APPLIED COLLABORATIONS

8TH INTERNATIONAL CONFERENCE AND EXHIBITION OF THE ASSOCIATION OF ARCHITECTURE SCHOOLS OF AUSTRALASIA
## Interdisciplinary and collaborative projects

11

*Design as Laboratory: Building value through design-directed research*

**MICK ABBOTT, JACKY BOWRING**

12

*Collaborating post-occupancy: Teaching and learning across architectural design and sociology*

**KELLY GREENOP, NAOMI STEAD, LYNDA CHERISH**

17

*Design as Locating the Self: Lessons from Lebbeus Woods and the Analogical Studio*

**SOPHIE HAMER**

24

*When Film, Fashion & Interiors Collide: Designing the After Darkly Graduate Fashion Show*

**MARISSA LINQUIST, ANNA CARTER, MONICA DALEY**

31

*Iterating Success: Learning to change through understanding failure*

**PETER MCPHERSON, ANNABEL PRETTY**

38

*The Sensory Meal: A performative interior design and theatre collaboration*

**KIRSTY MÂTE, JACQUELINE POWER, HELEN TRENOS**

46

*Design for Dementia: Exploring alternative places, spaces and practices of care*

**FLAVIA MARCELLO, PATRICIA BUCKLEY, TAKEMI SUGIYAMA, HEICO WESSELIUS**

53

*Solar Decathlon: A timely retrospective*

**GUY MARRIAGE**

66

*A collaborative Research program to develop an urban model for achieving positive development in Christchurch (New Zealand): Results and perspectives from Studio Christchurch Summer School 2015.*

**ALESSANDRO MELIS, ALEXANDER FIGG, EMANUELE LISCI**

70

*Wonderstuff & Turbulence: The RMIT Building 36 Project*

**VIVIAN MITOSGIANNI**

81

*“Design” and “Design” the verb, noun, prefix and suffix; Architecture studio teaching as an epitome of design methodologies.*

**ANNABEL PRETTY, PETER MCPHERSON**

94

*Negotiating Spaces Between: [Re]Cuba collaborative studios*

**MARK SOUTHCOMBE, ANDREW CHARLESON**

104

*Virtually There: A 4-dimensional digital multi-disciplinary learning environment*

**STEPHEN WARD, CHRIS LANDORF, GRAHAM BREWER, KIM MAUND**

111

*Steam in the Southern Capital: Emergent technology and social media in interdisciplinary travelling studios for a total immersive learning experience*

**MARCUS WHITE**

120

## Live and interactive projects

130

*New Structures: An Innovation in the Teaching of Technology*

**ANDREW BARRIE, JOHN CHAPMAN, YUSEF PATEL**

131

*Learning-by-Making: Transformative Learning in Design*

**RICHARD BURNHAM, LOUISE WALLIS, IAN CLAYTON, ROBIN GREEN**

138

*Academy-Profession-Market: Confronting the tension through the live project*

**MICHAEL DAVIS**

146

*Collaborating for Heritage at the Cutting Edge of Technology: 3D laser scanning cultural heritage sites in Queensland*

**KELLY GREENOP**

158

*FESTA: Urban Regeneration through collaborative live projects in a post-disaster city*

**JESSICA HALLIDAY, JO MAIR, NICK SARGENT**

167
Hothousing Collaborative Research
HELEN NORRIE, TRACEY WOODS

The live project and prototyping as agents for collaboration and collective learning in the architectural design studio
KIRSTEN ORR

Subjective place-making across physical and on-line environments: Strengthening personal identity while generating community
SCOTT SKIPWORTH

Situated and community projects

Topology of a Phantom City
HAMISH BEATTIE, DANIEL K. BROWN

The Temporal and the Temporary: Time, collaboration and architecture in post-quake Christchurch.
BARNABY BENNETT, TIMOTHY MOORE

Education as Mediation: Blurring the line between expert and lay knowledge
JACQUELINE MCINTOSH, PHILIPPE CAMPAYS, MAIBRITT PEDERSEN ZARI, BRUNO MARQUES

New Technologies, Social mMedia and Spatial Representations: Auckland’s public space of spectacle and consumption
MANFREDO MANFREDINI, ROSS JENNER, PAUL LITTERICK

Urban Collaborations
HELEN NORRIE, ROSS BREWIN

Caught in the Act of Collaboration: Students’ experiences of collective learning within a real-world design studio context
LINDY OSBORNE, JILL FRANZ, JULIE DAVIS, LYNDAL O’GORMAN, JESSICA ELLIS, GLENSA AMAYO CALDWELL

Benefits of Experiential Education 1915 and 2015
STEFAN SOHNCHEN

Ko Wai te Ingoa o Tenei Whare?*
SIMON TE ARI PRENDERGAST, DANIEL K. BROWN

Design ideas workshop as model for empowering youth participation
JANET THOMSON, PATRICK STEIN

