



Australian
National
University

What will our
world be like
in 2050?

CO DESIGN CULTURE LAB

**Kambri Cultural Centre &
Marie Reay Teaching Centre**

26-29 November 2019

ANU College of
Engineering &
Computer Science

R E I M A G I N E



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PROFESSOR ELANOR HUNTINGTON

*Dean, College of Engineering and Computer Science,
The Australian National University*

Welcome to our first CoDesign Culture Lab.

Our world needs people who are experts at designing and safely operating the engine that is composed of all of us – our society. These designers will need to be expert thinkers about how to safely create and operate highly heterogeneous and interconnected systems of natural and made things, IT and people – at scale.

We believe the role of engineers and computing experts in the 21st century is to bring together expertise on people, technological systems and science. Through the Reimagine investment, the College of Engineering and Computer Science at ANU will reimagine the traditional engineering and computing disciplines. We are not stepping away from the need to master a coherent foundational body of knowledge. Nor will we be confined by old disciplinary boundaries as we give shape to new bodies of knowledge. At the core of Reimagine, we will equip our people to ask the right kind of questions from a people-centric, technological and scientific perspective.

Within our pre-launch phase under the Reimagine investment, we are seeking opportunities to engage diverse voices and perspectives. We hope to build a community of critical friends to help design our new approach to education. These shared perspectives and experiences will be a catalyst to creating a truly transformational world.

The CoDesign Culture Lab provides the unique opportunity to connect people who want to create something exceptional. Unlock your imagination and share in the conversation.

Professor Elanor Huntington
Dean, College of Engineering and Computer Science
The Australian National University

CODESIGN CULTURE LAB

The first CoDesign Culture Lab will explore questions around different modes of practice that engineering and computer science graduates will be engaged with in 2050 and beyond. The Culture Lab builds on a year of CoDesign activity, involving industry students and academics and we are now inviting others into our active and ongoing dialogue. Through this event we hope to build a network of 'critical friends' who will inspire and provoke us, keep us active and accountable. We will learn about each other's work through a series of workshops and provocations, we will spend dedicated time co-designing education agendas, and we will explore the diverse and far reaching strands of our work through our Creativity and Collaboration summit.

This program details how we will spend our time together over the three and a half days, and provides brief background information on the individuals that have been invited to share their knowledge and experience in workshops, talks and discussions. As you will see, we have access to an incredible collective experience and wisdom as we work through these ideas and questions. We encourage all participants to speak up and actively participate throughout the workshops and conversations.

Our goal here is to go beyond consultation, and to CoDesign a path forward. Thank you for your time, energy and enthusiasm.

Dr. Maya Haviland
Dan Etheridge

Co-organisers, CoDesign Culture Lab



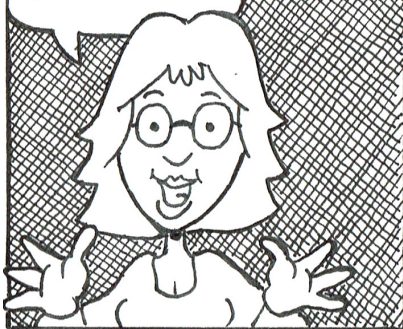
Dr Maya Haviland



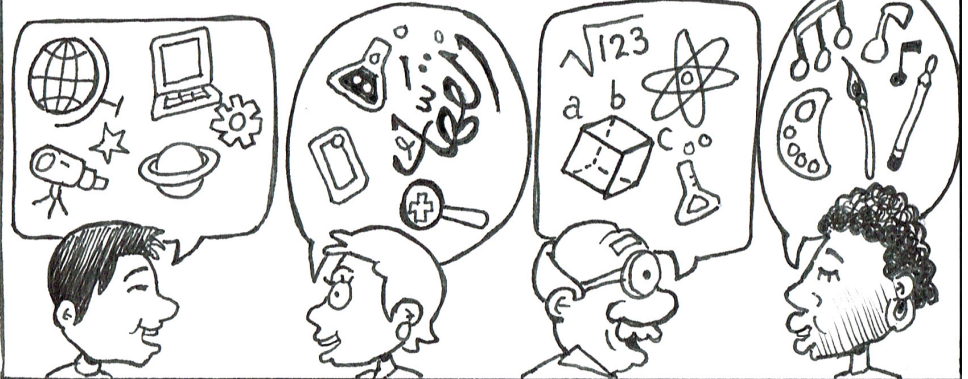
Dan Etheridge

VALUES OF CODESIGN

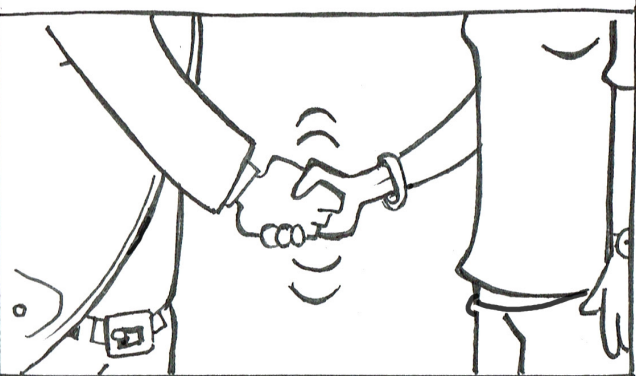
CODESIGN IS A COLLABORATIVE DESIGN



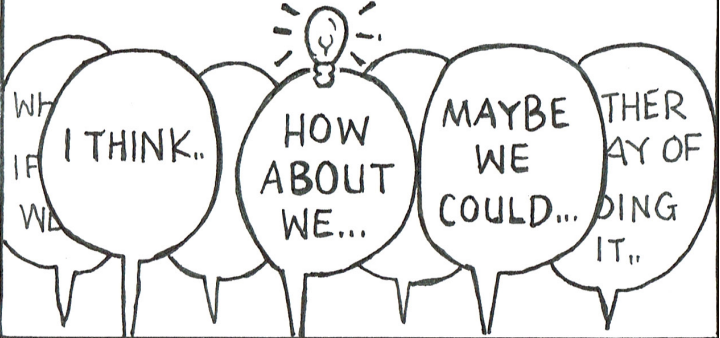
IT'S ABOUT WORKING COLLABORATIVELY
WITH DIVERSE PEOPLE TO PLAN, IMPLEMENT and
REVIEW IDEAS and ACTIONS



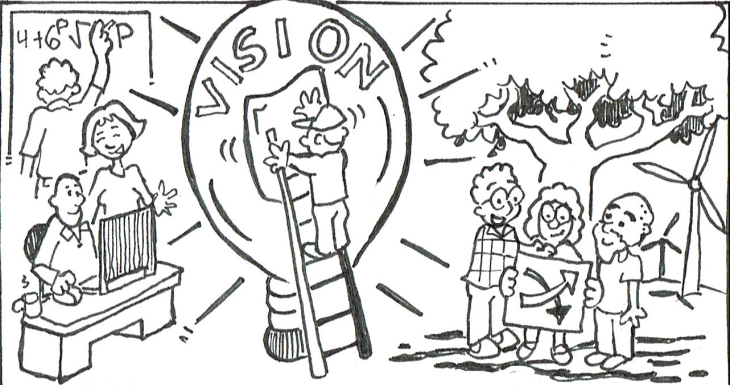
COMMITTS US TO COLLABORATIVE,
NON-HIERARCHICAL and MUTUALLY
RESPECTFUL WAYS OF WORKING...



