start with this one. Simon seeing who's another guest at the festival, a science journalist said yesterday in one of the sessions that he doesn't believe scientific knowledge is culturally based. That's a quote. And I thought we'd just start briefly with your response to his belief Londa.

Londa Schiebinger ([00:04:47](#)):

Well, it's kind of shocking to me or something like that. One just looks anywhere and you see that science is culturally based now in the U S we went through the science wars in the 1990s. And this was, and I didn't want to replay that on your stage yesterday. That was the war between the scientists such as physicists. I think Simon was trained as a physicist and people who don't want to acknowledge the cultural aspects of science. And then there are then the war was between those people and historians of science, critics of science sociologists of science and many scientists themselves. I think Dick Lewington and a number of biologists would be the first to say, certainly Stephen Jay Gould, if that's the name, you know, would be the first to say that science is born from a cultural context. So it's not that science isn't true and objective truth and objectivity are lofty goals, but they have to be obtained. You cannot proclaim them. A lot of people just want to take that short step and proclaim it, but you have to actually make objectivity. So reachers researchers are able to approximate truth and objectivity become by becoming aware of systematic bias in their work. And in the past 20 years, we have come to know the systematic bias that comes in through gender.

Londa Schiebinger ([00:06:24](#)):

And I think that that's partly what we're going to discuss today. And now scholars researchers have documented, I mean, for 20 years, we've been documenting concrete cases where you can see the gender in the science. And now we're to the point that we want to use gender analysis as a resource to create better human knowledge. So I think if we look at this dynamic system we have and understand what kind of resources looking at the culture can bring to human knowledge. I think that we will be much further ahead. Now I have lots more to say about that, but I think will.

Natasha Mitchell ([00:07:04](#)):

Londa has been doing some really great excavations of the history of science. There's some quite juicy examples. Simon, what do you think of Simon, The other Simon's comment about scientific knowledge not being cultural?

Simon Blackburn ([00:07:17](#)):

Well, I think my first instinct would be to disambiguate. I mean, I think probably what I had in mind was some of the results of science can't be thought of as cultural constructs are culturally variable. So for example, that, that the sun is 93 million miles away or so know that took a lot of discovery, but it was discovered and it was a discovery. It's a truth. And it's independent of culture. The sun is 93 million miles away, whether you live in Australia or India or Western Europe and gravity is gravity, regardless of whether you're a male, female or an alien Spacey steel is a better material for building bridges than say cast iron and so forth. So I think probably he had in mind that kind of objectivity and in a sense cultural

independence. But of course, when you start talking about the processes of support discovery selection, all the matrix within which scientific knowledge grows, then what Linda was saying is, is clearly correct that it's, it's different people with different biases, different lenses who throw themselves at the problem, whether they do it well or badly, is there an up for sometimes just history to tell and and obviously culture determines, for example, which questions get asked, which questions seem important at a particular time, which ones we need to solve, which ones we, which ones we tiptoe past, like for example, issues of race and intelligence are more or less undiscussable. And look on what's the word you know, this, you're certainly not going to get funding for these days.

Natasha Mitchell ([00:08:51](#)):

And it's interesting looking at the sort of plethora of Nobel that have been awarded sometimes to things that now are on the nose. I mean the, the labotamy yes, absolutely, won the Nobel prize.

Simon Blackburn ([00:09:05](#)):

Yeah, exactly. Medicine course, especially I think the history of medicine shows enormous cultural influence and bias. And so I'm, I can think of very good examples, but there are many others in which the metaphors, the lenses through which people look at a topic are culturally influenced. I mean, a nice example. I was just reading a book called a romantic economist, which I very strongly recommend. I guy called Richard Bronk. And he says that's the whole of 19th century economics was dominated by the metaphors of celestial mechanics. It was equilibrium. It was the way the different forces resolve themselves to produce a static economy static system, which was the sort of dominant lens through which people looked at economies. And there were always critics. And now it just seems like a crazy thing to think of because it's quite clear that an economy is a dynamic and moving and non linear system. And so things like that certainly influenced the way science has done. And if if Simon Singh intended to deny any of that, then I think he was on a hiding to nothing.

Natasha Mitchell ([00:10:13](#)):

We might have to give him a right of reply at some stage. [inaudible]

Natasha Mitchell ([00:10:18](#)):

Karen, what about yourself?

Karen Green ([00:10:19](#)):

In some ways, I think it's almost if you like, it's an open question. There's a view around the scientific view that this is objective knowledge. But in fact, since it's almost all been men and it's almost all been this Western culture, which has developed science, we don't actually know how it would have been different. If the people who haven't spoken had had more of a, a say particularly when one gets away from some of the hard sciences, sciences and science after all originally is just wisdom knowledge. And you start to think about something like philosophy, which is what I know about philosophy has represented itself in some sense as being objective. But when you actually read the philosophers, you'll find that they almost all say deprecating things about women. So Aristotle says women and children and slaves as lesser humans as not having complete deceptive reasoning. So just just as reason rules, the passions. So man rules, woman, and this is a metaphor that runs throughout a lot of, a lot of philosophical thought. So what do you do in face of that? I think in order to know whether or not there is an objectivity that is common to both men and women, you'd have to make sure that men, that women are equally represented in all of the institutions, which are developed science in the past men

have tended to think with Terrence. I think you quote him that I am a man, nothing human is alien to me, but actually the men seem to have gone on to say, woman is alien to me. Therefore woman is not human. And we won't know what is objective. I think until women are properly represented in the institutions, the grade science.

Natasha Mitchell ([00:12:49](#)):

We should come back to that point because whether or not women actually in those institutions have made a difference is another question in itself. But look, just to pick up on, I guess, the Pantheon that precedes you in philosophy I think women were actually considered incapable of philosophy. They were devoid of reason. And I mean, I think it was Khan. He said that her philosophy is not to reason, but to sense. And I wonder how you feel about having this heritage to your actual profession.

Londa Schiebinger ([00:13:20](#)):

I think we should also say first, the Khan said that anyone who was going to have deep philosophical, philosophical thoughts might as well have a beard because that better portrays who they are. So I, we could go on about Kahn some time.

Karen Green ([00:13:36](#)):

This is a terrible, terrible problem. And even at the moment, if you look at some of the catalogs where you have contemporary key philosophical thinkers, you'll see that a vast number of the men have beards. It seems that in order to really be a philosopher, you have to have a beard. It gives you that sagacity.

Natasha Mitchell ([00:13:58](#)):

Put your hand up. If you've got a beard in the audience. Clearly clearly more reasonable.

Simon Blackburn ([00:14:05](#)):

I think, I think in, in defense [inaudible] if you look at an awful lot of Christian saints, they've got beards too.

Karen Green ([00:14:19](#)):

The evolution of philosophy has come out of universities, which was set up as institutions, which excluded women because women were excluded from the pit priesthood. And it does partly go back to things like Saint Paul and women should be quiet and not speak in church.

Simon Blackburn ([00:14:35](#)):

And it's, it's not a, it's not a very good defensive philosophy either because I always liked the fact that in in Oxford, in the 1960s, theology was down the corridor labeled secondhand philosophy.