Planning Temporary-use Projects From Above: The case of Testing Grounds
BREE TREVENA, TIMOTHY MOORE

Make Believe: Activating a Strategic Practice
KATHY WAGHORN

A Place to Stand
SIMON WHIBLEY, LEANNE ZILKA

Poster

Modular Rule: Collaborative Mass Housing
SKY TIAN TIAN LO, MARC AUREL SCHNABEL

Outside-in: Dwelling in the City
MARK SOUTHCOMBE, NIC AYRES

SubUrban Dream
MARK SOUTHCOMBE, HENRY READ

New Newtown Urban Village
MARK SOUTHCOMBE, QIDUAN ZINDER Aisin-Gioro

Christchurch: Paradigmatic Rejuvenation
WILLIAM CONWAY, DANIEL K BROWN

New technologies, social media and spatial representations: Auckland’s public space of spectacle and consumption
MANFREDO MANFREDINI, ROSS JENNER, AARON HILLS
The virtual public thing: Or about the res publica in the post-consumerist society

MANFREDO MANFREDINI, ROSS JENNER, AARON HILLS 313

Critical transitions in the public space of contemporary Chinese cities: Evaluating the “otherness” of the malls of consumption and spectacle in Changsha

MANFREDO MANFREDINI, XIN TIAN, WEI CHUNYU 316

The energy gallery: Form finding and optimization of a structural steel-glass system for passive cooling and energy harvesting

ALESSANDRO MELIS 318

‘Walk and Talk’ the Queen Victoria Market

CHRISTOF MAYER, SVEN MEHZOUD 320

Arclight


Sub Rosa: A phenomenological approach to community design

ROSS T SMITH 326

Housing for construction workers in Ahmedabad, India

HANNAH BROATCH, KERRY FRANCIS 329

The Allegorical Architectural Project

HAMISH BEATTIE, DANIEL K BROWN 331

The Carvers’ School: An Indigenous Response to Post-Earthquake Christchurch

SIMON TE ARI PRENDERGAST, DANIEL K BROWN 333

Studio Christchurch Retrospective Exhibition 335

1-10 OCTOBER 2015
130 TUAM STREET, CHRISTCHURCH

‘Studio Christchurch is a collaborative Christchurch based research and design platform for architecture and related disciplines. The vision of an exemplary Christchurch rebuild is seen as a shared opportunity to bring together tertiary institutions, local industries, the profession and governmental bodies. Through facilitating collaborative partnerships, Studio Christchurch connects tertiary institution’s design studios with real-world issues.’

DEPARTMENT OF ARCHITECTURE AT UNITEC INSTITUTE OF TECHNOLOGY
Summer School 2014, Summer School 2013, LuxCity 2012, Canterbury Tales 2013, CityUps 2014

SCHOOL OF ARCHITECTURAL STUDIES AT CPIT CHRISTCHURCH POLYTECHNIC INSTITUTE OF TECHNOLOGY

SCHOOL OF ARCHITECTURE AND PLANNING
AT THE UNIVERSITY OF AUCKLAND
Summer School 2015, Summer School 2014, Summer School 2013, LuxCity, Future Christchurch, CityUps 2014

SCHOOL OF ARCHITECTURE AT VICTORIA UNIVERSITY WELLINGTON
Summer School 2015, Summer School 2014, Summer School 2013, LuxCity 2012

SCHOOL OF LANDSCAPE ARCHITECTURE AT THE UNIVERSITY OF LINCOLN
Summer School 2014, Canterbury Tales 2013

GEOGRAPHY DEPARTMENT AT THE UNIVERSITY OF CANTERBURY
Christchurch 2061 _Seismic Design Studio 2013

DEPARTMENT FOR CIVIL AND NATURAL RESOURCES ENGINEERING
AT THE UNIVERSITY OF CANTERBURY
Christchurch 2061 _Seismic Design Studio 2013
Posters included in the exhibition

STUDIO][CHRISTCHURCH

Summary by Associate Prof Uwe Rieger, the University of Auckland

The 48 posters Studio][Christchurch of the Exhibition summarize the multiple projects that were organized through this collaborative Christchurch based research and design platform from 2012 to 2015. Studio][Christchurch was conceived by Associate Professor Uwe Rieger and Camia Young in response to the seismic events of 2010 and 2011, which had left 80% of the center of New Zealand’s second largest city destroyed.

Posters 1-48:

The tertiary partners of the project were: The Architecture Department at Unitec, School of Architectural Studies at CPIT, the School of Architecture and Planning at the University of Auckland, the School of Architecture at Victoria University Wellington, the School of Landscape Architecture at the University of Lincoln Geography Department and Engineering Department at the University of Canterbury.

Over the course of 3 years approximately 1000 students participated in about 60 design studios.