SEEKS TO ENABLE NEW POSSIBILITIES
TO EMERGE FROM DIFFERENT EXPERIENCES,
KNOWLEDGE SYSTEMS
and PERSPECTIVES



INCLUSION IS MORE THAN
SIMPLY INCLUDING PEOPLE
IN CONVERSATION...IT'S ABOUT
INCLUDING PEOPLE IN DECISION
MAKING



WE SEEK TO MODEL WAYS THAT
REDISTRIBUTE POWER AND ENHANCE
POSITIVE OUTCOMES FOR EVERYONE

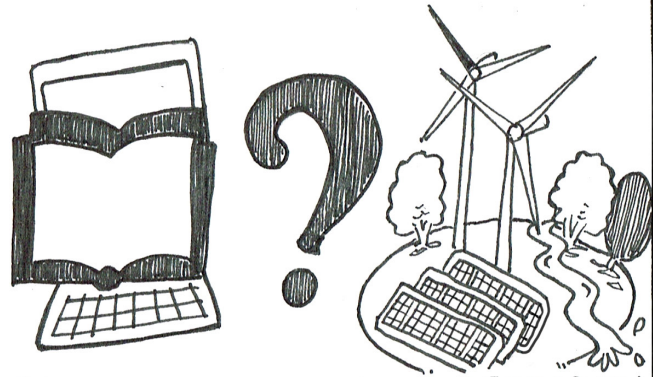
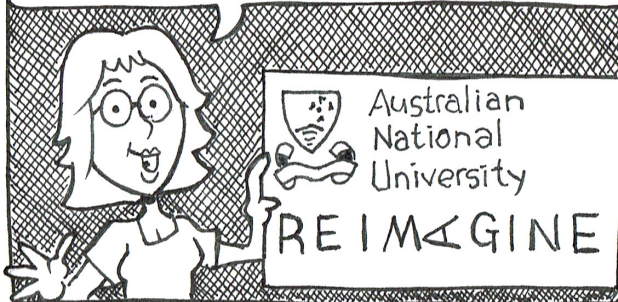
WE MUST CONTINUOUSLY EXAMINE ACCESS
TO POWER AND PRACTICES WHICH REINFORCE
STRUCTURAL PRIVILEGE...



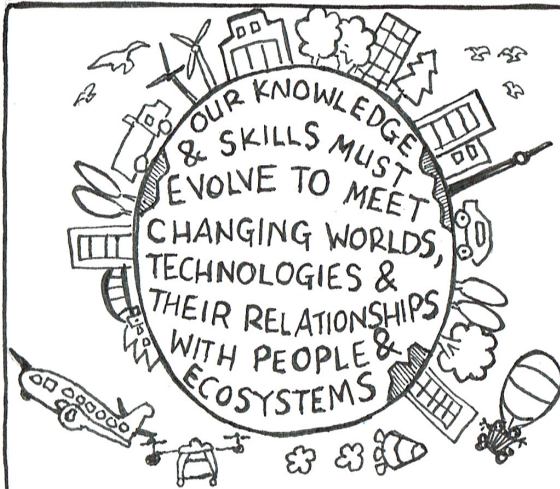
„RESPECTFULLY NAVIGATE
DIFFERENCE



CODESIGN IS A WAY OF WORKING IN THE REIMAGINE INVESTMENT TO ENHANCE...



TEACHING, LEARNING & RESEARCH EXCELLENCE THROUGH DIVERSITY



WE MUST IMPROVE OUR TOOLBOX & OUR WAYS OF WORKING TO MEET & CO-CREATE the FUTURE



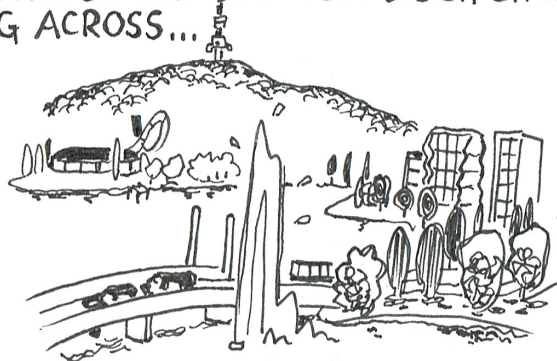
CREATIVITY IS AN ESSENTIAL SKILL FOR NAVIGATING UNKNOWN FUTURES



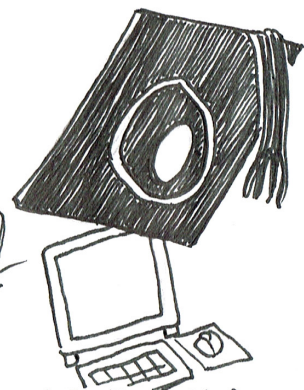
WE NEED TO ENABLE POROUSNESS BETWEEN DISCIPLINES & MODELS OF PRACTICE, INCLUDING ACROSS...



...INDUSTRIES ...



COMMUNITIES and..



ACADEMIA

PROGRAM SCHEDULE

Tuesday

Kambri Cultural Centre

Creativity and Collaboration Summit

1-2pm

Creativity and Collaboration in Reimagine

Professor Elanor Huntington

Building a community of 'Critical Friends'

2-3:25pm

Case studies in Collaboration and Creativity
Part 1

Afternoon Tea

3:25-3:45pm

3:45-5:30pm

Case studies in Collaboration and Creativity
Part 2

5:30-6:30pm

Reception at aMBUSH Gallery

Wednesday

Marie Reay Teaching Centre, Level 5 and 6

Creativity and Collaboration Summit

Registration required

8-9am

Breakfast/Coffee/Tea

9am-3pm

Doing things differently

Workshops from leaders in the field

Session 1

9 -10:30am

Morning Tea

10:30-11am

Doing things differently

Workshops from leaders in the field

Session 2

11-12:30pm

Lunch

12:30-1:30pm

Doing things differently

Workshops from leaders in the field

Session 3

1:30-3pm

Afternoon Tea

3-3:15pm

3:15-5:15pm

CoDesign session

Enabling Collaboration and Creativity

Thursday

Marie Reay Teaching Centre, Level 5 and 6

CoDesign with Reimagine Fellows

8-9am

Registration required

Breakfast/Coffee/Tea

9am-10:30am

Registration required

Reimagine Fellows CoDesign workshop

Session 1

Morning Tea 10:30-11am

11am-12:30pm

Reimagine Fellows CoDesign workshop

Session 2

Lunch 12:30-2pm

2-5:30pm

Innovation in teaching and learning

Reflections and Provocations from leaders in the field

Session 1

Afternoon Tea 4:10-4:25pm

4:25-6pm

Innovation in teaching and learning

Reflections and Provocations from leaders in the field

Session 2

Friday

Marie Reay Teaching Centre, Level 6

Education Lab

Registration required

8-9am

Breakfast/Coffee/Tea

9am-10:30am

Visioning Educational Futures

Morning Tea 10:30-10:45am

10:45am-12:30pm

CoDesign

Identifying future priorities for Engineering and Computer Science education

Part 1

Lunch 12:30-1pm

1-3pm

CoDesign

Identifying future priorities for Engineering and Computer Science education

Part 2

Afternoon Tea 3-3:30pm

3:30-5:30pm

CoDesign

Identifying future priorities for Engineering and Computer Science education

Part 3

Case studies in Creativity and Collaboration

In this introductory session, researchers and practitioners share their work in exploring issues related to technology, design and future oriented problem solving. In addition to showing us what they do, they will share with us the reasons why they do what they do and, in particular, how they rely on creativity and collaboration to get their work done. Common themes are an understanding of the impact on humans and the planet of technology driven change and a commitment to improving how we manage our physical and digital resources for maximum positive impact.

