THE UNIVERSITY OF SYDNEY

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Longform Series

Sydney Environment Institute

Co-creating futures: embedding Indigenous knowledges in environmental research

Dr Mitch Gibbs

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Presented at the Iain McCalman Lecture

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The research, events and operations of the Sydney Environment Institute take place at the University of Sydney, on the Gadigal lands of the Eora Nation. We pay our deepest respects to Indigenous elders, caretakers and custodians past, present and emerging, here in Eora and beyond.

The Iain McCalman Lecture celebrates SEI co-founder and former co-director Iain McCalman's dedication to fostering and pioneering multidisciplinary environmental research.

The lectures aim to highlight the work of early to mid-career researchers working across disciplinary boundaries to impact both scholarship and public discourse.

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Aboriginal and Torres Strait Islander readers are warned that the following publication contains images of a deceased person.

Front cover: Mullet run at La Perouse.
Credit: Mark Bond Photography, courtesy Randwick City Council

Lessons from the past

I am Dunghutti through kinship, and grew up in the Dunghutti nation located on the mid-north coast of New South Wales, in a small town called Willawarrin. Willawarrin is the home of the possum: *willayi* in the Dunghutti language means possum, and *warrin* is the possum's home.

I grew up on a 100-acre property, which gave me endless opportunities to learn about the environment from my father. He taught me how to manage the environment through understanding changes that may occur, and ways to understand how to care for that land through fire management. My brother, sister and I also learnt from elders, especially at Bellbrook and the Macleay River. Elders like Aunty Esther and Uncle George taught us different stories relating to the environment. We heard wisdoms from the way the mountains were made, how to tell the gender of the tortoises, the way the winds move, and the proper times to apply fire to country.

This was never taught to me in school. As an Indigenous person, learning through books in a classroom, removed from the environment, you lose other factors that teach you. When we learn through our elders, we learn from the experiences, the smells, the feeling, the taste, hearing the environment and observing how things change. Schools teach you to how to study, how to memorise, siloed learning, and that you shouldn't count on anyone else. This is counter intuitive to Indigenous teachings.

I made my way through school and developed the necessary skills to enter university. I started in forensic science majoring in chemistry. As I continued into honours, my project demonstrated the intermediates and chemical structuring of a productive called fluorescein to fluoroscin.

My study applied this chemical in a forensic context. In summary, I showed how a chemical goes from being extremely fluorescent (what chemists call optically active) to see-through (not optically active) and how this can be applied to forensics. I showed how fluoroscin (not optically active) changes to an optically active chemical (fluorescein) when mixed with blood and a catalyst.

I am telling you this to highlight the very "scientific" methodology and application of research within the university space. Following this, I began a PhD looking at oysters in climate change. There was a gap in the research on how lipids, the energetic reserves, are affected by climate change over generations.

I studied this using a process called thin layer chromatography – flame ionisation detections (TLC-FID). This involves placing lipids of the oysters on a rod and burning them off. This causes the lipids to separate. Once it is burnt off, a reading can determine how much of the type of lipid is present based on a calibration curve (a set of prepared concentrations).

This is important, as we can determine how the fast-burning energy within oysters are used based on the stressors of climate change, and if there is more or less due to the parents' environment. The theory was that maternal investment (the mother giving the young more energy) wasn't the driving force of change. We expected that in a more stressful environment, the mother would give the young more energy reserves to be able to deal with expected stress that they will be in.

However, the research proved that maternal investment wasn't the driving force – it was epigenetics. There was not more energy in those from stressful environments, in fact, the energy was broken down due to stress. This less-fast burning energy is required for the growing of young in the early stages, but epigenetics was slightly changing the DNA output of the organisms.

In Pacific and Sydney Rock oysters, the adaptation of these oysters is more about genetics and not energetic reserves, meaning they are able to fight against climate change stressors over generations – to a point. This research is important for Indigenous communities as we need to understand how these oysters, a valuable resource, change over time. This information can be the cornerstone in the health of the environment, impacting many other resources that Indigenous communities live off.