DEPARTMENT OF ARCHITECTURE AT UNITEC INSTITUTE OF TECHNOLOGY

Posters 49-52

Large Scale Fabrication Studio – FESTA – LuxCity 2012
Peter McPherson, Lester Mismash, Annabel Pretty, Julian Rennie, Cesar Wagner

Posters 53-55

Large Scale Fabrication Studio – FESTA – Canterbury Tales 2013
Peter McPherson, Annabel Pretty, Julian Rennie

Posters 56-60

Large Scale Fabrication Studio – FESTA – CityUps 2014
Graeme McConchie, Peter McPherson, Annabel Pretty, Julian Rennie

Poster 61

The Vertical Farm
Kim Clarke, Regan Laidlaw, Don Pengpala, Jeanette Budgett, Dushko Bogunovich

Poster 62-63

Breaking the Grid
Theresa Samson, Christian Burgos, Jeanette Budgett, Dushko Bogunovich

Poster 64

Light Conversion
Reya Patel, Flora Kwan, Jeanette Budgett, Dushko Bogunovich

Poster 65

Industrial Housing
Bree Morgan and Jessica Hulme, Jeanette Budgett, Dushko Bogunovich

Poster 66-67

Wellness Centre Christchurch
Kate Morland, Jeanette Budgett

Poster 68-69

Rebuilding Christchurch, Rebuilding History
David Cooke, Jeanette Budgett

Poster 70

The Creative Corner
Akshay Shah, Desmond Lam, Sean Patterson, Villa Yan, Budgett, Dushko Bogunovich

SCHOOL OF ARCHITECTURE AND PLANNING AT THE UNIVERSITY OF AUCKLAND

Christchurch 2061 – Seismic Design Studio, 2013

Summary by Assoc. Prof. Uwe Rieger and John Chapman

The 41 posters give an overview on the outcomes of the Seismic Design Studio, which was a research project at the School of Architecture and Planning at the University of Auckland as part of the interdisciplinary platform Studio][Christchurch.

Posters 71-112

PROJECT LEADER: Associate Prof Rieger and John Chapman.

PROJECT TEAM: Bennett Hume, Wade Kobus, Alexander Sullivan-Brown, Sindre Johnsen, Paul Yoon, Charlotte Farquharson, Sreeja Basak, Louie Tong, Sulin Wang, Amrita Kaur, Yang Meng, Xinran Chen, Xiaoming Zhang, Linbing Chen, Huicheng Wu, Yumeng Feng, Bill Liu, Erno Chen, Dylan Huang, Samantha Harrison, Kelsey Muir, Xiang Li, Chungsang Oh, Kar Lok Chin, Eleanor Glenton, Thomas Huang, Chaeyoung Lim and Yuk Chi Pang
Future Christchurch, 2011-2014
A review by Assoc Prof Uwe Rieger, the University of Auckland. The ten Future Christchurch posters give an overview of the intentions, principles, strategies and outcomes of a research and design project which ran from 2011 to 2014 as part of the Studio [ ] Christchurch platform. The Future Christchurch studio was conceived and led by Camia Young at the School of Architecture and Planning at the University of Auckland.

Poster 113
Introduction to Future Christchurch

Poster 114
V1: Future Christchurch

Tutors: Camia Young, Derek Kawiti
Students: Alexander Miloevic, Seth Munn, Mikhail Rodricks, Zhi Jian David Wong, Che Wei Jacky Lee, Praveen Karunasinghe, David Ma, Tina Martin, Thomas Denhardt, Jeremy Yoo, Sam O’Connor, Thomas Ward, Gong Rickey Wang, Gang Henry Feng, Logan Suhrer, Johnathan James Guest, Scott Alexander Riley Thorp, Duy Khang Phuong, Justin Baatjes, Yvonne Mak, Eric Nakijima, Jason Barnes, Richard Jones, Charlotte Laus, Jordon Tomas Saunders, Yun Kong Sung, Adrian Vincent Kumar

Poster 115
V2: MATERIALS AND RESOURCES

Tutor: Camia Young
Teaching Assistant: Jordon Saunders
Students: Mona Ibrahim, Farah Saad, Jae Tommy Shin, Justin Baatjes, Timothy de Beer, Melissa Harrison, Elizabeth Campbell, Lucy Hayes-Stevenson, Fritha Hobbs, Cynthia Yuan, Sophia (Whoi-Seung) Kim, Natalie Tan, Daniel Yang, Angela Yoo, WooMin Lee, Hannah Steenson, Qianzi Chen, Vivian (Weian) Chen, Tessa (Yichen) Song, Jeffrey Jiang, Young Hun Kim, Lily Pan, Dalia Al-Timimi, Amanda Nakarmi, Jeremy Wymer, Chun Qin Zhang, Nan Wu, Owen Xing, Pei Wang

Poster 116
V3: ECONOMIES

Advisors: Camia Young, Chris Barton
Thesis Students: Alexander Haryowiseno, Che Wei (Jacky) Lee, Zhi Jian (David) Wong, Praveen Karunasinghe, Biran He, Erica Austin

Poster 117
V4: EMERGING IDENTITIES

Advisors: Camia Young, Chris Barton

Poster 118
V5: FORMFOLLOWSPHYSICS

Advisors: Camia Young, Chris Barton
Advisor: Camia Young
Thesis Student: Khang Phuong

Poster 119
V5: THE BLUEPRINT?