Londa Schiebinger ([00:14:52](#)):

I wanted to come back to a minute to the question of objectivity. And I think Simon here said something very important that it's in the questions you ask. So if we look at nature, it seems to me that nature is infinitely rich. And we, as people, we as societies have the resources to know only a little part of it. So I think if we think of these 2000 years in which we've had Western philosophy in the few hundred years, we've had Western science and we think about people choosing pathways and they rushed down this

pathway and know everything about that. So we know exactly how many miles it is to the sun or the moon or to Mars or something like that. But if we ask different questions and for me the whole issue about gender or race or questions about science and whose ideas have been left out and devalued, it's really a question about what questions are we posing? What is it that we want to take our puny little resources and put into because scientists spend huge money come to Stanford university, someday scientists spend huge amounts of money on a machine that can tell you one little thing, right? So somebody has made a large decision that this one little thing will be the thing that we need to know. Now, these one little things bring you wonderful things. They bring you apple computers, they bring you iPhones. They bring you Google. They bring you great things, but nonetheless, it sets you off in a particular direction. And I think that Bernadette Healy, who was head of our national institutes of health, when we gave birth to the women's health initiative in the United States, she said it best if you want an area of science developed funded. And I will tell you that scientists very many scientists, engineers, and others, I think, cannot answer that question. Why are you researching this topic? It will be well at see there's funding in this area. I have a lab to support. I need to fund my students, my post-docs and all these other people. I'm responsible for them. I can get money over here. Therefore I'm going to move in this direction. So I think that we need to think of this as a political process. I know in the U S the Congress sets budgets for all of our big research institutes and Congress is apparently our voice. I don't really know, but anyway so I think that we need to think of this full bodied process when we're talking about objectivity and truth.

Natasha Mitchell ([00:17:29](#)):

Londa just to step outside of that a bit, you you've, co-edited a book called Agnotology, which you described as the making and unmaking of ignorance. And I mean, it's a great word, Agnotology. And did you make it up?

Londa Schiebinger ([00:17:41](#)):

I did not coin it. My colleague and I went to a class assist at Berkeley so that we could get just the right word.

Natasha Mitchell ([00:17:50](#)):

I mean, some people would argue that there are perhaps some things that are better ignored, but, and that, that to talk in absolutes, that truth is truth and knowledge is knowledge and facts are facts. And I wonder if that's the case that, that in fact, that sort of gender and race sort of become part of that, we, we, we ignore them. So we don't completely make things too complex for ourselves.

Londa Schiebinger ([00:18:12](#)):

Oh, I'm not sure I get what you mean, because once you start ignoring something that is such a big political issue then you, then you are living the life of the unconscious mind, right. We have to bring these issues and problems to the fore and really have a deep look at them and, and then continue it.

Natasha Mitchell ([00:18:36](#)):

But We don't necessarily do we.

Londa Schiebinger ([00:18:39](#)):

For, for what exactly?

Natasha Mitchell ([00:18:40](#)):

Say gender. I mean, we, we don't have this conversation. Women don't always in the sciences acknowledged their gender.

Londa Schiebinger ([00:18:46](#)):

Oh, yes. That's true. Well, a lot of, so I started out my life, not wanting to be thought at, I mean, my intellectual life in graduate school, as not wanting to be thought as a woman of, as a woman at all, it was like, oh, the women, no, that's not me. I'm an intellectual. So, and that's, that's a huge problem. You get a lot of women it would be, and then men who aren't recognizing their position in society as men or women, not recognizing their position in society as women. So it's basically living the unconscious life.

Natasha Mitchell ([00:19:21](#)):

Do you want to pick up on that character?

Karen Green ([00:19:23](#)):

Well yes in a way, because you said that, you know, philosophy is very male dominated and it has been, but actually once you start looking at the history of philosophy, you find that there are a lot of women who have tried to stand in the position of philosophers and they tend not to have been edited, read, discussed. So one way of trying to make women, I think, feel much more comfortable with being an intellectual woman is to try and change the disciplines so that some of these people who who did write fascinating stuff in the past taught and understood. So one of my project in terms of writing the history of women's political thought is to go back to people like Christine [inaudible], who was writing way back in the 15th century, but who was already saying, look, women are just as capable just as virtuous, just as prudent as men are. And she wrote a beautiful book called the book of the city of ladies, which she wrote in order to defend ladies. So he was a city that she constructed on stories of great intelligent women that she had heard about from her reading of the ancients, in order, as she described the city to provide a defense and a realm of femini, which would last for thousands of years now, actually we tend to think of feminism and women's interaction in intellectual life as a relatively early development. But you can see a direct line of influence from Christine to Pizan to Margaret of Navarre, who wrote the Hep tamarin, which was a set of stories in which she was discussing this question of whether women are as virtuous as men or men of virtuous as women, and which is better. And in fact, she came down a bit on the side of, well, women are clearly more virtuous, at least more sexually virtuous than men. You can take a line from her to Elizabeth the first and most people don't realize that when the argument about whether women could rule was raging in the 16th century with regard to Elizabeth sister, Mary, and then with Elizabeth, that Christina presents book of the city of ladies was one of the things that was reprinted on the side of those who wanted to say that women are, have capacity. And you then find people like Madeline Scuderi married to Goney in the 17th century taking on these, this argument. So, although we, we think that the history of thought is completely male. Once you actually start to do the research, you see there's a, there is a very long and deep set of arguments by women that were behind in fact, what happened in the 18th century. So it, and the history of philosophy and the history of politics starts to look different when you actually bother to go and read what women.

Natasha Mitchell ([00:22:40](#)):

You're talking about a time where women were working on the 17th century, say when, where nature itself it was cast as a truth that it was, it was a passive in one, one guys that was cast as passive and female and completely devoid of intellect and needed to be and another and in other instances, it was

cast as wild and raucous and female, and needed to be timed. I mean, there were interesting times that their very world was being defined in interesting ways. Wasn't it?

Simon Blackburn ([00:23:12](#)):

I think the two slightly different things going on. I mean you're absolutely right. That's, you know, women's voices were not heard. They weren't prominent. It's quite interesting with all the people you mentioned, although I've heard of quite a lot of them, I suspect many people in the audience haven't heard of them as they certainly answers that were common currency in the way that Hume or can't or Locke or any of the male thing. I think they should be coming to common current. You think they should be, but the fact is they're not not, not yet perhaps. I think that's that silence or relative silence or silence scene, if you like is undoubtedly historical fact, and everybody's very apologetic for it. And it's you know, I think fortunately, largely behind us women have equal opportunities now they, and they take them. And that's excellent. I think the other question though, which is slightly different from one about whether we should, you know, beat our breasts about the history. The other question which is slightly different is when women have the equal opportunity when they get into the sciences when they start being in the laboratories and even managing the laboratories is, is the epistemology different? Does the science get to look different as a result simply of female presence? Or is it just rather like having, you know, another subset of humanity, having slightly more people in in the place than they're used to?