The present challenge

My PhD supervisor is an Indigenous woman who has always wanted to pursue Indigenous knowledges but has made a career in climate change physiology. When she finished her PhD, the understanding of Indigenous knowledges was not something academia was interested in. Until recently, Indigenous knowledges have received limited recognition in the academic world. I was very fortunate to have guidance and supervision by people who acknowledge and respect Indigenous knowledges, such as Pauline Ross

Left: Mitch and his siblings. Credit: Mitch Gibbs. **Right:** Mitch receiving his PhD. Credit: Mitch Gibbs.

In 2020 the Australian Research Council (ARC) guidelines for research and fields of study changed to incorporate Indigenous knowledges. When you look at the context of this – after 60,000 years of knowledge that hasn't had the chance to be recognised – 2020 is so recent. The ARC is the main research funding body within Australia and up until 2020 had not recognised Indigenous approaches and knowledges to be its own field of research.

I am no philosopher, but that comes across as a biased and exclusionary decision. It has kept people, like my PhD supervisor and many others, away from showing the importance of Indigenous knowledges.

While I completed my PhD, I was travelling back home to take my dad to his chemotherapy treatment sessions. While sitting there, we would chat about many things – but one thing he made me realise was that earning a PhD, especially from the University of Sydney, would grant me respect in the academic space, and I should use that to highlight the knowledge held within Indigenous communities. This notion was supported by other elders within my community.

When writing my thesis, I was unable to input Indigenous knowledges about oysters. Even though I worked in a place that specialised in oysters, the Indigenous knowledges had not been 'peer reviewed'. All of this guided me to bringing Indigenous knowledges to the forefront of the academic world and to drive acknowledgement and respect of that knowledge to Indigenous communities all over Australia.

I am very fortunate to have secured a continuing position at the University of Sydney where I can advocate for a greater inclusion of Indigenous knowledge in the research community. I'm working on three major projects with different partners and Indigenous communities. These projects highlight Indigenous knowledges to inform restoration and environmental practices, bring Indigenous knowledges and perspectives into policy, and understand the pathways for Indigenous knowledges to be shared throughout communities to inform environmental practices.

Above: Example of how Indigenous knowledges are communicated through storytelling across generations.
Indigenous rock carvings in Brisbane Water National Park.
Credit: Mitch Gibbs

Current projects

The Department of Primary Industries: This project is working with Indigenous communities to understand the scope and wholistic nature of their knowledges associated with shellfish and shellfish reefs within the Gamay region. This includes harvesting and cultivating, and the cultural aspects of songs, stories, dance and art.

The James Martin Institute: This project is about policy change which looks at the perspective of Indigenous knowledges and how it should be applied into restoration projects with the proper collaboration with community members. This is to have an Indigenous voice at the table of restoration when restoring the environment that families have lived on, shared stories on and practiced on as their traditional homes. This grant also affords us to advocate for the changes of policy associated with the transmission of information between government and big business.

The Sydney Environment Institute: This project is designed to look at the way knowledge is transmitted between generations in Indigenous communities and to highlight the power of that when putting it into context of the environment. This is to make sure that those pathways are not severed, so that the traditional knowledge continues to be passed down through generations and to highlight the need for Elders to be teachers in our communities but also in the University space. This project is combined with the input of Jacqueline Dalziell and Pauline Ross.

Bottom: Indigenous rock carvings in Brisbane Water National Park.
Credit: Mitch Gibbs.

I have spent a long time fostering connections with the Indigenous communities to understand their needs and wants, and to listen. My grandfather always said to me: *I have two ears and one mouth, so you should use your ears twice as much.*

I didn't bring these projects to the community when I first met them. I waited until I had a strong connection with them first – I went to events and community days and was recognised by the community, and then I asked their thoughts. What commonly happens in Western practices is hosting a focus group or community engagement session, which typically lasts an hour, and then expecting Indigenous communities to share their knowledge and perspectives. This approach doesn't value the time they have given, nor the time it has taken for this knowledge to be generated.