Tutor: Camia Young
Teaching Assistants: Erica Austin, Melissa Harrison
Students: Han Chen, Hew Kenn Chew, Samuel Wong, Adam Chin, Shirin Heidari, Hanin Rajeh, Sam Peters, Maddie Clarke, Yining Tan, April Broderick, Laurielle Shannon, Charlotte Farquharson, Taylor Chan, Louise Tong, Damien He, Amanda Nakarmi, Darryl Jacobson, Janina (Nina) Massee, Gemma Cookson, Chunjin Zhang, Tessa (Yichen) Song, Qianzi Chen, Jianxiang (Mickey) Ma, Matthew Ryu, Ziyi (Bill) Liu

Poster 120
V7: POLYCENTRIC CITY

Tutor: Camia Young
Teaching Assistant: Kelvin Fung
Students: Nan Wu, Owen (Wei Wei) Xing, Huizi Suki Jiang, Xiaoming Zhang, Lesley Lu Chen, Emma Suzanne Farmer, Ting-Hin (Desmond) Lam, Villa (Huilin) Yan, Zara (Cheng) Huang, Ying Yan Zhou, Lydia Ai-Un Liu, Roberto Onat Wallace, Dimitar Borislavov Penchev, Rod Ziqian Tian, Timothy James Hogarth

Poster 121
V8: CHRISTCHURCH THE RESILIENT CITY

Advisors: Camia Young, Associate Professor Uwe Rieger
Thesis Students: Thomas Huang, Tessa (Yichen) Song, Xinwei Gu, Jeffrey Chow, Lesley Lu Chen, Tao Shen, Qianzi Che, Villa Yan

Poster 123
Thesis Project: ECONOMIES

Advisors: Camia Young, Chris Barton
Thesis Students: Alexander Haryowiseno, Che Wei (Jacky) Lee, Zhi Jian (David) Wong, Praveen Karunasinghe, Biran He, Erica Austin
SCHOOL OF ARCHITECTURE AT VICTORIA UNIVERSITY WELLINGTON

Poster 124-125
Reclamation and Rebirth: an Inventory-driven Design Opportunity for Christchurch
Jane Baker, Jacqueline McIntosh, Diane Brand 358

Poster 126-127
Urban Trauma: The Contemporary Square and the New Urbanist City – Reintegrating Christchurch Cathedral Square
Benjamin Chalmers, Chris McDonald 358

Poster 128-129
Lost Property
Emma Cleaver Shaw, Daniel K. Brown 359

Poster 130-131
Red Zone as Green Corridor: Opportunities for Suburban Intensification: a Christchurch Case Study
Sacha Constable, Chris McDonald 359

Poster 132-133
Constructing a Community
Katie Dickens, Fabricio Chicca 360

Poster 134-135
Wharf Dwellers
Tom Dobinson, Simon Twose, Jan Smitheram 360

Poster 136-137
Re-thinking the Kiwi Dream
Libby Elmore, Sam Kebbell 361

Poster 138-139
Drawn in: The Intimacy of the Hand Drawn Image & Design for the Robert McDougall Drawing Institute
Jasper Kelly, Peter Wood 361

Poster 140-141
Re Christchurch Cathedral: an Investigation Towards a New Christchurch Cathedral
Ed Kilkenny-Brown, Peter Wood 362

Poster 142-143
Intensifying Christchurch
J. Hamish McLachlan, Kerstin Thompson 362

Poster 144-145
[a] Project for the Sub-Centre
Grace Mills, Sam Kebbell 363

Poster 146-147
Design for Smart Transport: An Integrated Multi-Modal Transport Interchange in Central Christchurch
Joey (Ung Yu) Moh, Diane Brand, Jacqueline McIntosh 363

Poster 148-149
Dwelling Narrow: Affordable Home Ownership in the City
Angela Pennington, Mark Southcombe, Tane Moleta 364

Poster 150-151
The Wrong Side of the Tracks
Jorle Wiesen, Sam Kebbell 364

Poster 152-153
The New Eastside: Re-populating East Christchurch Through Diverse, Contextualised, Medium Density Housing
Brett Wines, Mark Southcombe 365

Poster 154-155
Shaky Studio 2011
Esikia Faiga, Melissa Thompson, Grace Mills, Jayden Caincross 365

Poster 156-157
Shaky Studio 2011
Oliver Booth, Libby Elmore, Josephine DeGuzman, Cameron Hurrell 366