Londa Schiebinger ([00:24:40](#)):

That's a good question. One that you've considered quite mindfully to assume. So we had quite an optimistic period in the nineties when people thought, if you just bring more women into science, you will change the science, right? How do you get a richer human knowledge? How do you cash in on diversity, you bring in a diverse population. If you have new science, you have new thoughts, but you did in some areas. I mean, you think about primatology, but that's a, it's a very essential list way of putting it. What I think where we want to move now is teaching everyone, men and women, how to do gender analysis. It shouldn't matter what your biological makeup is or who you are. You need to be trained in gender research. People think of gender research. Usually as something you can just pick up along the way, and suddenly you're an expert in it, but it's really complicated and difficult. And you wouldn't want to think that science is going to change Willy nilly simply by virtue of the fact that you have a female in the lab. This, this really is an essential and essentialist point of view, it really had it's identity politics. I just don't think it's a fruitful way of moving along. Now, having said that, I could say also that when women have come into disciplines, those disciplines have changed. Because I think it's because of the sorts of things. Karen is talking about that a lot has been left out of science. A lot of human qualities have been led, left out of philosophy and human concerns have been left out of science. So if you take no not science, but my field history, we see that history used to be extremely male dominated. It was about Kings. It was about wars. It was about diplomats. I remember a poignant moment when I was in graduate school. And I finally turned to my friend while we were in the showers after a swim or something. And I said, it's history really about war. I mean, what am I doing here? And this was just the moment. This was the late seventies. This was just the moment when the entire discipline of history was about to explode. And what happened is that we invented the field of social history was invented out of the 1960s. So it wasn't women who changed this all, but it was a moment in the culture when class and other issues became strong issues. The social movement of the 1960s in the United States brought in something called social history, looking at history from the bottom up, okay. King Louis, the 14th is ruling in France, but what are the peasants doing? I don't know if you've seen the wonderful film called the return of Martin guerre, but there's a great new social history of what is everybody else in the culture doing? This gave the entree to women to come up and suddenly it was an okay question. Say,

what are the women doing in a culture? So you could start unearthing women's thoughts, the philosophy.

Karen Green ([00:27:52](#)):

It was actually in some ways that social history was problematic, at least from the point of view of philosophy, because it assumed that you could deal with women as objects that women were out there amongst if you like those who were illiterate, it didn't recognize that actually women have been there as subjects at already putting a different point of view, understanding the circumstances of their, of, of society in a different way. And so in fact, that movement, as you say, I mean, I think it was very beneficial within history because history is now a discipline where a women can study women as well as, as men. And in fact, they really are integrated and you can see that in terms of what's taught. And even the fact that in universities, in history departments, there are a lot of women teaching history in philosophy. We never had that movement because there wasn't assumption. And unfortunately it was an assumption that was even shared by the feminists. Partly maybe because of Simone de Beauvoir saying that, you know, a woman is either a lot of feminists really took on this notion that women are had been objectified. And that actually provided a big a problem. I think for women in philosophy, in that our understanding of the history of the discipline is one of women only being objectified. Now, certainly I wouldn't want to say that women haven't been objectified by men because they obviously have been, but it rather, it stopped us from looking for the female subjects who are already there and who interestingly, already see the world in a rather different ways. So, one of the people that you'd talk about is Margaret Kevin dish, who was an early scientist and the metaphors that she used the way in which she thought of nature as active. It was very, very different from the way in which men at the same time were thinking about these subjects. So there are these fascinating other voices, which are slowly being discovered, but really haven't been yet integrated. I think.

Natasha Mitchell ([00:30:08](#)):

Let's consider how science attempts to construct facts or, or truths about the world. And, and you were talking about the lenses through which we look being important. Nature said there are not facts. There are only interpretations. I mean, he really put a cat amongst the pigeons. Didn't even really say that.

Simon Blackburn ([00:30:29](#)):

Yes, absolutely. Yeah. I mean, each has coming at the end of I think a romantic history. I mean the romantic with a capital R where there was a huge dispute between what some thinkers, I mean, had there in Germany was probably the first, but then you know, came to the English speaking world through coverage and Wordsworth. There's this dispute between the mirror and the lamp and the two metaphors for understanding knowledge. One is that the mind is the mirror of nature. All you have to do is be receptive. If you, if you put yourself in the right position, you open your eyes, you know, and you see, so it's rather like you know, I'm going to see whether there's butter in the fridge. You don't have to do very much except opening the fridge door and either there's butter there or there isn't, and that's a, that's one model of gaining understanding, or at least gaining knowledge about nature. The other, the other metaphor is that of a lamp. So it's the mirror and the lamp, that's a title of a famous book about all this where the lamp does its own illuminating. It does something very much more active. It presents the light in which things are seen and this active metaphor for the, for the mind and the understanding line, the cognitive mind was I suppose, largely due to count of course, but it was socialized by people. I heard that. They said, well, actually our language, our culture, all those things affect the quality of the light. They affect the way we're going to think about things. And that's a message which was iterated and

reiterated throughout the 19th century. It's had a an outing and Hagle and it came to Vichtenstein and the especially the later pick constrained in the, in the 20th century. So it's been a huge issue in philosophy. And I think we still, in a sense live with the two metaphors of the receptive mind and the creative mind, the scientists, when you talked about the science was I think they're very apt to see themselves in the light of receptive because after all, yet they had to go and do the darned experiments. They have to go and look, and, you know, the, the idea of looking already suggest, you know, the stuff's there, you just have to put yourself in a place and you'll see it. So they, they want to see themselves much more receptive to the facts. The historians and sociologists in the science wars came along and said, oh, no, but look, there was all kinds of issues of gender issues, cultures use of language determining the way people are determining literally what people saw when they went and looked and then to the scientists that was very threatening because that seemed to undermine their objectivity. In fact, I don't think it should have been, I think the science was....

Natasha Mitchell ([00:33:14](#)):

And it still is threatening. I mean, I think, I think I've still get into debates with scientists. They absolutely fervently strong about the scientific methodology being a neutral dispassionate.

Simon Blackburn ([00:33:30](#)):

Yes, absolutely. They do feel threatened if I could just finish last sentence. I mean, I don't think there's any need to be threatened. You can quite easily and take a lots more credit for having a lamps than just being a mirror.

Natasha Mitchell ([00:33:46](#)):

All this is, I mean, led you to write a book called truth, a guide for the perplexed, but I am perplexed. Why are we so perplexed fudge truth?

Simon Blackburn ([00:33:56](#)):

Well, I think partly because you got these two rather conflicting goals, we want on the one hand to do justice to the creative categorizing language, using car of the mind the lamp. But then we also want to see ourselves as getting things, right. You know, we don't write about the distance to the sun or about the size of the charge on the electron or whatever else scientists have managed to, to discover. And it is discovery. It's not invention or creation. So you've got to keep those two metaphors together somehow. And it is very, very different.

Natasha Mitchell ([00:34:30](#)):

You, you say something like this in your book, which is quite provocative, you know, that there may be rhetoric about socially, socially constructed nature of sites, but there are no specifically Hindu or towers Taoists designs for mobile phones. There are no satellites based on feminist principles of quantum theory, even that great public skeptic. You say about the value of science prince Charles never flies a helicopter burning homeopathically diluted petrol.

Simon Blackburn ([00:35:02](#)):

I rest my case.

Karen Green ([00:35:04](#)):

I think we should go back to the question that Londa was pointing out the politics of science. And just before this, we had a session on automated on, on moral robots on this project to try and create a, a robot that has, that is an autonomous agent that you can use in war. Now, why are we spending vast amounts of money on war? I mean, there's so much of the money that goes into is coming from the military machine. When, if we were spending more money on humans on trying to solve the social problems of humans, of thinking about the nature of politics and how we create a global order, whereby anybody anywhere is able to live well, we might not need to have nuclear weapons and robots.

Natasha Mitchell ([00:36:12](#)):

Although some people would cast that as a woman's thing to say, wouldn't they. Well if there were more women involved in politics that these things would be change and that's contentious, isn't it.

Karen Green ([00:36:26](#)):

It is contentious. And we wouldn't.