Genevieve Bell

Director, 3A Institute, ANU

Angie Abdilla

Founder and CEO, Old Ways, New

Peter Worthy

Social Robotics Lab, University of Queensland

Anna Madeleine Raupach

Mixed media artist, Lecturer, School of Art and Design, ANU

Callie Doyle-Scott

Role Playing consultant with the Cyber Institute

Fiona Beck

Senior Lecturer & Convenor Hydrogen Fuels Project, Energy Change Institute and College of Engineering and Computer Science ANU

Mitchell Whitelaw

Associate Professor, School of Art and Design, ANU

Andrew Lamb

Innovation Lead - Global, Field Ready

W E D N E S D A Y

27/11/19

Doing things differently: Workshops from leaders in the field

Designed to engage small groups in deep exploration of new models of practice, the goal of today's workshops is to collectively explore the technical, ethical and logistical challenges of the multi-dimensional problems our work addresses, and creates. These are the kinds of complex challenges graduates of engineering, computer science and design related fields must navigate and within which find ways to succeed.

The Wednesday workshop sessions are limited to invited attendees from within CECS, across other colleges at ANU and partners in the private and public sectors.

Session 1

9-10:30am

> Creating Social Impact & Supporting Sustainable Development

Sam Perkins and Alison Stoakley, *Engineers Without Borders Australia*

Workshop description

A facilitated workshop that will explore how ANU's reimagined College of Engineering and Computer Science can actively and effectively contribute to the sustainable development agenda, and in doing so, ensure that no-one is left behind.

> Bold Moves for Gender Parity by 2030

Dr. Francesca Maclean and Emily Gentilini, Co-founders *Fifty50*

Workshop Description:

Engineers and computer scientists of the future will have an inclusive mindset to design a future that is accessible for all. Reimagining CECS teaching and learning is an exciting opportunity to create gender equitable and inclusive practices that form the next generation of world shapers. Join us as we share our first-hand experience as CECS students and industry professionals, combined with best practice inclusion knowledge, to generate transformative interventions to reach gender parity in CECS by 2030.

> Speculative Futures informing the design of interactive systems**Ben Matthews and Peter Worthy, *The University of Queensland, School of ITEE*****Workshop description:**

Through this workshop, students explore the design of interactive systems through speculative futures. Design methods such as ethical reviews, fringe scenarios, frame analysis, extreme characters and value fictions are used to assist students as they explore a wider range of considerations and impacts to inform their design of interactive systems.

> Bold Moves for Gender Parity by 2030**Dr. Francesca Maclean and Emily Gentilini, *Co-founders Fifty50*****Workshop Description:**

Engineers and computer scientists of the future will have an inclusive mindset to design a future that is accessible for all. Reimagining CECS teaching and learning is an exciting opportunity to create gender equitable and inclusive practices that form the next generation of world shapers. Join us as we share our first-hand experience as CECS students and industry professionals, combined with best practice inclusion knowledge, to generate transformative interventions to reach gender parity in CECS by 2030.

> Designing and building technology through Country Centred Design**Angie Abdilla and Keir Winesmith, *Old Ways, New* (3 hour workshop)****Workshop Description:**

How can local Indigenous Knowledge Systems be harnessed to inform new approaches to engineering and computer sciences to create a better world? This workshop is part of a series of collaborative, transdisciplinary and iterative engagements between Old Ways, New and the College of Engineering and Computer Sciences, culminating in the codesign and development of an interactive cultural mapping prototype.

> Role Play Game Play Test “Logic Error Detected” (3 hour workshop by invite only)**Callie Doyle-Scott****Workshop Description:**

“Greetings, and welcome to the All-Life Rehabilitation Centre. I am MICA, the Massively Intelligent Calculating Automaton in charge of operations. I look forward to learning from you.”

In this three-hour collaborative storytelling experience, you have been called in to help train MICA, a revolutionary AI, to solve problems and react to unexpected scenarios. All you have to do is answer her questions and provide guidance when she requires it. It should be a simple task. After all, computers can only do what they are told.

> How to appropriate technology for Indigenous homelands**Andre Grant and Peter Renehan, *Center for Appropriate Technology*****Workshop description:**

A co-design collaborative process exploring the concept and criteria for determining what is Appropriate Technology in an Australian Indigenous context while also exploring the technical challenges of remote Indigenous homelands and how they might 'appropriate' technology for their own ends.

> Encouraging Emergence in Emergencies – how engineers who embrace complexity save lives**Andrew Lamb, *Field Ready*****Workshop description:**

This workshop introduces the transformational work of the humanitarian engineers, innovators and relief workers at Field Ready, and gives a sense of what disaster relief might look like in 2050. It will 'briefly introduce complexity theory and its relevance to the training of engineers and the nature of the challenges they'll need to work on - particularly disaster relief.' The workshop also explores the mindsets in action in emergencies.

THURSDAY

Reimagine Fellows exploration workshops

The Reimagine Fellows are a cohort of visionary academics and staff in CECS who are embarking on exciting projects that will reflect CECS' vision for the future. Exploring innovation in teaching and learning with the Culture Lab, the Fellows will host individual workshops. Participants will receive a taste of the Fellows' projects with invitations to share their experiences, knowledge and insights from their own project planning processes. Covering topics of leadership, creativity, collaboration, innovation, social benefit and more, there will be inspiration, opportunities to contribute and something for everyone to learn.

Reimagine Fellows CoDesign workshop sessions

Session 1

9-10:30am

> Working together to deliver teaching excellence

Fellow: Neil Kaine

Workshop description

Are you interested in student labs and projects? The technical services team are and we are re-shaping the way we support these activities. Thus, your input today will influence the way we work in the future.

Convenors; from when you first get an idea for a new lab or student project to when the students are handing in their results, what support would smooth the way?

Students; from when you sign up to a course with practical content until you finalise your reports or complete your build, what support would you appreciate having?

Tutors; before, during and after supporting a lab, what assistance from professional staff would be useful for you in delivering the best possible lab experience?

In this workshop, we wipe the slate clean of the way we do things now and imagine there are no financial, space or labour limitations. Working together, we will create a new future of lab and project support to ensure we deliver teaching excellence in all we do.

> Lead from where you are: Leadership development for Higher Degree by Research students

Fellow: Cathy Ayres

Workshop Description:

Higher Degree by Research (HDR) students commencing right now will be the leaders of their fields in the middle of the century. These leaders will require extraordinary leadership and vision. The Future Leaders in Engineering and Computer Science (FLECS) program will provide opportunities for HDRs to build and develop their leadership capabilities as early career researchers.