Poster 158
Shaky Studio 2011
Nicola Bowman, Renee Nankivel 366

Poster 159-160
Design for Disassembly 2012
Emma Lusty, Lu Cheng, Grant Davis, Declan Burn 367

Poster 161-162
Convention Centre Feb 2013
Amanda Pride, Catherine Hall, Catherine Mooney, Vi Huynh, Connie Ling, Dawid Wójasz, Helen Zou, James Schollum, Zoe Redwood 367

Poster 163
Convention Centre Feb 2013
Aaron Miller, Charles Collins, Charlotte Stephens, Declan Burn, Daisy Cheng 368

Poster 164-165
The Theatre District Feb 2014
Ann-Kathrin Kuepper, Matty Nuku, Patrick Li, Luke Bryant, Will Hope 368
**Poster 166-167**
The Theatre District Feb 2014
Olly Syme, Milla Saris, Divyesh Bhaven, Vanessa Coxhead, Ben Webber, Janice Chan

**Poster 168**
The Theatre District Feb 2014
Amelia Hoult, Chris Young

**Poster 169-170**
Cityhood 2015
Eunice Sison, Maria McManus, Tyler Harlen, Ben Laurenson, Stephen Yiavasis, Elise Proby-Cautley

**Poster 171-172**
Cityhood 2015
Jessie Ewart, Satcey Mountford, Claire Ford, Ryan McCully, Mikayla Roadhouse, Jaymoyne Middleon

**Poster 173-174**
Cityhood 2015
Megan Hunter-Wilson, Jordan August, Hannah Bridger, Joshua Roberts, Rosie Evans, an Krisadawat

**SCHOOL OF ARCHITECTURAL STUDIES AT CPIT CHRISTCHURCH POLYTECHNIC INSTITUTE OF TECHNOLOGY**

**Poster 175**
Christchurch Aquatic Centre – 3rd year final project – EXIT Exhibition 2014
Michael Carter

**Poster 176**
Narrative Scars – 3rd year final project – EXIT Exhibition 2014
Tom Johnson

**Poster 177-179**
New Christchurch Library – 3rd year final project – EXIT Exhibition 2014
Sean Van Scouten

**Poster 180**
Small Businesses Hub – 3rd year 1st term project | Taylors Mistake Surf Club - 3rd year final project – EXIT Exhibition 2014
Jackson Mills

**Poster 181**
Colombo Start-up Hub- 3rd year 1st term project 2014
Michael Carter

**Poster 182**
Glenafric Farm Homestead – 3rd year final project – EXIT Exhibition 2013
Ryan Brent

**Poster 183-184**
Residential Reinterpretation; a proposal derived from analyzing the ideas of Christopher Alexander – 3rd year final project – EXIT Exhibition 2013
Alexandra Smith

**SCHOOL OF LANDSCAPE ARCHITECTURE AT THE UNIVERSITY OF LINCOLN**

**Poster 185-187**
Eden Project New Zealand: Reimagining the Christchurch Red Zone as a waterscape/landscape with Ki Uta Ki Tai Mountains to Sea Trust and Sir Tim Smit, Eden Project Cornwall
Mick Abbott, Kate Blackburne, Jacky Bowring, Charlotte Murphy

**Poster 188-189**
Aririra Wetland, Te Waihora restoration project: with Living Water, Department of Conservation, Fonterra, and Waihora Ellesmere Trust
Mick Abbott, Kate Blackburne, Jacky Bowring, Nick Dickinson, Charlotte Murphy

**Poster 190-195**
Banks Peninsula Mosaic: Design Possibilities for a Landscape Synergy of Melded Values
Kate Blackburne SUPERVISORS Mick Abbott, Jacky Bowring

**Poster 196-201**
Uncertain Landscapes, Avonside Christchurch: Encouraging a Community’s Ability to Adapt through the Design of Landscape Infrastructural Spaces
Nicky Copley SUPERVISORS Jacky Bowring, Mick Abbott

**Poster 202-203**
Equilibrium: Inhabiting a Changing Coast, New Brighton, Christchurch
Justine Carey
The 8th International Conference and Exhibition of the Association of Architecture Schools of Australasia is organized by the New Zealand Architecture Schools at Victoria University, Unitec and the University of Auckland. The event is supported by the interdisciplinary teaching and research platform Studio Christchurch.\(^1\) and the Christchurch Polytechnic Institute of Technology (CPIT). The focus of the conference is on educational projects in the context of collaborations in the built environment, bringing together a broad range of built environment academics and professionals.

The event will consist of a conference and an exhibition, on interdisciplinary studios, collaborations with the profession and industry and community based projects. The exhibition will also present recent Christchurch based projects of Studio Christchurch Members.\(^2\)

In reflection on the recent Christchurch events and experience the conference will investigate the principle of collective learning, which is based on the unique human ability to remember ideas, communicate them, and to build up on ideas from others. Over the past two decades, more than any other technical development in history digital media has boosted our capacity to operate collectively.