Londa Schiebinger ([00:36:27](#)):

But we haven't tried it yet either. Let's do the experiment, the social experiment.

Simon Blackburn ([00:36:34](#)):

We have one called Mrs Thatcher in Britain.

Natasha Mitchell ([00:36:35](#)):

I want to pull some examples out of history because Londa, you...

Londa Schiebinger ([00:36:42](#)):

Could, I, could I just, alright in, just want to get to some examples. Yes, that would be fine. So we've talked about politics, we've talked about the receptive mind and the mirroring. But we haven't talked about institutions because knowledge is really mediated by institutions. Universities are very important institutions and women were not part of these institutions from the time that they were founded in the 12th century until the end of the 19th century. And then a few women were allowed to be students and then slowly but surely women could become professors, but women didn't really become professors in, in large numbers until the 1970s. So women have been shaping these institutions only for this much of the history. Now this is important because we are shaped by our disciplines. I think Fuko was very wise in showing how people are disciplined by their disciplines, always. And the reason, one of the reasons that scientists don't like to sit back and reflect upon what they do is because this is not part of their training. I, as a historian of science have tried to find ways to get some, some history into the science curriculum, some history, some philosophy, sociology to have them become reflective about this process, that they are part of creating nature, creating the world. And it's almost impossible to do because, you know, you couldn't sacrifice any chemistry and, you know, you wouldn't want to not do the bit of physics and yes, that's true, but you also need this broad view. So I think that we are in a very historic moment now, as universities are becoming interdisciplinary, we're really changing the basis of the universities. Universities are pretty much 19th century German institutions. And when we talk about conch and Nicha and some of the wonderful German intellectuals, they had a very, very poor view of women. And that was kind to say it that way. So we really need to rethink our institutions and what should be done to make them more agile and more ready to train people for the 21st century.

Natasha Mitchell ([00:39:06](#)):

Simon. Did you want to pick up on that?

Simon Blackburn ([00:39:08](#)):

Yeah. I've got a nice anecdote about science. If you don't mind, I'll tell it this true, true story. My daughter was at a very good school in Oxford, one of the best girls schools in the country. And she came home one day at about the age of 15 or so. So though that I've, I've had it with science, I'm not doing any more science, I'd done science until I was in Cambridge, changed the philosophy. So I was very disappointed at this and I said, oh, I'm sorry, dad, what's wrong. And she said, I just don't get it. And I said, well, what didn't you get? It turned out. They'd been looking at the pendulum which is of course a very interesting object. And, and they'd done, they'd been up flashback to physics class at school, and they'd been, they'd been given an equation to solve the equation, was to show the velocity of a pendulum at the bottom of its swing, by thinking of the equation between the potential energy that's got at the top and the kinetic energy stuff at the bottom. And I said, well, what didn't you understand? And she said, I didn't understand what this thing energy is. I didn't see it's got any energy at the top of the six swing. It's just sitting there. And I'm told, has got a lot at the bottom of the swing or, you know, I don't just don't get it. And I said, well, what did you do? And she said, I asked the teacher and they said, okay, good. And what did the teacher say? She said, get off the, get on and solve the equations. And that was it. And my daughter left science. Now I've actually been reading about the history. Yeah. I'd been reading about the history and the philosophy underlying, well, first of all, Galileo, and then Holly begins and then Newton alive. And it's the concept of energy. The kids were being given. Didn't arrive in that form until after thermodynamics. It was the middle of the 19th century two and a half centuries after Galileo actually first laid down the equations, which govern the isochronic swing of the pendulum. So there would be given a completely on historical fait accompli either you get it or you don't. And it took 250 years for people to thrash out that concept. I mean, it's such a crime against education and the wonder people don't do science. If it's taught absolutely absent, any historical context or philosophical context.

Natasha Mitchell ([00:41:21](#)):

To put some, to come from energy, let's go from energy to breasts. And the reason I say is because this is another great story about the historical context of something that we take to be just scientific knowledge now, where did, how did mammals come to be called mammals Londa?

Londa Schiebinger ([00:41:47](#)):

Well, there's a story. Interesting. So I don't know if any of you have thought about why you're called mammals. I was one day I had just had my first child and I was in a library and I had escaped from the home the way it was still nursing the child. And so if you're nursing, you've got to, you know, do something about this milk eventually. So I, but I was sitting there reading boot fall. I love to read 18th century naturalist and he was calling me a quadrat pet. And I kept going now, look, if I'm a quadriplegic, then what is my problem today? Really? I'm not a quarter pet. So I was thinking to myself, so when exactly were mammals called mammals, I mean, this is what we historians do. You know, you see something that doesn't fit and then you have to go figure it out. So I realized eventually that this was quite a story that mammals became the class of animals. That includes us humans and lots of other animals, animals was only called mammals in the 18th century. Now for 2000 years, we've been called quadropeds. And in the 18th century, Carla Neha started putting humans into nature. Before this time, humans had always been thought to be kind of apart from nature's slightly under the angels, but not

really of the net of natural stuff. So looking at what is humans place in nature, Linnaeus starts looking at classification systems and he's revising them. He's the great taxonomist of the 18th century, but so why are we called mammals? Why did he coined this term? Many of the terms in his system of classification, he takes from other places, but he coined a fully new term to call us mammals. This was very important to him. So as a class of, of, of mammals as a class of animals, we all have characteristics in common. And what he was doing was naming animals after important characteristics that they have. But mammals have at least eight, perhaps 15 unique characteristics, common to all of us. We all like hair. We all have a particular shape toward jaw bone and we have a particular ear mechanism, that sort of thing. So why did Linnaeus focus in on the breasts, mammals mean meaning literally the breasted ones. And this is where I like to talk about the politics and the cultural pressures that are going on at the time. So Linnaeus had a whole bunch of options and he chose one. It makes a very interesting historical case. Why does he choose to call us mammals? And you have to think, then it really has to do with the place of women in 18th century society, 18th century societies. This was the birth of the great democracies. You were a few years after he coined this term. Mammalia, you're going to have the American revolution, the French revolution, the Haitian revolution, great democracies are formed. And the question is, what is women's place in this democracy?

Londa Schiebinger ([00:45:02](#)):

If all men are equal by nature, and this was that inclusive, man, if all humans are equal by nature, but these new democracies are not going to give rights to women. How do you justify that? And this justification of leaving women without the vote in these great new democracies was the justification came to natural law. If you're not, if all men are equal by nature, then for some reason, some of those people are not equal. And you see a lot of study of sexual differences in the 18th century, the appearance of the first female skeleton in European anatomy was to show that women are quite different from men and then not equal. So mammalia the breasted one had to do. Linnaeus wanted to show that women's place was not in the public sphere. Having the vote, being scientists, being in the professions, this was women were, were excluded from all of these things along with university in this period to justify that exclusion Linnaeus had to make it seem very natural that women were the, in the home as the breasted one, their natural role is to bear children and to suckle them. And so by building this into his classification system, he made, he reinforced the notion that women's proper place in the new new democracies was in the home. That could be said that this is your interpretation of what he did. But in fact, he was, he was outspoken though, wasn't he at the time phenomena of witnessing? So women would absolutely outsource the breastfeeding of their children to other women. He was, he was quite vocal about that. Yes. You know, when you're a historian, you need a document. You need evidence. We don't just make up our arguments and Linnaeus wrote a pamphlet against wet nursing. What nursing was huge in the 18th century, women had solved the work-life balance. Women has aristocratic women had, and also it was a brutal system. The wet nursing, many kids died.