We're talking about 60,000 years of knowledge being condensed enough to be shared in an hour, with many other groups trying to get their perspectives across.
I spent time forming connections until I was invited to different events, taking my time in understanding the needs and wants from the community perspective. I am always learning as well; I will never know everything.

Eventually, the rangers and I started doing research together. This research was really a method of bringing funding to the community – I was instructed by the Elders and Rangers what they would like and started to write grant applications. This process continued through the projects, I was ensuring that the community members understood and were comfortable with the ethics approvals.

"I knew that the community were the knowledge holders, and I was just a conduit for that knowledge in the university space. I was given the means to understand the community perspective by being part of the community, and I had the elders and knowledges holders' voices push through into the research. Through building that research together, I have formed amazing relationships and collaborations."

Bottom: Marco Hatch (Supervisor for the Fulbright Fellowship) and Mitch doing some grabbing. Credit: Mitch Gibbs.

I think it is also important to understand that as an Indigenous person, when forming these relationships, it is not intended for you to do the research and then leave. These are lifelong connections, and the priority needs to be placed on the community and not on yourself.

I know what you are thinking: what can the University of Sydney do to keep true to its shared desire to include "caring for country" in its institutional strategy?

I am working on another project with James Gibbs and Aunty Lyn Riley through the University of Sydney and the Faculty of Science. We are starting the First Nations Institute of Community and Practices, which includes three major themes.

The first and most important theme is Collaboration: a place to create a space for the collaboration of Indigenous communities and researchers. We understand that there are some communities who are overwhelmed with researchers wanting to do research with them. This also goes the opposite way, as some researchers may feel like their research is not being understood or accepted. We are working to create a portfolio with the research interests of Indigenous communities and bring researchers and communities together, done in a culturally safe place.

The second theme is Country. In a Western academic sense, this is any information associated with the "sciences". Knowledge about our environments and the way they work, as well as products made from our environments.

The last theme is Culture. This involves the arts and social sciences, the knowledges associated with kinships, and knowledge transfer. However, everything is related: the kinship lines play an integral role in knowledge transfer.

I hope this Institute will bring more recognition of the knowledges and perspectives of Indigenous communities to the university space. My goal is to grow Indigenous incorporation into a vast array of projects, which will filter into academic curriculum, changing the culture of the university to acknowledge Indigenous knowledges and create an environment where more Indigenous people want to be part of.

In all the study I have done in universities up until I finished the PhD, I didn't see any of my culture portrayed in any respectable light – I don't want the same for any students who come after me.

In 2023, I was fortunate to complete a Fulbright Fellowship in the United States working with traditional owner groups on the importance of incorporating Indigenous people in restoration. While I don't want to take away from the Australian perspective, it is hard to give local examples. We also need to learn from the successes and challenges seen from projects in other parts of the world when considering Indigenous knowledges.

In North America the impact of the climate change has been seen in clam gardens. Clams prefer to have a certain amount of water covering them within the intertidal zone. When a beach slants too much, Indigenous communities have historically built rock walls in the water to protect the clams.

I was lucky enough to be part of building one in the Salish sea. This rock wall helps to level the beach to a height which expands the area that clams can live. This increases the number of clams within the area but also allows more algae to settle. The more algae that settle, more carbon dioxide is exchanged, mitigating against the impacts of elevated CO2 within the clam garden.

This also creates an influx of safe zones within the area and biodiversity starts to increase. This practice has a wholistic vision of the environment. The combination of wisdom from the Indigenous community and modern technology has created a new restoration practice, restoring ancient technology and wisdom for the benefit of the environment.

As continued projects within North America have also seen to bring back culture to these areas, this means that it has brought back the sovereignty and accountability of the environment for Indigenous people and the general public.

