

Craig bridges a PhD

Support for student research

IT took eight years of dedicated research into the structural health of bridges – and building the world’s most complex model of a truss bridge – to earn QUT engineering lecturer Dr Craig Cowled his PhD this year.

Dr Cowled became the fifth Indigenous man in Australia to receive a structural engineering PhD when he graduated with his doctorate in July.

His PhD research with QUT’s School of Civil Engineering and Built Environment saw him build a giant 8.5 metre-long model of a steel truss bridge that resembled Brisbane’s famous Story Bridge.

With the help of vibration sensors placed on the bridge, he then analysed its performance across a variety of scenarios that weakened the structure.

He combined his experiments with a study of existing research into structural health monitoring (SHM) and concluded that vibration-based damage detection was increasingly difficult to demonstrate on complex bridge models in a lab, let alone structurally complex operational bridges in the real world.

Australia has more than 35,000 bridges with an annual maintenance bill greater than \$100 million and an estimated

replacement cost of approximately \$16 billion. Dr Cowled said bridge owners needed to be realistic about the capability of SHM and remain diligent about regular testing, visual inspections and maintenance.

“SHM systems offer promising technology, but the greater the complexity of the bridge design, the harder it is to interpret the vibrations with sufficient accuracy.

Even so, SHM systems can monitor bridge performance in real time, allowing bridge engineers to identify whether the structure is performing within healthy limits.”

Dr Cowled graduated from QUT in 2006 with a Bachelor of Civil Engineering and worked as a site engineer and structural engineer before commencing his PhD at QUT in 2009 and later also becoming a lecturer.

The father of four’s PhD studies received a major setback early on in 2013 when he was badly injured in a crash while cycling to work and had to have his broken hip bolted back together.

Dr Cowled credits his wife Natalie with providing unwavering support during his PhD journey and said his parents had encouraged a love of learning from a young age.

In the acknowledgements at



Dr Craig Cowled earned his PhD this year.

the front of his PhD thesis, he also paid tribute to his maternal grandfather, Les Ridgeway, who was an elder of the Maiangal clan of the Worimi nation.

“Despite having a poor education, my grandfather consistently promoted the importance of education in improving the future for Australia’s Indigenous people,” Dr Cowled said.

“His strength of will,

determination to rise above his disadvantage and his vision for Indigenous Australians have inspired me to pursue higher education.”

Dr Cowled said he had also learnt perseverance from his English ancestors, John and Sarah Cowled, “the children of two flour milling families in Kent, who were among Australia’s first boat people” and among Adelaide’s first wheat farmers.

QUT’s Indigenous Research and Engagement Unit (IREU) was established to advance the research, careers and achievements of Indigenous researchers.

It is led by Associate Professor Peter Anderson, whose research areas include Higher education philosophy and leadership, First Peoples education and initial teacher education. He is also the director of the National Indigenous Research and Knowledges Network.

The IREU’s academic team includes Distinguished Professor Aileen Moreton-Robinson, one of Australia’s most highly regarded Indigenous academics. Internationally, she is known for her scholarship in whiteness, feminism and critical Indigenous studies.

Dr Levon Blue is another key member whose research areas include financial literacy education and mathematics education with a social justice focus.

Applications for research degree scholarships for 2019 close on September 30. Email research.scholarships@qut.edu.au for details.

The support you need for your research degree

The Indigenous Research and Engagement Unit (IREU) is committed to fostering an environment for Aboriginal and Torres Strait Islander people to share research and knowledge.

The IREU offers Indigenous Higher Degree by Research students at QUT, a culturally supportive environment that includes access to student support services, study areas, scholarships, financial support, research seminars and critical reading groups.

Find out more

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