Learning is no longer just about what we know as individual but also about how we access information and how we share information with others. Today’s problems are being solved in teams, across and in-between disciplines and through collective learning processes. The new interest in integrative planning strategies such as adaptive and user generated urbanism are key indicators of a shift in thinking. Effectively this shift requires new competencies and dissolves the traditional distinctions between teaching and learning.

On a global level this change is reflected in the emergence of an increasing number of alternative architectural education platforms. With multiple collaborators involved, their aim is to react to acute architectural, social and environmental demands, which expand beyond the limitations of institutional structures and the focus of assessment criteria for predefined outcomes.

The conference is structured around 3 broad themes:

1. **Interdisciplinary and collaborative projects**
   Outcome focussed planning and design projects which involve multiple disciplines or the collaborations with professionals, industry, NGOs and governmental bodies. The design collaboration may include interaction in physical space or through virtual environments, the development of methods, protocols and tools and the exploration of new professional skill sets and competences.

2. **Live and interactive projects**
   Realization projects which include a range of stakeholders. They may involve the production of buildings, places, events or public art. Common is the real world setting, the public display and interaction.

3. **Situated and community based projects**
   Design and planning projects which are based on user and community participation. Projects are situated, based on reflection, empowerment, participation, vision or activism. They may involve investigations to support new social planning structures and offer alternatives to traditional practice.

The event will consist of two components. The AASA conference for individual presentation and an exhibition to introduce recent interdisciplinary studios, collaborations with the profession and industry and community based projects.

---

1. Operating from 2012 to early 2015 Studio Christchurch was an interdisciplinary platform for the facilitation of collaborative teaching and research projects between tertiary institutions in partnerships with local industries, profession, communities and governmental bodies. With a focus on the Christchurch rebuild Studio Christchurch’s aim was to foster applied investigations and public outcomes. As an educational platform its goal was to prepare the next generation of built environment professionals for advanced contemporary practice with skills for interdisciplinary collaboration, team oriented leadership and collective learning.

2. Studio Christchurch members were: the Architecture Department at Unitec, the School of Architecture and Planning at the University of Auckland, the Geography Department at the University of Canterbury, the Department for Civil and Natural Resources Engineering at the University of Canterbury, the School of Architecture at the Victoria University of Wellington, the School of Landscape Architecture at Lincoln University and the Architecture Department at the Christchurch Polytechnic Institute of Technology.
Interdisciplinary and collaborative projects

Outcome focussed planning and design projects which involve multiple disciplines or the collaborations with professionals, industry, NGOs and governmental bodies. The design collaboration may include interaction in physical space or through virtual environments, the development of methods, protocols and tools and the exploration of new professional skill sets and competences.
Within university-contexts, design is increasingly being framed as experimental. There is a shift from the exemplary to the investigative, and from the singular outcome to a suite of scenarios. It is within this changing constitution of design research that Lincoln University’s Landscope DesignLab operates. Design as Laboratory presents a challenge for those who continue to see design as merely in the service of ‘solving a problem,’ rather than recognising its value as a vehicle for exploring new terrain.

The challenges of design-directed research are amplified in spatial design disciplines, as research methods have traditionally been borrowed from other academic paradigms with design as the ‘subject’ of research, rather than the ‘method.’ However, landscape architecture also offers a potent context for operating a laboratory approach, since it is a discipline built on the nexus of art and science. And as design theorist Richard Buchanan argues, drawing upon the observations of John Dewey, it is precisely this interplay between science and art which is key to embracing design-directed research. Contrary to a positivist position, it is not, as Buchanan points out “science as primary and art as secondary.”

The challenge is to transform a research paradigm in which, as Carter so deftly puts it, “knowledge and creativity are conceived as mutually exclusive.” Carter observes that “while ‘creative research’ ought to be a tautology, in the present cultural climate it is in fact an oxymoron.” The key here is that the relationship is only oxymoronic in the ‘present cultural climate,’ reflecting the way in which the prevailing positivist paradigm dominates research activity. Researchers within creative disciplines are often faced with the challenge of needing to quantify or defend ‘research outputs’ in terms that come from the language of positivist science. The problem is that, according to creative practice researcher Steve Strange, “‘Creativity’ is seen as an amorphous, irrational concept; ‘research’ a rationalising force tied to the institutional nature of the academy.”

This split between creativity and knowledge is recent and reflects the scientific paradigm of the last couple of centuries. The severing of the subject and the object has much to answer for in terms of the de-coupling of creativity and knowledge. Agamben reminds us that, “For Antiquity, the imagination, which is now expunged from knowledge as ‘unreal,’ was the supreme medium of knowledge.”

In the School of Landscape Architecture at Lincoln University, Landscope Designlab is actively pursuing a research agenda where design is its core research method. Students and staff within the DesignLab explore research questions in ways which foster collaboration and collective endeavour, and include research and researchers from other disciplinary areas.