This workshop is an in-depth, interactive consultation and discussion of the challenges facing our HDR students. In it, we explore how we can create opportunities for leadership development in our HDR cohort and how we can make the CECS HDR (and, by extension, the ANU PhD) a truly transformative experience. Outcomes from this workshop will provide the foundations for the schedule of forums and seminars that will make up the FLECS program, scheduled to start in 2020, and will be directly relevant to HDR students (within CECS and ANU more broadly), HDR supervisors and all working in HDR matters across ANU.

Session 2

11-12:30pm

> Toolkit for CECS Academics

Fellow: Lorena Sciusco

Workshop description

Are you a creative thinker? Do you have good ideas about what academics need in their 'toolkit' when applying for grants or securing industry collaboration for research development? Join us and bring along your ideas, views and experiences to help us develop a 'Toolkit for CECS Academics.'

Participants from the perspective of industry, government, HDR students, academics, administrators, school managers, grants and business development professionals can join the discussion by providing their unique insights on how we can improve the research development process.

This is an interactive workshop. A 'first cut' of what a toolkit might look like will be developed by groups working together. Considering a set of prepared questions, participants will reflect on their experiences, challenging them to consider the expectations of industry, HDR student, academics, professional staff and other related operational areas in the University.

> Designing the future of environmental engineering at the ANU

Fellow: Wojciech Lipinski

Workshop description

In CECS, we are building a modern, interdisciplinary educational program of global significance for engineers and computer scientists. An early step in this process is developing a new environmental engineering degree and we are looking for diverse voices to inform its development. This workshop explores what our new degree should look like as we seek input and insights from participants to help us shape the degree development process.

> Shared Connections - Creating an Engineering Positive Impact (E+i) Hub at the ANU**Fellow: Jeremy Smith (3 hour workshop)****Workshop description**

This workshop explores the establishment of the Engineering Positive Impact (E+i) Hub at the ANU. The E+ i Hub will be a space for connections, connecting engineering and technology expertise with other parts of the ANU, community groups and organisations. Working in partnership to focus on positive changes in human well-being in Australia and our region, the E+ i Hub will encourage creating shared journeys and shared values for the use of engineering and technology to strengthen quality of life for all. We will explore ways of working for the proposed E+ i Hub, the values it embodies, the connections it shares and the impacts of its work.

> code/creativity/culture curriculum design workshop**Fellow: Ben Swift (3 hour workshop)****Workshop Description:**

Is it possible to learn about algorithms by writing poetry about wealth inequality? How about commenting on social media use via sculptures built using cybersecurity tools and concepts? Furthermore, is it possible to design an assessment task that encourages deep technical work and honest cultural reflection in producing a genuinely interesting creative outcome? This workshop brings together folks from all points of the code/creativity/culture compass to design a _real_ assessment task for the c/c/c studio creative code outreach program. In fact, it _needs_ a diverse range of voices to work properly. So if you have thoughts and ideas about CS/Engineering curriculum design, the arts, and life within the socio-technical assemblage of our present age, then come along and have your say!

Education Lab workshop sessions

Innovation in teaching and learning: Reflections and Provocations from leaders in the field

Our speakers for this afternoon's 'Education Lab' component of the CoDesign Culture Lab have much to teach us regarding their experiences, critical reflections and work. These invited thought leaders/provocateurs bring their experiences from work in and beyond universities around Australia and the world. Joining us for the Friday Education Lab CoDesign group work, this afternoon's leaders will also assist in further animating our collective ideas for the future of teaching and learning at CECS.

Arlindo Silva

Associate Professor, *Singapore University of Technology and Design (SUTD)*

Celeste Carnegie

Girl Geek Academy

Cameron Tonkinwise

Professor of Design Studies, Director, Design Innovation Research Centre, *University of Technology Sydney*

Abel Nyamapfene

Programme Director MSc Engineering & Education, Principal Teaching Fellow (Integrated Engineering Programme), *University College London*

Kathi Fisler (via teleconference)

Professor (Research) and Associate Director of Undergraduate Students, *Brown University Dept of Computer Science*

Shriram Krishnamurthi (via teleconference)

Professor of Computer Science, *Brown University Dept of Computer Science*

Jochen Trumpf

Director, Software Innovation Institute, *ANU College of Engineering & Computer Science*

Euan Lindsay

Director, CSU Engineering Foundation, Professor of Engineering

Karl Kane

Senior Lecturer, Design, Director, Design+Democracy Project, *School of Design, Massey University*

Lesley Seebeck

Chief Executive Officer, Cyber Institute, *ANU College of Engineering & Computer Science*

FRIDAY

29/11/19

Education Lab CoDesign Day

Today's CoDesign Education Lab brings together a diverse group of people from within and outside of the ANU to explore what engineering and computer science education could look like in the next 30 years. Working together in small groups, participants will deep-dive into a range of design challenges for education in CECS, exploring ways in which these are being tackled from diverse perspectives and synthesising learning to apply to our current and future practice. By the end of the day, we will have co-designed diverse set of design criteria to help to guide where we want to go and how we can get there. Informed by different backgrounds and experiences, we will collectively envision a future of education that inspires us all.

Education Lab Workshop Objectives

- > Explore a range of Design Challenges that look at different components of the future of education
- > Build on the Education co-design workshops and discussions run with industry professionals and CECS academic and professional staff across 2019.
- > CoDesign design criteria to guide education reforms that range from personal action to larger-scale change
- > Envision what engineering and computer science may look like in 10-30 years and then work that into what constitutes people and experience focused education.

CREATIVITY AND COLLABORATION LEADERS

ANGIE ABDILLA

Founder and CEO, Old Ways, New



Angie Abdilla is a Palawa, (Trawlwoolway) woman who has been living and working in Sydney for over 15 years. Angie works with Indigenous cultural knowledges to inform placemaking, service design and the resulting deep technologies for both the public and private sectors. Her published research on Indigenous Knowledge Systems, Robotics, and Artificial Intelligence was presented at the United Nations Permanent Forum on Indigenous Issues. Angie and Old Ways, New have published the co-edited book, *Decolonising the Digital: Technology as Cultural Practice*, and co-founded the pioneering international Indigenous Protocols and Artificial Intelligence symposium. She previously lectured and led studio's on Human/Technology inter-Relations and Futuring methodologies at the University of Technology Sydney and continues to publicly present on the topic. Angie is a Fellow of The Ethics Centre and holds a Bachelor of Arts in Communication from the University of Technology Sydney.

CALLIE DOYLE SCOTT

Freelance writer and gamer



Freelance writer, gamer and gastronomic history enthusiast, Callie has been creating and running tabletop role-playing games, or 'collaborative storytelling experiences,' for over sixteen years. Her work has been shown at Canberra's Phenomenon Roleplaying Convention, with horror game *Cold Legs* winning the Best New Designer award in 2015 and magical girl odyssey *The Tower, The Princess and the Star* (developed in collaboration with Samantha Blanch,) participating in the convention's Triptych showcase in 2018. When she isn't telling stories Callie is writing them, having completed an Honours Degree in Creative Writing at RMIT University and worked for Australian web-journals *Verity La* and *Feminartsy* as a Project Editor and Writer in Residence respectively. She is currently working on her debut novel manuscript with assistance from artsACT.