Karen Green ([00:47:11](#)):

I don't disagree with you, but I think there is another element of this history that we haven't really come to terms with. And that is the fact that actually in the 17th century, you had had an incredible fluorescence of intellectual women. You had the growth of salon. You had Madeleine scurry, who I talked about, mentioned a little bit before, had written one of the most influential big books or a number of big, big, long novels are two men, one called data man, and another called clearly. And they were translated into English. They were incredibly influential. They were about actually sexual difference. I mean, she was somebody who was kind of arguing against women, trying to be then. And she developed this idea of a sociable femininity, a conversable society, a an elegant. And actually she

was also a monarchist, a quarterly kind of existence in which men were civilized and polite and knew how to have intelligent discussions with, with women. At that time. It was an open question, not the academies, the scientific academies, which were being set up would accept women and Melinda Scuderi herself. And a number of other French women were in fact elected to some of the attacks to one of the Italian academies of science as members, although they didn't actually go. So it was a kind of there was an aristocratic ideology of women equality within a hierarchical society. And it's fascinating the way in which the men and I think Rousseau is absolutely central to this quite spoken about witnessing too. He was very Bergen about witnessing. He took some of the ideas that scooter he had developed about the possibility of a sort of loving friendship. And he galitary fun, loving friendship based on virtue between the sexes, which was one of the ideas that was going to be developed in order to get from, if you like marriage based on property to companionate marriage, as we now have it. So that was an idea that scooter he was developing, but Russo took it. And rather than I'm thinking of it in terms of the whole society, if you like being a hierarchical society, in which the king has the duty to look after the people and the people actually should be civilized and friendly equals and not bother very much about politics, because that was the way Scuderi thought Russo comes along and says, yes, the women should be the ones who care for everybody who are the loving society. And the men will be the rational rulers. They'll play the place of the sovereign. And we get this distinction between the public and the private, which is the way in which democracy became understood rather than what was potential in the 18th century. That is a democracy in which men and women really were equal. And I think this is one of the reasons why people like can't, you know, can't talk about the rational will and the fact that we are all rational agents who ought to be free to discuss and discover the rational moral truth. And then he says, but of course, I don't mean women.

Londa Schiebinger (00:51:05):

I know you can be free to discuss the moral truth. As long as someone else is doing the housework, right.

Natasha Mitchell (00:51:11):

Simon, you were alluding to before as to whether or not having women in the sciences has made a tangible difference to the way in which they think about problems. And let's come to that before we come to you for some questions and discussion. Do you think being a male affects your way of knowing I'm interested in this concept of whether there are a female ways of knowing and male ways of knowing and where there's some, the female way of knowing what exactly. So I'm interested in, in, in how you think about this in relation to your own work.

Simon Blackburn (00:51:45):

Some of my best friends are women, I mean.

Natasha Mitchell (00:51:51):

You all of you are going to be asked this.

Simon Blackburn (00:51:54):

Well, I'm really interested in language in the philosophy of language. That's been pretty central to my life. And I do think there's a certainly a rationalist paradigm, which I think deserves to give way this is the idea that words and language express concepts, concepts are related by logical laws. It's the business of the philosopher language or the logistician to lay down what those laws are. And everything has a kind

of stainless steel sort of engineering kind of look to it. It's a solid structure. And there it is. And that's your language and the counterculture, which I think is very much more attractive to most women is that words are much more fluid. And they've got to kind of fecundity about them. A word can stand for an idea. And an idea is something which has many corridors leading off it. So it's much less cut and dry. Everything is more flexible and more in a sense poetic in a good sense, I think. And I think that's different way of looking at language is very important and, and what's suppressed for much of the 20th century. The paradigm was logic and science on the sort of physicist view of language. If you like in the end, though, we still need to use language to diff to define things we do again, you've got this this mirror in the lamp story. That's to some extent, our words are just very good at, you know, picking out the right kind of thing. If I ask you to hand me a glass, I don't expect you to hand me something, you know, a scarf or something take something salient. So of course, you know, they're, they're there to some extent, they're there to reflect the carving of the joints that we do on nature, the, the way in which recovered up. But to another extent they, as invitations to let your thoughts move in a certain direction and the invitations to think sometimes creatively, sometimes in very hackneyed ways. I think when nature said that the no facts only interpretations, he also said the truth was just a kind of fossilized metaphor. And I think what he had in mind is that we're very apt to take words as sort of lumps as static when in fact, in origin and in their potential they're dynamic and creative and should be thought of like that. And I think that's, that's been this to some extent, a male, female difference. I think the men were good at logic and concepts of engineering and the women were better at the more more dynamic metaphorical side of, of thinking about language.

Natasha Mitchell ([00:54:38](#)):

Interesting, interesting. Londa, what about you, do you think there are ways of knowing that we can attach to our gender?

Londa Schiebinger ([00:54:46](#)):

The, this whole notion of women's ways of knowing was very popular in the 1980s and took us down a path of difference. Feminism that I think was that ultimately is not very helpful because it reinforces the stereotypes. It reinforces the notion that men are reasonable and that women are caring or whichever of these stereotypes you wish to talk about. And I think what we need to do is put the whole person back into knowledge. I think we need to get the whole panoply of human qualities back into the way we think. And I think that we need to train each student to master all of these ways of thinking. So my big idea is to promote gendered innovations. We have a big project on this at Stanford now, and around October 15th, we'll be launching a huge website where we give I hope at least 20. I have to see my, how my research staff does, you know, 20 or 40 examples of how, if you look at gender in a system, you get much better knowledge. So what are some examples here? One of my favorite examples, while I could use the example of Aboriginal bones in Australian museums, what did I use? That one? This is an example I, I use quite often seems apropos at the moment. So if you look at Aboriginal remains in Australian museums when anthropologists archeologists bring in remains, the remains are sexed. Okay. And if you have no DNA remaining, you just have to sex it. You don't have anything you can kind of rely on. So it's fine. People take the bones, they throw them in boxes. You know, they sex them. They throw them into boxes. But when someone looked at all of the remains in all of the museums in Australia, 90% of the bones were sex, male. Wow. What's going on here? So what I would like to teach students is how to question gendered assumptions. So that those bones, when thrown in boxes, don't get sex male, if they're not male necessarily. So what archeologists do when they find this is big and human origins research. When they find bones, you know, Lucy, the, one of our oldest you know humanoids anyway that we have she was sexed female because she's small and this is what happens all the time. Women

are small and men are big. Okay. That sounds really silly, but that's actually a working assumption and that's how people sex these things. So if you then tell someone, okay, now 90% of your population of Aboriginal remains you have here is male. Then they have to go back and look at their gender assumptions. They have to question that assumption. Why do I think that big things are male and small things are female. And so we can lay out lots and lots of examples like this.

Londa Schiebinger ([00:57:55](#)):

I think it's a good way to show people why it matters. We also have, I'll just give one another quick example. I'm sure that a lot of you get knee implants. And I think, I think the knee implants have been designed for male bodies. So females have been getting knee implants and they haven't been fitting as well. So we now have what's called the gendered knee. This is how it's being sold, you know, the gendered knee. So that sounds good. But what it does is to look at the 19 or so unique characteristics of female knees and to prepare a knee for female needs. Now this is on the female side of life. You can take examples from male sides of life. Many males have osteoporosis, but because osteoporosis is defined as a female disease, they're not screened for it. This is very dangerous because when men have pelvis breaks, a third of you males and the audience will have pelvis breaks. If you live long enough, men die more often from pelvis breaks than women. So this is very serious. So we really have to look at our notions about gender, and we need to start using gender as a resource for making better human knowledge.