“I want to make note that Indigenous knowledge here in Sydney cannot be used in other parts of Australia – this is place-based knowledge: the culture, knowledge and environmental change between these communities can vary a lot. We need to create meaningful connections to Indigenous people in the area we wish to work, to make sure that we get the specific knowledge of that area, to understand the impacts on that environment and restore that environment wholistically. This relationship cannot be transactional, nor can it be entirely based on research, it needs to be a relationship between friends and family.”

- Mitch Gibbs

Below: Turning soil in the clam garden, Saturna Island. Credit: Mitch Gibbs.

Towards the future

Projects should take the time to connect and make meaningful relationships with Indigenous communities, including codesign, proper incorporation and recognition of Indigenous knowledges, and collaboration throughout the project. While codesign of the experiment may occur with Indigenous communities, this connection does not stop at the design phase and should continue throughout, incorporating Indigenous knowledges through guidance from the Indigenous community.

By valuing a more wholistic way of knowing, this allows people to see environmental interactions that often haven't been seen by academic researchers in the past. In the yarning circles I have held with Elders and knowledge holders, they have illustrated that the blooming of particular flowers indicates what marine organisms are present at that time. Flowers blooming may indicate salmon moving up the coast, or lobsters in the area. Understanding these intricacies illustrates the interconnectedness of these organisms and how the seasons of these organisms have changed in the western sense, but remain untouched in their interconnected systems.

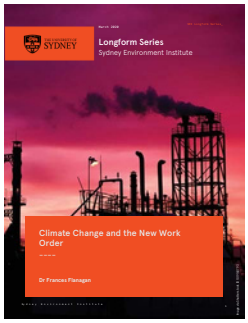
One way the University of Sydney can support the inclusion of Indigenous knowledges and people into their research is with the help of the starting of the First Nations Institute of Community and Practices that my brother (James Gibbs) and Aunty Lyn Riley are initiating. The more institutions like the University of Sydney foster meaningful collaborations with Indigenous communities, the more our understanding of the environment, and its health, will evolve. We have a responsibility to both students' education and the well-being of the environment.

"I began my life learning through community, and then pursued the Western academic system as far as I could go, but now I am brought back to the wholistic systems that Indigenous knowledges teach. As an institution of academia, we have only just begun to scratch the surface of what is possible and what the likely outcomes can be by incorporating Indigenous ways of being and knowing about our environment."

Bottom: Mitch and his dad. Credit: Mitch Gibbs.

Listen to the Lecture recording

Past Iain McCalman Lectures



2019 Lecture

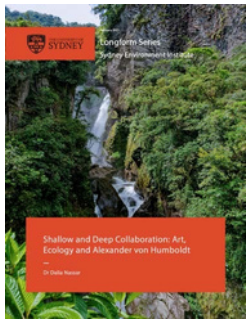
Climate Change and the New Work Order

Dr Frances Flanagan

2020 Lecture

Swinging the Pendulum Towards the Politics of Production: Animal-Based Food and Environmental Justice

Dr Dinesh Wadiwel



2021 Lecture

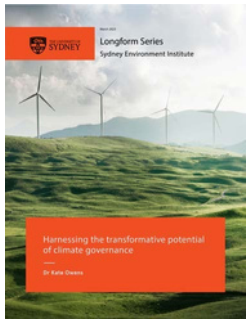
Shallow and Deep Collaboration: Art, Ecology and Alexander von Humboldt

Dr Dalia Nassar

2022 Lecture

Wilful Ignorance: Pacific Collections and Equitable Futures

Dr Jude Philp



2023 Lecture

Harnessing the Transformative Potential of Climate Governance

Dr Kate Owens

2024 Lecture

Multispecies Mourning: grief and resistance in an age of ecological undoing

Dr Sophie Chao

Dr Mitch Gibbs.
Credit: Christopher Wright (Instagram @chriswrightau)

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