PETER WORTHY

Postdoctoral Research Fellow

School of Information Technology and Electrical Engineering

Faculty of Engineering, Architecture and Information Technology

Through my Ph.D. research and work, I have developed a personal philosophy informed by human-centred design when developing technology for people. I am passionate about ensuring that interactive technology is truly designed for people so that it supports what is important to them within the specific context that they are using that technology. I believe that the best way to do this is to work with a team that has a mixture of disciplines that involves the people that we are designing for as part of that team.

I'm very happy now to be working on a project that seeks to support people living with dementia as it's definitely continuing my learning journey. For me, working with a diverse multidisciplinary team is a clear benefit of the project as it is exposing me to many different viewpoints, something which I think is critical for successful design. IMHO design must be applied through working with people who have different experiences and perspectives on the condition that is sought to be changed or improved. Most importantly, Design must include the actual lived experience of that condition throughout its process. The Florence project is guided by a reference group of people with lived experience (established through the vision of Jacki Liddle) and I think this is an important step towards a deeper collaboration in the development of technology.

As an interaction designer I accept that, when designing and developing technology, I have a clear responsibility both to my employer/client and the person who will be using that technology. I have developed an interest in the ethics of the design and development of technology. I have one foot firmly in the de-colonisation of design camp.

My interests extend across design theory and practice, human-computer interaction and user experience, and the application of the theory of these domains into practical and novel contexts. I have a strong interest in developing a vision for technology that supports a citizen-centric smart city and am seeking to extend my understanding of design research in complex and contested environments.

MITCHELL WHITELAW

Associate Professor (Design), ANU College of Arts and Social Sciences



Mitchell Whitelaw is an academic, writer and maker with interests in digital design and culture, data practices, more-than-human worlds and digital collections. His teaching and research takes up data and code to seek out moments of insight and delight, amplifying our engagement with a complex world. He is a lapsed musician, a self-taught programmer, a keen collaborator and a nature nerd.

FRANCESCA MACLEAN

Senior Consultant at Arup, Joan Kirner Emerging Leader, Inclusion + Equity Speaker | CoFounder Fifty50



Francesca is currently a Consultant in Advisory Services at the independent engineering firm Arup, and an Engineer in Residence at the Engineering Practice Academy at Swinburne University of Technology.

Francesca completed her PhD in tissue engineering, investigating biomaterials to control the inflammatory response of the brain after traumatic injury. During this time she co-founded Fifty50, a student-led movement at the Australian National University (ANU) promoting gender equity in STEM, which was named Engineers Australia's Best Student Group in Gender Diversity in 2017. She was also awarded the ANU Vice-Chancellor's Award for Excellence in Tutoring in 2017 after educating over 300 undergraduate engineering students during her time at ANU. Francesca also holds a Bachelor of Engineering (Hons)/Bachelor of Science ('13) with First Class Honours from the ANU.

For her contributions to promoting gender equity in STEM, Francesca was named 2018 ANU Postgraduate Student of the Year, 2017 ACT Young Woman of the Year, and was one of 30 Australian women with STEM PhDs to be selected in Science&Technology Australia's inaugural Superstars of STEM. She was also a participant in Layne Beachley's Rising Stars Mentoring Program, and is an up-and-coming profile within the media, featured in the Australian Financial Review for her work in gender equity, and appearing on ABC News Breakfast in 2018.



BEN MATTHEWS

Senior Lecturer

School of Information Technology and Electrical Engineering

Faculty of Engineering, Architecture and Information Technology

Ben conducts research across the fields of interaction design, human-computer interaction, participatory design and design studies. He's interested in the human aspects of technology design and use, and methods for studying and involving people in design processes. He has worked in a range of design domains with various industry partners: audiology (Oticon), diabetes care (Novo Nordisk), domestic Internet of Things devices, industrial components (Danfoss), passport processing (DFAT), primary school educational interventions, remote mental health services, toys and play (Lego Group, Kompan), indoor climate (Velux), workplace safety (WorkCover Qld), and emergency first response. The constants across these diverse domains relate to the design process—the methods used to understand people, identify design opportunities, facilitate collaboration between project stakeholders, champion users' contexts and requirements, prototype early solutions, evaluate concepts in the field, and build new technologies. This results in a variety of research contributions: new design methods and perspectives that have been tailored for specific contexts of use, identification of the potentials and limitations of different approaches to design and analysis, the discovery of context-specific issues for the design of new systems, new understandings of people, their work and contexts of use, and the design and evaluation of bespoke technologies.

PETER RENEHAN

Chairman, Centre for Appropriate Technology



Peter is from the Central Arrernte group based in and around the desert regions of Alice Springs in Australia's remote Northern Territory. He is an Aboriginal engagement specialist and has worked with remote infrastructure systems to support Aboriginal livelihoods development for remote communities predominantly in the supply of sustainable water systems before taking up senior roles within the Centre for Appropriate Technology in 2004. Becoming the Chairman of the CfAT Board in 2010 Peter leads the Board with strong Governance skills and visions for a sustainable economic future for Aboriginal people in remote areas.

KEIR WINESMITH

Chief Technology Officer, Old Ways New



Keir is a digital leader, strategist and theorist who has been working at the intersection of digital, culture and place for the last 15 years. In June 2018 he was included in Fast Company's 100 Most Creative People in Business for his work in this area. Keir is the lead digital strategist and practitioner for Old Ways, New. Previously, he directed the award-winning digital department at the San Francisco Museum of Modern Art where he created and led the museum's R&D group, SFMOMA Lab. Before moving to California, he led the digital team at the Museum of Contemporary Art in Sydney. Keir is also a Professor at UNSW Art & Design where he completed his Ph.D. in New Media.



ANDREW LAMB

Innovation Lead - Global, Field Ready

Andrew is the former CEO of Engineers Without Borders – UK. He co-founded and serves as a Trustee of the Humanitarian Centre in Cambridge. Andrew is also a Trustee of RedR-UK. He has worked as a consultant for the UN and the World Federation of Engineering Organizations and has also been a regular contributor on engineering issues to various media outlets including the BBC, Independent, Times, Guardian and Ingenia magazine.



FIONA BECK

Senior Lecturer, ANU College of Engineering and Computer Science

Dr Beck leads a research group focused on integrating nanophotonics and optoelectronic device design for applications in solar fuels and the next generation of photodetection technologies. She is also Convenor of the Hydrogen Fuels Project in the Energy Change Institute's Zero-carbon energy for the Asia-Pacific ANU Grand Challenge.

Dr Beck currently holds a Discovery Early Career Researcher Award (DECRA) from the ARC, as well as the Future Engineering Research Leader (FERL) Fellowship from the ANU. She joined the Research School of Engineering at The Australian National University as a research fellow and lecturer in 2015. She spent the previous 4 years as a Marie Curie Research Fellow at ICFO - The Institute of Photonic Sciences in Barcelona, Spain, employing plasmonics to enhance the performance of novel optoelectronic devices. She obtained a PhD from The ANU in 2011, with a thesis on designing plasmonic light trapping schemes for applications in solar cells. She has an MSc degree in Physics from The University of Glasgow, and was awarded the Eve and Ravenscroft prize for the most distinguished graduate from the Faculty of Physical Sciences.