Natasha Mitchell ([00:59:17](#)):

Karen, you think that there are some pitfalls in, in assuming women's way of knowing implies that they are more holistic or more contextual or more empathetic.

Karen Green ([00:59:28](#)):

So this is part of the construction, isn't the agenda. So that I don't, it's very hard to say, what would, do I think it's a woman or not? I I'm, I think, as an individual. And I think, I do think that there's some very obvious differences between the sexes. You know, men have penises, women have vaginas, women can give birth to babies and these make huge differences in terms of the way in which we react to each other. What's important to us and how really the society needs to be organized if the women are going to have the authority that men have. So I'm not sure whether, you know, if women are in positions of say of science doing science, I'm almost more of an objectivist, I think, than, than Simon. Because I think that if you just say something like well, what's true is what happens to dominate, which I take it to be nature's view then history seems to show that men dominate. So what men's, they must be true that doesn't see. So for me, I think that, that, so, but I think that actually historically for women, the idea of objectivity the idea that even if in virtually every society that we know and not perhaps every society, but in virtually every society, we know the women have been treated as inferior that doesn't show that women really are inferior that you can actually not just take the evidence. But see that fundamentally, they just can't be this reason. You know, we are just two sexes of one species. And the point of view of one sex must be just as good in some sense, as the point of view, the others, other sex, you see that, even though it doesn't actually seem to have been carried out in very many societies. And I, I actually think that if that one almost to start from the top down and say, okay, if we want to have a society in which women have the same authority as men, that should be instituted in the political organization, guaranteed equal representation for both sexes. And then we can start looking at the other institutions because it is really the democracy, the government, which is the fundamental political institution. And

maybe we'll find, you know, that there is a difference. And maybe there isn't, but we don't really know because we haven't done the experiment, as you said.

Simon Blackburn ([01:02:24](#)):

I just want to say, I, I, by no means wanted to associate myself with the idea that might is right or that, because men say it's true, it must be true. I none. And I know, I mean, nature himself actually, although he gets a bad rap these days he thought one of the more remarkable things about human beings was the will to truth. I mean, nature was probably the first philosopher to write in a seriously post Darwinian atmosphere. And you know, and yet he knew that we have ideals principles, goals, especially ones connected with truth, which as it were stand out against and are capable of standing against peer pragmatism. It's not always, it's not always, No no.

Karen Green ([01:03:07](#)):

Because nature also says of Socrates and the Christians and those who believe in the truth of equality, that these are feminine followers of the herd, the meek and the miserable. And he is not in favor of any of those tendencies within our society, which have in fact enabled women and the meek and those who are not capable of imposing their point of view by force to actually have a say and be looked after. So I don't agree with you that when that, well, Foco would say the real truth in, in, in nature is just the will to power and you think it's wrong, but I think there's a lot in nature that actually...

Simon Blackburn ([01:03:53](#)):

Well of course, of course. Yeah. It's not really the will to power even after all it's the will to self-expression. I mean, that's, I mean, you know, nature disliked a victim culture. I think he, he thought that people should pull up their socks and go out and do stuff. Can I just say that one? I think the most important thing about women in science, it was just very briefly touched upon, but then we kind of lost it and that is which science are you going to fund, which is going to get done. I don't know what it's like in Australia or America, but I'll tell you about England or Britain rather in Britain, they're seven research councils. That's those are the councils who are responsible for distributing government support for education and for research. They're things like the arts and humanities research council, the social science research council, and so on there's seven of them. Their joint budget is equivalent to the research budget of the ministry of defense. Now, all they ever managed to do is produce Bulletproof wheelbarrows and things. And yet their funding is as much as the funding of everything else that the country does. Culturally, if you added medical funding, it would look even worse. It'd be sort of 10 to one to everything else. That's human. And I think that's shocking. It's basically two fears. The ministry of defense is there because they're afraid of the other, we're afraid of invasion and stuff like that. Medicines there, because we're afraid of dying. How you live while you're living, it doesn't seem to matter to anybody.

Natasha Mitchell ([01:05:25](#)):

Well, I think we've established, I think we've established that we're, we're not afraid of questioning and questions and we'd love your participation. Now. We've got a good, solid little bit of time to get a discussion going. So please there is a microphone right in the middle, and we do ask that you use the microphones. I won't it just so we can all hear. And there's also a microphone up there and I can see you're queuing up already. So thank you, please, sir.

Audience member ([01:05:55](#)):

Thank you. Recently I heard a very senior federal government minister use the in her portfolio involve the application of science. Use the expression, consensus science. Now may have just been a reflection of the dreadful nature of political decision-making, but do you think there are inherent dangers in approaching science in such a way? Or are there some virtues in it?

Natasha Mitchell ([01:06:18](#)):

Maybe one, who'd like to take that up, consensus sides.

Simon Blackburn ([01:06:22](#)):

I'm not quite sure what the phrase is supposed to mean, but I mean...

Natasha Mitchell ([01:06:26](#)):

Do you want to give it some context, because it is a very specific term and movement.

Audience member ([01:06:32](#)):

Meaning that we, we arrive at scientific truth by general agreement. What everybody likes by a vote, if you like, rather than by what might actually be true.

Panel members ([01:06:43](#)):

That's a disaster. Total disaster.

Natasha Mitchell ([01:06:46](#)):

Well it comes from a movement called the consensus conference movement, which is about bringing people together to debate scientific issue, controversy and issues of risk. And then come up with a sort of set of policy advisories around, say nano tech or, or other such things, you know,

Karen Green ([01:07:02](#)):

Isn't it very difficult. I mean, there's that on the one hand, you know, you yourself would say, what is objective? It is what in the long run, those people who, who seriously look at the evidence, agree is the truth. And so in some sense, scientists based on a consensus, but there does need to be consensus amongst those people. Who've done the hard work and you can't yeah, you can't just do something medical on the basis of a consensus amongst people who know nothing about how the body works. No, no. And of course, as far as creativity and imagination and progress in science goes, it often depends entirely on the Maverick. Who's, you know, asked the question, everybody else thinks is stupid or pursues the avenue that nobody else will follow and so on. And you do have to get a consensus after that imagination. But yes, in fact, it does work that, that the experimental that you can test and the experimental method shows.

Simon Blackburn ([01:08:09](#)):

Yeah, science is the ultimate Darwinian jungle hypotheses are born into nature, red in tooth and claw, and then the other scientists try and pull them apart. And the ones that survive go forward as the truth.

Natasha Mitchell ([01:08:23](#)):

It's a nice metaphor. Do we have a question upstairs? Thanks.

Audience member ([01:08:28](#)):

Yeah hi. It strikes me that a lot of what we've been talking about today is that there, there are sort of two delineations. There's what we know. And there's the process of actually knowing. And I'd be interested in finding out whether the panelists thought there were any specific gaps in what we know and whether or not that's, because primarily there are certain classes of people in this case, women specifically that are not involved as much as they should be in the process, or whether it's more because the people that are involved in that process not adequately reflecting on the process in the manner that we're talking about today. Does that make sense?