Landscope DesignLab seeks to examine, and in the process consider the capacity of design-directed research to generate options, opportunities and value other those being identified elsewhere. In this paper we discuss projects undertaken with the DesignLab, including Ararira/Yarrs, Eden New Zealand, and Punakaiki. We offer five strategies that are core to research within a design laboratory: questioning, collaborating, designing, grounding and communicating.

1. QUESTIONING
Research can be too often motivated by the presumption of finding The Answer. However, a key strategy for building value is to frame projects around a process of active questioning. As landscape theorist Thomas Oles puts it “Do not rush to answers, savour the asking.” We draw on the insight...
the field of design thinking, which recognises the need to challenge this ‘rush to answers,’ and instead recognises the value in not over-simplifying the problem. Design theorist Charles Owen’s simple graph (Figure 1) provides a potent illustration of the importance of explicitly exploring the problem. Owen’s graph points to how the common leap to ‘how to make it’ completely overlooks the question of what should actually be made.7 This is very pertinent to landscape architecture, where a tradition of dealing with ‘the site’ can result in looking only towards site solutions in the exploration of a question. However, it may not be the site that holds the innovative potential for exploring the question – there may be more imaginative scope in an expansive framing, investigating for example the prospect of a hand-held device as much as a designed place, or an item of footwear as much as a boardwalk.

Projects are most powerfully framed around research questions that are honed through a multidisciplinary literature review. Selecting research questions of active interest to other academic fields allows comparison of design-based findings with results from other disciplinary fields and methods.8

Questioning as a core strategy in working with the design laboratory emphasises research as active, rather than the passivity which can result from selecting a topic. A focus on a defined topic tends to lead to closing down rather than opening out. One of the useful tactics in opening-out is a form of questioning known as the Five Whys (championed by design consultancy IDEO), an approach which peels layers off assumed understandings of a situation, and like Owen’s graph can cast a problem into a very different context. Industrial engineer Gary Jing offers an example of how the Five Whys can derail path dependency in the exploration of a design problem, noting how at the Jefferson Memorial in Washington DC, an issue with crumbling stone had arisen9. Rather than simply treating the stone itself in the rush to find an answer, unpacking the problem repositioned the challenge:

- Why does the memorial deteriorate faster? Because it gets washed more frequently.
- Why is it washed more frequently? Because it receives more bird droppings.
- Why are there more bird droppings? Because more birds are attracted to the monument.
- Why are more birds attracted to the monument? Because there are more fat spiders in and around the monument.
- Why are there more spiders in and around the monument? Because there are more tiny insects flying in and around the monument during evening hours.
- Why are there more insects? Because the monument’s illumination attracts more insects.

Through researching the problem the imaginative scope for this landscape-based problem was revealed not to simply fix the stone, but to turn the lights on an hour later each night, thus avoiding the infestation of tiny insects.

2. COLLABORATING

Design as laboratory invokes a sciences model, emphasising collaboration and collective research, where different research teams work on key aspects of shared questions. As a physical, shared space the DesignLab establishes a collaborative research setting which fosters ongoing discussion and exploration, where intensive moments of ideation can be at the same time tested and critiqued. This is in distinction to the ‘study alone’ office settings that are the norm for most humanities-based researchers. The concept of the lab draws on science as a model, particularly in recognising the potency of co-operative and collective research activity.

And perhaps central to the strategy of collaboration is the fact that not-collaborating is a risky business. Adopting an autonomous and non-collaborative stance when involved in problems in a landscape setting would profoundly limit the prospects for innovation. No one, and no discipline, alone holds the breadth of knowledge needed to effectively explore problems. Landscape DesignLab projects actively engage with other disciplines within the university, as well as wider stakeholders. The Punakaiki project, working with Rio Tinto, Conservation Volunteers NZ, Department of Conservation and ecologists from Lincoln...
University seeks to increase the ecological potency of a retired mining site. Landscape architecture sought to express a desire for citizen science into an integrated, site-based expression of ‘voluntourism’, and collective ecological restoration as the mechanism for transferring land into neighbouring National Park through the very actions of people. In this collaboration it was identified that National Parks have the capacity to afford experience that support widely held values of conservation, including protecting the environment, native species, and the country’s green image, and beyond default activities of walking and camping. 

3. DESIGNING
The focus for DesignLab is on multidisciplinary research questions that seek to increase imaginative scope and innovation potential, supporting methodological strengths in design including scenarios, design, synthesis and diagramming. Design-directed research enlists both generative processes such as ideation, as well as analytical techniques like critique.