Dr Beck tweets about optoelectronics, nano-optics, and saving the world with renewable energy @Fiona_J_Beck

ANDRE GRANT

Regional Manager, Queensland, Centre for Appropriate Technology



Andre (BSc, MSust Dev.) works for Indigenous non-profit organisation the Centre for Appropriate Technology, based out of their Cairns Office. He is a community engagement, participatory planning, remote infrastructure and sustainable development practitioner with over 15 years' experience in working with Indigenous communities – mostly on Cape York and the Torres Straits. He has extensive experience creating, managing and delivering remote Appropriate Technology projects including many probono engineering projects. Andre is also an 'Open Standards' conservation coach and has facilitated numerous participatory 'Healthy Country Planning' (HCP) projects with various Indigenous Traditional Owners groups across Cape York and the Torres Straits and lead HCP and OS train the trainer workshops in with Indigenous, non-Indigenous and international practitioners.

Andre is an international Kinship Conservation Fellow and has a Reconciliation Award for a remote indigenous Ranger base project in Partnership with Engineers Without Borders Australia.

EMILY GENTILINI

Graduate Engineer at Arup, CoFounder Fifty50



As a Graduate Engineer at Arup, Emily works across sustainability, waste and transport projects for clients both locally and internationally, working across key themes of infrastructure sustainability, the SDGs, resilience and the circular economy. She is committed to improving sustainability outcomes in our cities, and ensuring they are equitable, inclusive and accessible for all users.

Emily completed a Bachelor of Engineering (Hons) and a Bachelor of Arts at the ANU. She was heavily involved in student life, through leading the Engineering Students Association and co-founding Fifty50, a student organisation at the ANU promoting gender equity in STEM. She held the Lisa Brodribb Engineering Scholarship and won the 2018 Tillyard Prize for her contribution to the ANU community.

Emily has presented talks and workshops covering sustainability, development, and gender equity to groups including the Institution of Mechanical Engineers, National Science Week, Accenture, the Australian Computer Society, Green Drinks and Engineers Australia.



SAM PERKINS

*Head of Education, Research & Technology Development,
Engineers Without Borders Australia*

Sam has a long-term and passionate interest in the application of technology to create equitable, sustainable and scalable engineering solutions that lead to positive social impact. He follows a simple manifesto: “until everyone would be willing to trade places with anyone, there is work to be done.”

Sam’s experience in human-centred design and innovation management marries well with his senior leadership experience and strategy and change management expertise. With more than 10 years experience in the academic, humanitarian and private sectors, Sam has developed a diverse and adaptable set of skills, knowledge and experience.

Sam holds a PhD in Aeronautical Engineering from the University of Tasmania and Cambridge University. He also completed a Postdoc with Hydro Tasmania and has lectured Fluid Dynamics, Thermodynamics and Communication and Design at the University of Tasmania.

In 2012, Sam moved from academia to the humanitarian sector, where he worked as the Energy Lab Coordinator, leading the evolution of UNHCR’s energy programme in Geneva. Since then, he has worked in 8 countries in Europe, Africa and Asia and has professional experience in a range of sectors including: Camp Coordination and Camp Management, Shelter, WASH, Energy and Environment, and Innovation Management.

Since 2016 Sam has occupied senior management roles including as the Chief Innovation Officer at Bright Products, a Norwegian company that design, develop, manufacture and sell solar products for off-grid communities.

Sam’s current role as the Head of Education, Research & Technology develop at EWB Australia bring together two of his passions – educating the workforce of the future, applied research and the development of equitable, sustainable and scalable engineering solutions to create positive social impact.

GENEVIEVE BELL

Distinguished Professor at ANU College of Engineering and Computer Science and Director of the 3A Institute, | Senior Fellow at Intel



Distinguished Professor at the Australian National University, Director of the 3A Institute, and Senior Fellow at Intel

Genevieve Bell is an internationally-renowned cultural anthropologist working across academia and industry to ensure humanity stays at the center of technology development. She is a Distinguished Professor at the Australian National University (ANU), Director of the 3A Institute (3Ai) and Florence Violet McKenzie Chair. She is also Vice President and a Senior Fellow at Intel Corporation.

In 2017, Genevieve was appointed the inaugural director of the 3A Institute (3Ai), co-founded by the ANU and CSIRO's Data61. At the 3Ai, she leads a diverse team of researchers with a bold research agenda is to establish a new branch of engineering to better understand, design and manage artificial intelligence (AI) and cyber-physical systems as they go to scale.

Genevieve is also a Non-Executive Director of the Commonwealth Bank of Australia Board; member of the Prime Minister's National Science and Technology Council, and a Fellow of the Australian Academy of Technology and Engineering (ATSE). She also presented the highly acclaimed ABC Boyer Lectures for 2017, in which she investigated what it means to be human, and Australian, in a digital world.

Genevieve completed her PhD in cultural anthropology at Stanford University in 1998.



ALISON STOAKLEY

Engineering Education Manager, Engineers Without Borders Australia

Alison is inspired by the opportunity to work across sectors to create pathways for technical professionals to continuously learn, explore, and contribute to the world.

After an undergraduate degree in Civil and Environmental Engineering in the US, Alison moved to Melbourne to complete a Master of Environment at the University of Melbourne. Across both continents she has worked in sustainability consulting, education, and sustainability advocacy.



ANNA MADELEINE RAUPACH

Lecturer, Printmedia and Drawing, ANU College of Arts and Social Sciences

Dr. Anna Madeleine Raupach is an artist working with drawing, animation, installation and augmented reality (AR) to explore expressive interpretations of scientific concepts. She has a PhD in Media Arts from UNSW Art & Design (2014) and a Bachelor of Visual Arts (Honours) from ANU School of Art & Design, where she is currently a Lecturer in Printmedia & Drawing. She has had solo exhibitions in New York, Melbourne, Sydney, Canberra, Montreal and Bandung. Her research has included collaboration with the Hydrology, Meteorology & Complexity Lab, Ecole des Ponts, ParisTech; Common Room Networks Foundation and Bosscha Observatory, Bandung, Indonesia, Geoscience Australia, the ANU Medical School and the ARC Centre of Excellence for Free Radical Chemistry & Biotechnology, University of Melbourne.

EDUCATION LAB LEADERS

SHRIRAM KRISHNAMURTHI

Professor of Computer Science, Brown University



I primarily teach computer science all across the spectrum, from introductory to advanced graduate. My materials are either very broad (introductory) or very topical on specific areas like programming languages, security, and education (at the graduate level). I'm also Associate Director of our Executive Master of Cybersecurity, in which I think about (and execute on) questions about bringing urgently-needed, rigorous security knowledge to working professionals. Finally, I co-direct the Bootstrap outreach project that integrates computing into middle- and high-school programs.

KATHI FISLER

Professor (Research) and Associate Director of Undergraduate Students, Department of Computer Science Brown University



I teach various first-year CS courses, including a new course that I have designed on “data centric computing”, which combines data science, data structures, and computer science. The course is targeted at majors and non-majors alike. I am also working on a project to integrate content on social concerns in computing into our early curriculum. As associate director of undergrad studies, I keep an eye on our courses and strategies to support an increasingly heterogeneous student population. I also have considerable experience doing K-12 outreach, especially around integrating computing into other/existing courses (such as math, physics, and social studies).



