

MOD. BEGINNINGS exhibition

JAMES HOPEWARD GOULD INTERVIEW TRANSCRIPT (01:45mins)

Hi, I'm James Hopeward. In my research, I focus on the big problems that we're facing, and the local solutions to those.

If we think about the modern world's energy system, we have to think about the different sectors, things like transport, things like heavy industry, mining, households, shops, factories and so on. All of these different sectors consume energy in different ways. So, some of them consume electricity, some of them consume gas, some of them consume coal, oil, liquid fuels. So, when we think about the energy system, we have to think about all of the different demands on the system. We have to think about conversion from one type of energy to another, if we burn a fuel, or if we harvest sunshine, or we harness the wind to generate electricity, or we grow crops to generate fuel, and we have to think about the transitions as different technologies emerge and different demands are placed on that system. Then we can see transitions from one type of energy to another type of energy. The way we transition between those types of energy, it's a complex adaptive system.

It can be a challenge to take a complex system and distill it down into something that is understandable. One of the things that I find very useful is cause and effect.

Fundamentally, there are parameters or events that cause other events, something can go up, causing something else to go down. And so, if we understand those simple relationships on a parameter-by-parameter basis, then we can gradually build up the complexity. So, when we zoom out, we see all of the mess of the system, but if we zoom in, we can actually see the individual causal relationships, and that brings great clarity

MELISSA NURSEY-BRAY GOULD INTERVIEW TRANSCRIPT (03:35mins)

I'm Melissa Nursey-Bray, and I'm a Professor in human geography in Adelaide University, in the School of Society and Culture. My research primarily looks at how communities get involved in environmental decision making. I'm working on a number of different projects at the moment. One of the biggest ones is looking at how we can incorporate indigenous knowledge into policy.

South Australia has one of the biggest deposits of copper in the world. As a critical mineral, it makes us very politically sexy, but it also means that, you know, there's a big pressure on us to exploit that resource. A lot of water is extracted for copper production, and we need copper for the energy transition, for all sorts of things, solar, you know, wind, etc, but you know the springs that that water is being taken from, extracted from, is having a negative effect on the ecology and the cultural values and knowledge around

those springs. There are a number of First Nation peoples, particularly the Arabana people, who are the people of the Kati Thanda (Lake Eyre) who are the cultural custodians of the mound springs that occur across the basin.

In South Australia the Friends of the Mound Springs, they work together with people like the Arabana Rangers and other groups to build monitoring of those springs and to try and work with the mining companies to try and develop ways of managing for that water and that biodiversity, but also the cultural knowledge, the knowledge that's very important to the Arabana and other First Nations peoples for how they have understood their country, how they use their country, how they access it, and how they care for it. And so, It's emblematic of a very pointed and sharp contest between, you know, culture and also need.

When you talk about Indigenous Knowledges, it's always a fractious issue. And you know, because over the last couple of centuries, indigenous knowledge has been, invaded and colonized and appropriated. To me, as a non-Indigenous person, one of the key elements about the idea of indigenous knowledge is that it's, the knowledge itself is amazing, but the perspective, if you like, they always talk about Indigenous ways of knowing and being and seeing. And I think that the idea of Country and the idea of caring for Country that's embedded in, you know, 60,000 years of that knowledge and all the different dimensions of it is the key element that we could all learn from without appropriating it. And then, you know, if you enter into partnerships with the First Nations. What a First Nations person will tell you is what it means is provision of jobs and employment. It means having a voice at the decision making table. It means being visible and being centered right from the get go, and that includes incorporating something like the idea of Country, or caring for Country, and resourcing it, so resourcing people who can build their knowledge of what's there, and then use that knowledge, but being actively involved themselves, not just handing it over.

In the context of the green transition, I think it's a very important element, because the other key idea, I think, is about justice and the fact that large proportions, and I mean large proportions of Australia's land now, which is being eyed up or desirable for the establishment of various forms of green energy are, in fact, Aboriginal lands.

A lot of the work that I do is about saying that communities, actually, might actually have a role to play, or, or a voice to offer that can contribute to policy and also to the knowledge bank that you need for the policy.

GRAHAM (GUS) NATHAN GOULD INTERVIEW TRANSCRIPT (01:48mins)

My name is Gus Nathan. I'm a Professor in Mechanical Engineering and also Director of the Institute for Sustainability, Energy and Resources at the University.

The world has committed to decarbonise, because obviously we're facing together the challenge of climate change. But challenge and opportunity are two sides of the same coin.

