



WESTERN SYDNEY
UNIVERSITY



Centre for
Smart Modern Construction

c4SMC INTER-UNIVERSITY ACADEMIC ROUND TABLE

14th November 2018

Research at
Victoria University of Wellington

Morten Gjerde

Head of School of Architecture

Observations

Fragmented industry slow to adopt change

Many continue to cling to sequential contracts as way of managing risk

Flip side is that New Zealand's small size has been factor in early adoption of other technologies

Housing must drive demand for off site construction manufacture

Working through common barriers



On site assembly of prefabricated elements at Hobsonville Point



Victoria University

Emphasising digital tools and media in all areas of built environment

- Design
- Visualisation
- Manufacture
- rapid prototyping
- evaluation and assessment
- ongoing management

First Light House

- 2011 Solar Decathlon entry
- Student led
- Broad buy-in from wider university and industry



Industry relationships

Prefab NZ

BRANZ

X-Lam

ConcreteNZ

Central and local
government

Funding for student
and staff research

Access to technology
and expertise



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THE HEART OF INNOVATIVE CONSTRUCTION

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Prefab CoLab

Prefab Cluster

PrefabNZ is the heart of innovative construction in New Zealand. PrefabNZ has been obsessed with increasing innovation in construction since its birth in 2010. That's eight years of relentlessly informing, educating and advocating for offsite or manufactured construction methods, also known

Master's & PhD research

Well developed culture around design research

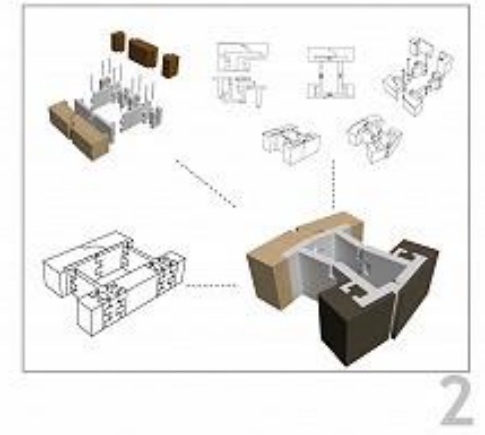
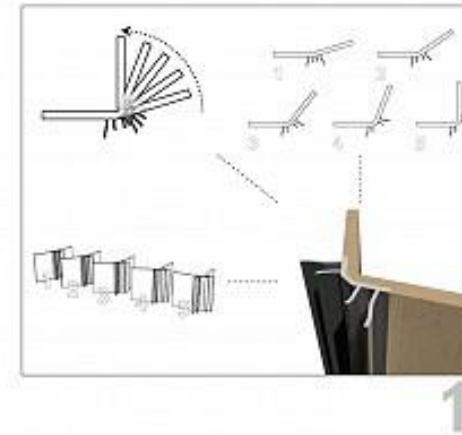
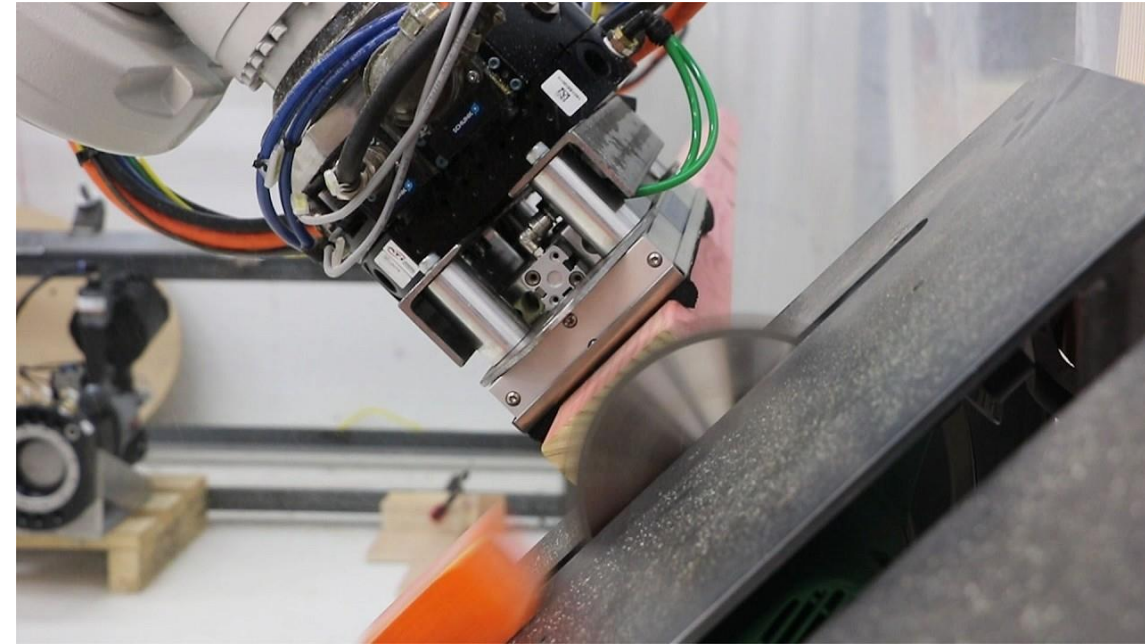
Students tackling industry issues