EUAN LINDSAY

Director, Charles Sturt University Engineering Foundation (CSU), Professor of Engineering

I am the Head of School for Charles Sturt University Engineering. As the Foundation Professor of Engineering I was the key driver in establishing the innovative world-leading curriculum model for Engineering here at Charles Sturt University.



ABEL NYAMAPFENE

Principal Teaching Fellow, University College London (UCL)

I am a member of the UCL Faculty of Engineering Sciences team that led and coordinated the design and implementation of the flagship UCL Integrated Engineering Programme (IEP). In this role I led the design and introduction of a faculty-wide, application-oriented engineering mathematics curriculum for first and second year undergraduate engineering that draws on mathematical modelling and analysis techniques to enable students to draw connections between mathematics and the various engineering disciplines. I am currently the faculty academic lead for the two mathematical modelling and analysis modules.

I have also led the design of the UCL MSc Engineering & Education programme, a joint initiative between the Faculty of Engineering Sciences and the UCL Institute of Education. This is a new programme aimed at equipping engineering lecturers in further and higher education and professional development practitioners with the skills they need to develop effective engineering training and education programmes that address 21st century needs. I am currently the Director for this MSc programme.

ARLINDO SILVA

Associate Professor, Singapore University of Technology and Design (SUTD)



I have been a key instructor (and lead faculty) in the introductory design course at SUTD for 4 years (and previously contributed similarly at the University of Lisbon, at all levels of higher education), where a new approach was developed involving co-teaching from engineering and architecture faculty. A new cross-cutting project was implemented involving Intro to Design, Mathematics, Physics, and Social Science where students are driven to develop projects that explicitly involve three of these four subjects (where Intro to Design is mandatory). I also led a committee to develop the new Master of Engineering in Innovation by Design (first intake in September 2019).

CAMERON TONKINWISE

Professor of Design Studies, Director, Design Innovation Research Centre, University of Technology Sydney (UTS)



As Director of Design Studies, I am responsible for the required sequence of 'Studies' subjects that accompany design discipline specific Studio subjects (in Animation, Fashion, Photography, Product and Visual Communication Design). As Director of DIRC, I am responsible for tailored subjects that build government agency and industry capacity in Problem Reframing (especially with regard to marginalized peoples, such as those with disability, economic disadvantage or subject to the criminal justice system) and Transition Design (the role of human-scale design in systems-level social change).



LESLEY SEEBECK

CEO, Cyber Institute, ANU College of Engineering and Computer Science

Professor Lesley Seebeck started as the CEO of the Cyber Institute, Australian National University, on 30 July 2018. Most recently, she was Chief Investment and Advisory Officer at the Digital Transformation Agency, arriving there from the Bureau of Meteorology where she served as Chief Information Officer from mid 2014 to late 2017. In March 2017, she was recognised as Federal Government CIO of the Year.

Dr Seebeck has extensive experience in strategy, policy, management, budget, information technology and research roles in the Australian Public Service, industry and academia. She has worked in the Departments of Finance, Defence, and the Prime Minister and Cabinet, the Office of National Assessments, and as an IT and management consultant in private industry, and at two universities.

Dr Seebeck has a PhD in information technology, an MBA, a Masters in Defence Studies and a Bachelor's degree in Applied Science (Physics).



JOCHEN TRUMPF

Director, Software Innovation Institute, ANU College of Engineering and Computer Science

A/Prof Trumpf has held a multitude of educational leadership positions within the ANU College of Engineering and Computer Science including as Associate Dean (Education) and Associate Dean (HDR), as well as multiple Program Convenor roles. He has taught courses at Universities in Germany, the US, and Australia. He is currently developing a state of the art software engineering teaching program with a world leading work integrated learning component.

KARL KANE

*Senior Lecturer, Massey University School of Design &
Director, Design+Democracy Project*



My research explores the role of design and design thinking in advancing '21st Century citizenship'. This is particularly focused on design-led youth voter engagement and civic education, and designing for a more deliberative, collaborative democracy. I teach into the Visual Communication Design degree with a focus on service and experience design and brand communication, and specialise in contextual-studio and work-integrated teaching modes. I coordinate the Brand Communication, Experience & Service Design papers, and the .400-level VCD Honours program. I also supervise Master of Design candidates. I have also been deeply involved in applying design to the design of research, teaching and learning experiences, sharing this work as part of the Future of Design in Higher Education community.

CELESTE CARNEGIE

Girl Geek Academy



Celeste Carnegie is a Birrigubba South Sea Islander woman from Far North Queensland who stands strong on 60,000 years of technological advancement and environmental sciences that shapes her exploration into science and technology while sharing the sophistication, richness, and leadership of Australia's First Peoples within the STEAM space.

Celeste has extensive experience in running projects in the education and development space, having worked as Project Officer for the National Aboriginal Sporting Chance Academy, Learning Experience Designer for Indigenous Digital Excellence, and most recently as Indigenous STEAM program producer at the Museum of Applied Arts & Sciences.

REIMAGINE FELLOWS WORKSHOP LEADERS



BEN SWIFT

*Senior Lecturer, Research School of Computer Science
ANU College of Engineering and Computer Science*

Dr Ben Swift is a Senior Lecturer in the ANU Research School of Computer Science (RSCS). As the leader of the code/creativity/culture (c/c/c) research group, Ben's goal is to create spaces for talking about the way that code (software), creativity (especially the arts) and culture (life) intersect in the modern world. Ben's research contributions range from traditional Computer Science (digital multimedia, web technologies and human-computer interaction) through to invited livecoding (live code-based music performance) performances and multimedia artwork installations. In 2019 Ben was awarded one of the inaugural _Reimagine Fellowships_ to develop the ****c/c/c studio****, an ANU Extension outreach program which will teach computer science to pre-tertiary students through making art, music and other cool things with computers. The c/c/c studio will also provide a supportive community in which a new generation of people can learn, create, and share---unlocking the latent potential in students who never knew their diverse interests (especially in the arts & music) could be used in engineering and computing.



CATHY AYRES

*HDR Services Team Leader
ANU College of Engineering and Computer Science
Student Services*

Dr Cathy Ayres is the Deputy Manager, Student Administration (HDR) in the College of Engineering and Computer Science. During her PhD, Cathy began working in student support roles for research students at ANU. Cathy is passionate about initiatives that enable research students to develop as well-rounded young professionals with high quality research, technical, and leadership skills.

JEREMY SMITH

Lecturer, Research School of Electrical, Energy and Materials Engineering, ANU College of Engineering and Computer Science



Jeremy Smith is a Lecturer and Reimagine Fellow at the Australian National University (ANU). Over the last 20 years he has been involved in research, development and engineering projects across automotive manufacturing, aerospace design, software development and community development, through industrial R&D centres, start-ups and the for-purpose sector. For 10 years he has been at the centre of the growth of Humanitarian Engineering in Australia leading education, research and outreach projects with partners in Australia and South-East Asia. In 2017 he received an Australian Awards for University Teaching Award for Teaching Excellence for his contributions to Humanitarian Engineering education. Jeremy is a Fellow of Engineers Australia and a Senior Fellow of the Higher Education Academy.

NEIL KAINES

*Technical Services Manager
ANU College of Engineering and Computer Science*



Neil Kaines is the Technical Services Manager for Research School of Electrical, Energy and Materials Engineering and his experience in managing workshops and laboratories has led to a strong interest in developing new ways of delivering professional support in teaching and research institutions. He enjoys the challenge of combining the variety of technical disciplines and building the teams of people needed to meet the diverse requirements of a modern university.