So, hydrogen is one of the important opportunities within this mix to help in society. The reason it's important is because it's a fuel, and fuels have got much more energy density. They can be stored. You can store a lot more in a smaller volume, and also they can be used directly to generate high temperature energy. When you burn it, you don't generate CO₂, because it doesn't contain any carbon. It won't do everything, but nothing will do everything.

Yeah, so one of the ways to make hydrogen is by splitting water. So water is H₂O so this can be done, but of course, it takes a lot of energy. The challenge is, it's relatively expensive. So one of the platforms we have at our University, a pilot scale rig is actually already built and is just starting to be tested at our Roseworthy campus. This is led by Professor Greg Metha, and Spark Hydrogen is the company. This uses photo catalysis, which uses the sunlight to directly split water. So we can expect, going forward, that'll become an increasingly viable part of the mix.

There's going to be lots of opportunities for the emerging generation of researchers in this whole field. There's opportunities in the, the science of how to split water, opportunities in the engineering of how to implement some of these new systems into the net zero processes such as iron and steel making. There's new markets whether their interest is understanding how to better manage variability, some of the science of how these new technologies work. There's lots of opportunities in all of these fields.

ARIELLA HELFGOTT GOULD INTERVIEW TRANSCRIPT (02:37mins)

I'm Ariella Helfgott, I run SA Futures Agency.

Even though it gets called energy transition, I would say it is a fundamental transformation. It isn't just a substitution of technologies, it isn't just a substitution of supply. In order to transform supply, we have to transform the demand side of everything, and that is a transformation of every single sector of our economy. It involves re-skilling and new industries, and it's actually a fundamental transformation of all of our society, and it does have winners and losers.

The degree of polarisation of this issue is a really big problem. Energy Transition is a systemic and a collective action problem. If you cut off energy supply before transforming demand in situations where people are completely dependent on that supply, assuming it was possible to completely cut it off, there would be unrest and potentially conflict.

When I worked for Shell, I experienced a lot of, of negativity. I even got spat on in the Netherlands at one event where I was trying to make a dialog happen and to bring people together across the supply and demand sides of things. And that level of polarisation and of blame can make it hard to bring people together, but all of the examples that I have of when transformation has actually happened has been when we've been able to do that.

For me, the future thinking part of this is not to just think that we're constrained to one pathway, but to realise that there's a lot of different stuff that is going on and that that the futures and foresight thinking can help us to look at not only all of our vulnerabilities, but all of our possibilities. And, and to look at different scenarios and to have the conversations together about what could work and not just be locked in.

I imagine that we will have an energy mix in a green future. Plenty of electrification for absolutely everything that it makes sense to electrify. There's now a company in South Australia that can take any type of biological waste, human, textiles, all of it, and turn it into a form of biodiesel that councils could be using to run all their vehicles. And if that already exists now, in my imagined future, all of our waste that can't be used usefully in some other form is getting turned into the molecules that we need for the things that we can't electrify.

For me, the biggest shift is the shift from an extractive way of relating to labour, to ourselves, to each other, and to nature, to one that is much more generative and circular, and where you're aiming for everything to be enriching.

JEREMY BENTHAM GOULD INTERVIEW TRANSCRIPT (02:51mins)

I'm Jeremy Bentham, I've spent a lot of my time internationally with 45 years in the energy industry.

Energy Transition is one of the most important currents for reconfiguring our economy in the decades ahead. A good friend of mine always points out that the future doesn't exist yet, but stories of the future are always at play, and they're what are shaping our choices and decisions. So, stories of the future are really important. And if we look at the story that most people have in their heads about energy transitions. The story is one that energy transition is some kind of single, slow moving, high cost, supply driven, burden, that is, you know, not a very inspiring story.

But if you actually pick apart what has happened in energy transition so far, but also in energy in the past, it doesn't look that way. You just have to look at recently the explosive growth in solar power, wind power, batteries, battery electric vehicles. You look back further into things like rural electrification, and what you see is that when the stars align and come together, you get a tipping point, and things take off explosively

fast. And that's often driven by competitive dynamics, once it looks like there's even the prospect of something being attractive, everybody piles in. And once you look at the so-called costs, you actually see those either come down rapidly as economies of scale begin to build in, but also even where they appear expensive by the time you look at it across a whole economy, it's very diluted.

So instead of that story of a single, slow, moving, costly burden, what you actually find is a series of fast, high opportunity, modest cost, demand enabled tipping points of uncertain timing. And that's a very different way of looking at it. And when you look at it that way, you see that there are opportunities there, and so with a storyline of fast moving tipping points of uncertain timing, you get a different attitude towards seizing those opportunities. And those opportunities can be really directly beneficial for those able to seize them, but in seizing them, they benefit everybody.

<https://mod.org.au/>