Automated construction and manufacturing:
Natural curiosities are driving explorations of
technology and craft.

- Jointing/ modularity/ aesthetics

Disaster relief housing

Infill housing



Circular Economy

Design for
minimum waste in
manufacture

Design for
alternative uses
at end of life

Cradle to cradle
thinking

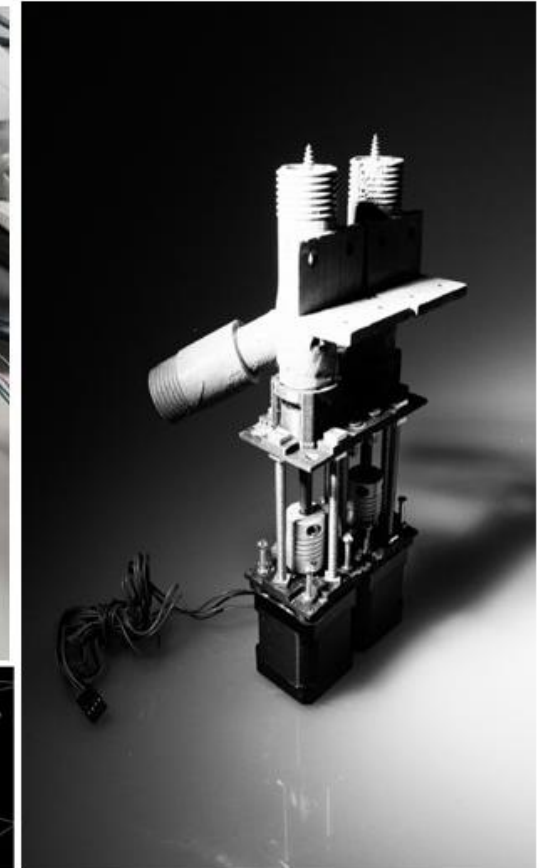
Design Experiment
'X-Frame' CNC Plywood Structure



Opportunities

How might we think about design and manufacturing through an indigenous culture lens?

On site manufacturing **Situa**



"Technological Mis-alignments: re-aligning fabrication and materials with cultural complexity."

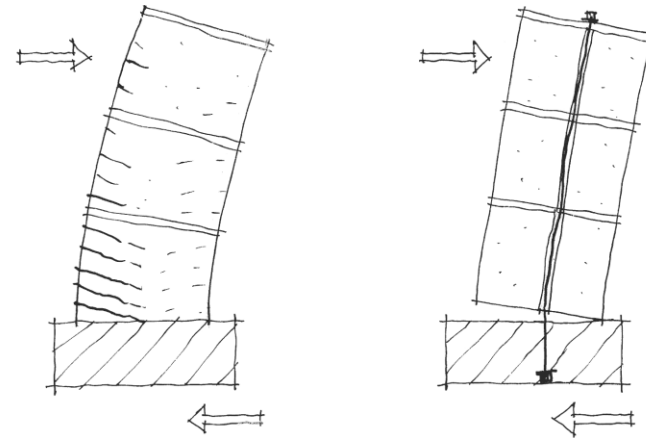
Derek Kawiti/ Mark Bagley Clay + Bio matter scaffolding. Pūriri Moth/ Ngāpuhi kaupapa for tool making. Bio-computational partnering/ design orchestration.
References to term 'Whakairo' Whaka-Iro.

Opportunities

Design and manufacture for seismic conditions – **Earthquake Hazard Centre**

Building science curriculum could extend into new ways of working.

Project management specialisation



National
SCIENCE
Challenges

UNIVERSITY OF
VICTORIA
UNIVERSITY OF WELLINGTON

BRANZ

In summary

As a consequence of the current housing crunch, New Zealand could see growth in use of OSCM

Longstanding relationships with industry and government can enhance relevance of our research

Engine of our research capability is our postgraduate student base

Owing to multi-disciplinary and collaborative environment, Victoria University well placed to take leadership in design-led research for prefabricated construction