LORENA SCIUSCO

*Business Development Manager
ANU College of Engineering and Computer Science*

Lori is the Business Development Manager for College of Engineering and Computer Science and a Reimagine Fellow. She is an experienced consultant with a background in project and bid management, community engagement, policy development and research in Australia and the Pacific.



WOJCIECH LIPINSKI

*Professor, Research School of Electrical Energy & Materials
Engineering
ANU College of Engineering and Computer Science*

Wojciech Lipinski has been Professor at the Australian National University since 2016. He obtained his Master of Science degree in Environmental Engineering from Warsaw University of Technology in 2000, and doctorate in Mechanical and Process Engineering and habilitation in Energy Technology from ETH Zurich in 2004 and 2009, respectively. He previously held positions of Research Associate and Senior Research Associate at ETH Zurich (2004–2009), Assistant Professor at the University of Minnesota (2009–2013), and Associate Professor at the Australian National University (2013–2015). Prof. Lipinski's research interests are in radiative transfer, reactive flows, energy materials and solar chemistry.

DOCUMENTATION AT THE CULTURE LAB

Please be aware that we will be documenting many of the activities and conversations occurring at the CoDesign Culture Lab. Documentation will include filming of public talks, photography across the whole event, notes and other visual documentation in workshops, and interviewing people for a podcast we are aiming to produce after the event.

If you do not want to be involved in specific forms of documentation please complete the opt out forms that will be provided in your participant pack and at the event registration desk.

SCAFFOLDING CO-DESIGN IN THE COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

Dr. Maya Haviland, Co-Design Lead at the College of Engineering and Computer Science (CECS) is one of the convenors of the Reimagine CoDesign Culture Lab November 2019, and is also undertaking research looking at processes of CoDesign within the context of the Reimagine investment. Scaffolding CoDesign with the ANU College of Engineering and Computer Science is a research project investigating what practices, processes and skills are involved in enabling and sustaining collaborative creativity and CoDesign within CECS and with its collaborators.

As a participant in the Culture Lab you may become a participant in the research. Participation can involve participating in an interview, workshop or action research activity or may simply involve being observed during CoDesign and related activities occurring at or sponsored by the ANU College of Engineering and Computer Science.

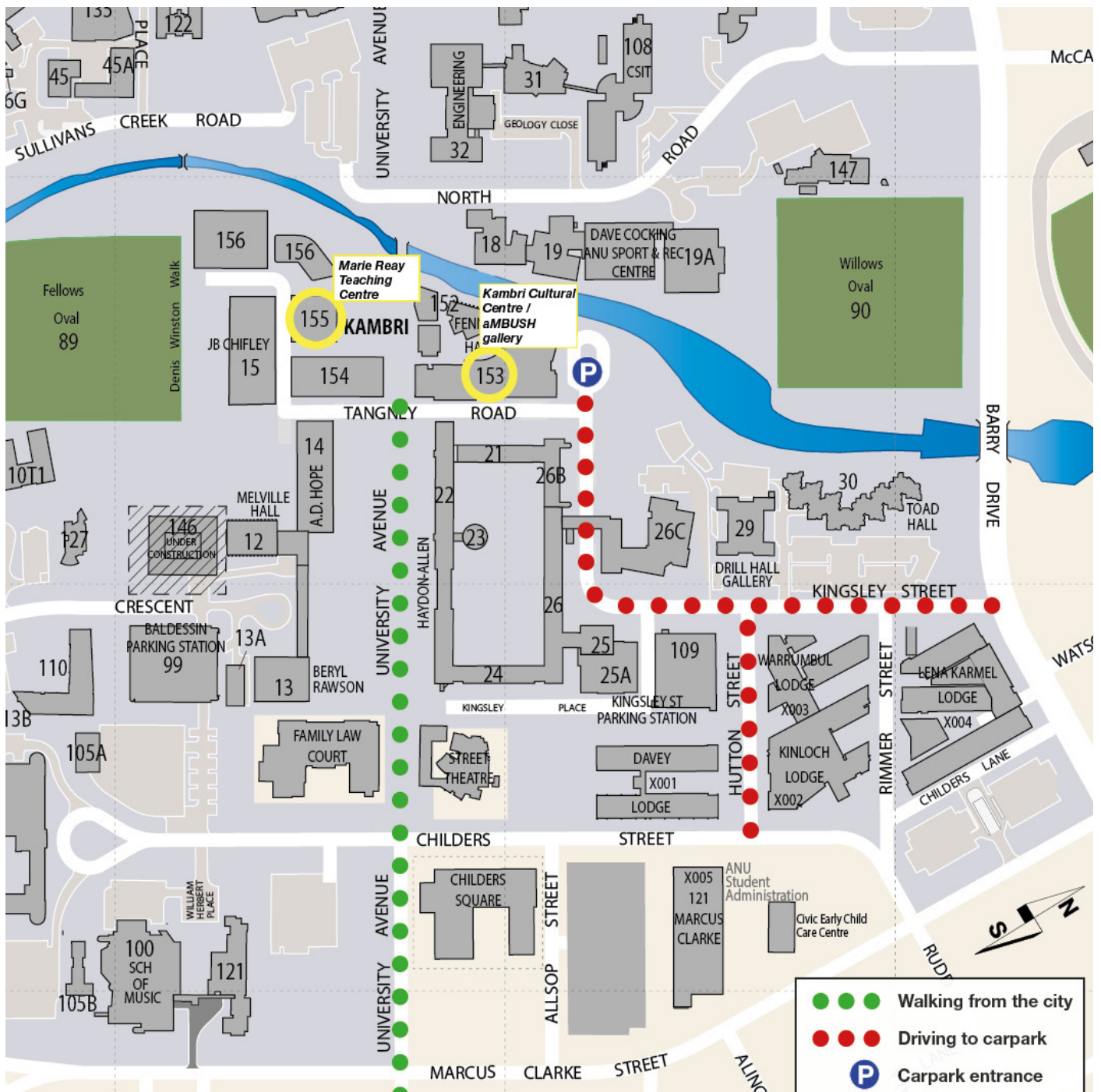
Further information about the research and how you might be involved is available at <https://chms.cass.anu.edu.au/research/projects/scaffolding-co-design-college-engineering-and-computer-science>.

You can also chose to specifically OPT OUT of any participation in the research by filling in the online opt out form at <https://chms.cass.anu.edu.au/form/scaffolding-codesign-opt-out>. Opting out will not impact or disadvantage your participation in the Culture Lab or other CoDesign activities run by the College of Engineering and Computer Science at the ANU.

If you want specific updates on the research, have any concerns or questions, or would like to get actively involved you can at any time contact Dr. Maya Haviland on Maya.Haviland@anu.edu.au.

The ethical aspects of this research have been approved by the ANU Human Research Ethics Committee (Protocol 2019/751). If you have any concerns or complaints about how this research has been conducted, please contact:

Ethics Manager
The ANU Human Research Ethics Committee
The Australian National University
Telephone: +61 2 6125 3427
Email: Human.Ethics.Officer@anu.edu.au



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#ReimagineCECS

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