Natasha Mitchell ([01:09:10](#)):

Good questions. Adelaide festival of ideas, audiences ask excellent questions. So who'd like to take that one up.

Londa Schiebinger ([01:09:16](#)):

Well, I would say we have huge gaps in our knowledge, and I think it has precisely to do with the process. And one, I think very good example is medical research, I assume here also, but in the United States, women suffer twice as much from adverse effects of medication because they have not, in fact been part of clinical trials. Now this is a simple process. This doesn't take rocket science or something. It's kind of like research 1 0 1. If you're setting up a population for study, it should be representative. This is kind of like, you know, it was really like first base here. So I think we, and it took, I should say that there was no self-correcting mechanism in science to correct that. Now one of the promises of enlightenment science is that lots of people have these hypothesis. They compete as you were suggesting. And then the good ones went out. And this means that if you do an experiment than the people in the next lab can repeat the experiment, they should get the same answer, but they correct you if you have something wrong. But in this case, there was no self-correcting mechanism in science. And in fact the federal government asks our national institutes of health in 1986 to please include women. And that had no impact. So we, we actually passed a federal law in 1993 in order to get the science right? So it often takes a lot to fill these gaps, but it is a gap because we don't understand the mech basic mechanism of drugs in female bodies.

Natasha Mitchell ([01:11:00](#)):

It's still the case that a lot of animal models in scientific research male animal models and, and quite explicitly because menstruation or the reproductive cycle of whatever was considered a bit of an mess in terms of a variable.

Londa Schiebinger ([01:11:15](#)):

It just makes it more expensive and it makes it more difficult. But I think if we can send people to the moon, we can certainly look at female animals. I mean, there, there are a lot of difficulty once. So lab animals are raised for this purpose and they just didn't, they don't have a supply of the female animals. I mean, it's as simple as that. You'd have to get people, people to make the female animals. And then most of the medical testing is not done on old animals because, you know, they want to get the animals in out. You pay for the animal, you kill the animal, you do the experiment and they don't wait. No one is waiting for the animal to age. So I think age is another issue that we don't have good medical experiments.

Simon Blackburn ([01:12:01](#)):

Yes. I'm not sure how it plays out on the, the gender thing. But I once heard that 95% of results in psychology journals produced by from samples of the population, which consists exclusively of youngish. People who live within five miles of a major research university.

Londa Schiebinger ([01:12:26](#)):

Well, even worse than that, Stanford is famous for its social psychology. And I was on a PhD exam. They use their own students. It's not only that it's like your own students. This cannot possibly be represented to us.

Natasha Mitchell ([01:12:38](#)):

And I think it was discussed yesterday that many medications or psychotropic drugs, medications were tested on prisoners for a long time. Not general populations will. So, and forcibly often these weren't subjects by choice. Have we got another question? I think there was another one here. Thank you.

Audience member ([01:12:55](#)):

Hi. thank you all for your stirring debate. My name is Carrie baker and I'm here with a colleague of mine, Hillary common. We both are doing our PhDs in inorganic chemistry at the department of chemistry at Adelaide here. And earlier this year, the first female academic in chemistry was appointed ever. And that might be.

Londa Schiebinger ([01:13:18](#)):

What year is it right now?

Audience member ([01:13:20](#)):

That's right. And but she's, she's, I can see that she's going to be quite successful. And also Tanya Monroe in the department of physics has been extremely successful. Anyone familiar with her work she's getting the most funding, I think out of all of the professors in both the department of chemistry and physics. And my question to you is we're at an extremely important crossroads here where women now do have the opportunity and they do have the encouragement on the most part. And they do have the accessibility to study and to become a professor and have an impact and be an academic. But there's still this problem where we've got over half the people in our undergraduate and undergraduate contingent in the chemistry department are women over half. And there's still, no one only one person still has been appointed as, as an academic. And this is because of all of my colleagues that are women. They cannot see a path as an academic and while there as a family, there is no, there is, you cannot precon pretty much can't do it. And I know from, from Tanya, they've heard on the grapevine. The only reason that she's managing is because her partner takes on a role at home, much more with her children. And so my Christian children, I think three or four children, that's right, she's got a future in yet. And I think the question is we need to really be looking at the construct of society to change that and to get people Packers at the moment, you can't, you have to publish papers in advance and release them during your you know, nursing period as to not fall out of academic, you know position.

Natasha Mitchell ([01:15:01](#)):

And so if, if we can change society, my second question is if we can change this, this construct and get more women into senior academic positions what do you think the direction of research might take given that there's been extremely influential and different ways of looking science, such as Rachel

Carson, who, when she released silent spring, which had a great impact on the world. And I guess took a good humanitarian look at science and also Susan Greenfield in London who is establishing the RA has helped to establish their own institutes is soon to open here in Adelaide and has taken on a much of a communication role and has been a great model and an advocate for women in science.

Natasha Mitchell ([01:15:42](#)):

Okay. Good series of questions. And thank you for that. And thanks for your sharing your own experience too. And it was interesting reflecting on Larry Summers comments, some of you might've heard he was the president of Harvard until recently. Now he's a senior advisor in the Obama administration. I think I mean he made the comment that that one of the reasons he thinks that women don't succeed in science is because they can't do 80 hour weeks. So I mean, who wants to pick that up?

Londa Schiebinger ([01:16:08](#)):

Me. First of all, I don't think Larry Summers works 80 hours a week. Although I have seen him nodding off in those Obama meetings now, no one worked 60, 80 hours a week all the time, right? So Stanford professors work about 60 hours a week. That's a lot most professors across the U S work about 55 hours a week now coming to this issue of home and, and work about the balancing act. You know, it goes way back to the 18th century and it's really built into society. So you're absolutely right that we need social change. So there, there have been a lot of studies of how to do that. Well, first of all, let's look at the problem. So our Berkeley colleagues have a study out that shows if women have a baby five years after their PhD, women are 38% less likely to get tenure than the males who have babies because men in fact are rewarded for being family, men, but women are not rewarded. And they don't have the backup to be family women. I mean, it was always amazing to me when we had little children, my husband would bounce them on his knee in public, and this got accolades, right? Oh, look, he's bouncing the cute baby. And I mean, if I'm bouncing the baby, it's like, oh, is she not serious about her work? You know, this sort of thing. So number one, there is a Swedish study that shows that women have to publish 2.5 times more articles to get the same numbers of grants and positions as men do. Now that was specific to Sweden. But I think it, it happens a lot where there's comparatively good equity situation happening. So let me tell you some of the things we're doing in the United States that are attempting to help women in this balancing act. First of all, there's delaying the tenure clock and that is you have this, as you were mentioning, you have this pressure point at the time that you're supposed to be publishing for tenure, but also it is the time that you are reproductive as a human being. And so the idea is that both the male and the female can stop their clock for a year to give them extra time for taking care of children and then also doing their academic work. There are, you know, so American universities also support daycare so that you can at least outsource some of this work. And there are often daycare centers right on campus. This is very, very helpful because you can drop off the child or your partner can drop off the child. And they're right there, it's easy access, that sort of thing. Now people have focused a lot on the child and having children, but they haven't focused so much on the housework that academics do. My Institute just did a study of dual career academic couples. So this is where both of the people in the relationship are professors. And we were talking about how hiring practices at universities need to change, and in fact are changing, but we also collected data on housework. And we find, we find that even in these academic couples where both people are on tenure track or tenured, that was, we studied only the top universities in the U S and only permanent faculty. So you're getting a very rarefied group of people. We find that the women are doing twice as much housework than the men, even though they have the very same jobs. So our recommendation will be that universities actually in their benefits package offer a benefit for housework as well, offer up a package of benefits so that you can them in any way that you need to enhance your productivity. Our studies showed that people who outsource

their house cleaning their core housework actually are more productive. So I think that this is the way that we're going to have to go about, maybe in Australia, your government will do this sort of thing, but in the United States, our institutions do these sorts of things. So I think you need these kinds of policies. We all need these kinds of policies to pick up the burden, the work that has been placed on women's shoulders to take care of, to keep the home fires burns.

Natasha Mitchell ([01:20:37](#)):

Wondering, could we answer that question in Australia? Would our government do that sort of thing? A couple more. I think we've got a couple of minutes, oh Karen.

Karen Green ([01:20:48](#)):

However, so one of the things you said was that it's too hard to have children and have an academic career. I think that one shouldn't take that for you. I mean, I have children, Londa has children and you can have children and have an academic career. And in the end, you know, even if, okay, it's hard work, anything that's worthwhile is hard work and a child, you know, maybe it takes a year or two out of your career, but slows you down a bit. But we are very long lived creatures and there's enough time to have an academic career and have children.

Simon Blackburn ([01:21:33](#)):

I'm sure there is. And one institutional problem. I mean, none dimension the tenure clock in the United States. I mean, you got to remember that after tenure, a lot of men go to sleep. In fact, there's a, there's a wonderful metaphor for 10 years. Some of you may know there's a fish, I forget its name. There's a little fish that its life sucks cycle is it sets off, it goes buzzing about, and eventually it mates and it's, if it's female, it gets eggs and then it finds a hole and it goes into this hole and it eats its own brain that's that's that's so, so that's, it's, that's the only source of protein and it doesn't lead eyes on things after that. Cause it's just a, it's just niggling, pouch. And and it's known as the ten-year fish.

Panel members ([01:22:21](#)):

Housework for all academics. To do the housework for the younger women.

Natasha Mitchell ([01:22:34](#)):

We have more questions. Any more questions? Yes. Thanks.

Audience member ([01:22:39](#)):

Hi. thank you. I have been enjoying everything that you've said so much, I'm beside myself. I think that I've understood correctly that everyone on the panel has aggrieved. That science is socially, culturally, historically, and temporally constructed, and that the scientific so-called scientific truth we've got access to are very much matter of what questions we're prepared to ask and prepared to fund. And given that I'm left with the dilemma of sources of legitimacy, and I wanted to ask each of you, where do you look for a source of legitimacy when you're trying to make a decision about something that you should do? And the reason why I'm asking these questions is because I'm an engineer and I work in developing countries and I've seen the most amazing technologies fail because they're not socially culturally or temporally appropriate. And I would actually even disagree with Simon's earliest statement that the it's better to construct a bridge out of steel than cast iron, because that depends on the particular community in the time and the place that you're in. And it might've been much better to build it out of

bamboo. So yeah. Would each of you mind telling me, where do you look for legitimacy given the contextual and contingent nature of everything?

Simon Blackburn ([01:24:11](#)):

I plead guilty to the point about the bridge you're quite right. Touché I think the two different kinds of legitimacy we might want to distinguish. One is the legitimate legitimacy of the science in the sense of the results we've been using the example of the sun being 93 million miles away. And the source of legitimacy, there was simply the epistemology, the amazing achievement of using things like parallax and very, very delicate optical measurements to get it right. And if somebody says, well, why is that judgment legitimate? You just have to take them to what was necessary to make her an estimate of the distance of the sun. And that's the source of legitimate legitimacy when it comes to policy. Of course, you've got a whole new ballgame because policy will require judgements about welfare, about amelioration, about distribution of resources, about impact on the status quo. And they've got a whole slew of sometimes moral questions, questions, distribution, ethical questions, political questions, and their legitimacy is much, much harder to find because there's no established, agreed upon method for answering those questions. People disagree about everything, including measures of welfare. You know, what's the good life is ours, the good life, or is a romantic Savage, the good life. So there, you've got, you know, a very different set of problems and legitimacy is very contested. And I think rightly contested and eventually the decisions have to be in a sense democratic decisions, but one hopes wise ones for all that, which goes back to the necessity of educating the democracy, educating the people who are making these decisions, which we've been talking about.

Natasha Mitchell ([01:25:55](#)):

Do we have one more final question, perhaps? Yes. Oh, you want more comments on that? There were three questions. I know. So does anyone want to pick up on any of the others?

Karen Green ([01:26:10](#)):

The source of legitimacy and I mean, at the end, I think us human beings and part of the problem with going elsewhere. I mean, this, this is a particular issue of somehow because we have the wealth and the educational institutions, we think that our solution's legitimate and really, you know, you need to be trying to give other particularly the people who are not doing well in current circumstances who don't have the institutions that are recognized, which give them legitimacy, or we need to develop those institutes in the end, the Judah mercy does come from us. We, we w and the conversation that we have all we have is our reason and our, our, our attempts at getting it right. And that's the ultimate source of legitimacy. But it isn't very well shared around, and it's going to take a lot of, you know, political change, I think, to actually have equal legitimacy in terms of being able to engage in this discussion about what's worth doing how we should do it.

Londa Schiebinger ([01:27:30](#)):

Can I, can I just say something, I think that you're, you're really halfway there by asking the question to being legitimate, because you're, you're asking those larger questions and we humans have our best approximation of truth, just because we can't hold on to absolute truth. We still have our best approximation, and this is where the interdisciplinarity comes in. So great. An engineer wants to know how to work in another culture. So bring in the anthropologists, bring in the historians, bringing in the gender experts because a person from that, yes, absolutely bring in the people from the culture. In fact, there's a woman at Berkeley Louise Fortman, who has this notion of participatory science, and all of

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their projects are with the people in the country who have, who do that work themselves and getting that perspective. And so I, I really think that we can do this.

Natasha Mitchell ([01:28:32](#)):

And we'll just have one final question. Thank you.

Audience member ([01:28:35](#)):

The sex wise sex wise of knowing come from the malleus, [inaudible] the hamburger questions and torture, which is in the middle ages. Now, the mine targets of them was which at the ancient, the midwives who carried the ancient contraceptive knowledge and like, and confiscated their probably like Mike randos confiscating the drug property with no appeal. I suggest you read the malleus matter of her car. I mean, you see the, the arguments put out by the Catholic church in 1487, about the witches.

Natasha Mitchell ([01:29:13](#)):

Wait, right? Okay we'll take that as a comment. Thank you. Thank you very much. And thank you. Thank you to our panels. Well yes let's give them a cheer. Karen Green, Simon Blackburn and Londa Schiebinger, this was a very rich conversation and you can have more of this. Karen's done all her presentations. Thank you for participating in the festival. Now you can actually relax, Simon Blackburn on again tomorrow at 3:00 PM on a panel, the place of work in a meaningful life with some other fantastic panelists, do check that one out and Londa Schiebinger, or is on another panel. We've been working very hard at 3:00 PM as well. Tomorrow's agony actually at 3:00 PM. I can't pick this three sessions. I want to go to you'll be on with Ray Gator and others on the role of shame across cultures. So please give them another hand, give yourselves a hand. Thank you.