A matrix can facilitate cross-pollination, bringing together elements which may not have been used in an interrelated way before, like the ‘knight’s move’ – the oblique operation where things not linearly connected are combined in unexpected ways. In Figure 3 students at Lincoln University’s School of Landscape Architecture are undertaking a concept generation activity to shift communication-centric design proposals focusing on individuals to those that emphasise interaction and the building of social value. In the exercise, concepts are located according to two axes: individual-collective and communication-interaction. Students then determine design strategies to ‘shift’ their concepts further along the collective and interaction continuum.

A quadrant approach based on intersecting axes, or ‘quattro stagioni’, can similarly be both analytical and generational, where the two axes set out a field of possibility. In the context of memorial design, we used this approach to critique existing memorials in terms of their form and their temporal qualities. A formal continuum between object and place, and a temporal continuum between static and changing were set up to provide an armature for critique. Opposing these two axes creates the more powerful design-based device of the four quadrant array. Utilising the opportunity of a workshop with practitioners familiar with emotions and rituals, the quadrant tool was used as a kind of crowd-sourcing collaborative design critique. The workshop sought to identify the ways in which memorials can operate, and the example here is based on an analysis of the Gibellina Earthquake Memorial in Sicily. Each practitioner recorded their responses on the axes, and these were subsequently overlaid to reveal areas of concentration, and areas of absence (Figure 4). The distribution of dots – each reflecting one person’s critique – reveals how the reading of one site can be nuanced across a range of interpretations. Design generation can subsequently be leveraged off an analysis process such as this, where the process of questioning can prompt exploration and create briefs. For example, what is a memorial which is a changing object, vs a memorial which is a changing place? How can a memorial be both static and changing? And perhaps both object and place?

4. GROUNDING
Context, environment and project are never generic. Design-as-laboratory seeks out in the tangible a test bed for the value and validity of theoretical frameworks. Landscape DesignLab grounds research in place, recognising how creative research must be simultaneously within the universal and the local. Paul Carter expresses this eloquently with an analogy to weaving:

The warp is composed of the threads extended lengthwise in the loom. These can be thought of as the culture's myth lines, the grand narratives...
in terms of which it defines its sense of place and identity. But these linear narratives can neither cohere to form a pattern nor be subverted and overturned, unless the shuttle of local invention is at work, casting its woof-thread back and forth, over and under the warp-threads. Only in this way can cultures collectively gain agency over their story lines, learning to become themselves at this place. But to take control in this way, to represent a society locally reinventing itself, the shuttle has to advance, creeping progressively crosswise along the warp.\textsuperscript{15}

Landscope’s Eden NZ project is borne on the strategy of grounding. While the originating concept of an immersive environment with exhibition and education dimensions stems from Cornwall in the UK, the New Zealand iteration is emphatically of this place. The location, form and focus of Eden NZ are about here, and they explore the question at the core of the project: how might a significantly degraded environment be used as an opportunity for re-focusing Christchurch’s relationship with its lands and waters, and values of Mahinga Kai, in the twenty-first century? The site of exploration is in Christchurch’s residential red zone, an area
necessarily abandoned following the earthquakes of 2010 and 2011. One impact of the earthquakes was to lower the land level, which had the consequent effect of increases in flooding, raising questions over possible scenarios for cities faced by rising sea levels. With water, rather than Eden UK’s plants, as a focus, this project is tuned into issues that are pressing at global, regional and local levels. It is not only inundation with water that is being explored, but Canterbury, the province in which Christchurch is located, has a relatively dry climate and irrigation is both a problem and an opportunity in the highly modified landscape. Sails speak of ocean migrations, plantings of ecological restoration and rivers of revitalised aquatic ecology. Here design is negotiating Christchurch’s transition – both materially and perceptually – from its location on the plains – a landscape – to its place within rising seas and aquifers – a waterscape as well. The woof-thread carries these water stories through the overarching warp threads of wider narratives, with Eden NZ becoming the place of grounding and collaboration.

5. COMMUNICATING

Perhaps the most powerful added value in creative research comes with its communication. Landscape DesignLab is committed to presenting findings so researchers in other disciplines, can incorporate findings into future research projects and/or wider stakeholder applications. Design has particular strengths in generating compelling visual, time-based and three dimensional form that make comparative differences, and analysis, readily discernible. As part of the wider collaborative process, the communication of findings is a value that design brings to the table.

Communication of design-directed research must often connect with lay audiences – which range from scientists unfamiliar with the language of design, to stakeholders unfamiliar with both science and design.

CONCLUSIONS

While much energy can be used in defending design as a research method, as Cross advises, design researchers ‘must concentrate on the ‘designerly’ ways of knowing, thinking and acting … Design practice does indeed have its own strong and appropriate intellectual culture, and … we must avoid swamping our own design research with different cultures imported either from the sciences or the arts’ (Cross, 2001: 56). The examples illustrated in this paper demonstrate the efficacy of design-directed research, and an expanded scope for both landscape architecture research, and also its value for themes of inquiry in the wider academic world.

Here design research is content in that conjectural realm of the nearly coming into being – as research sites that foster imaginative scope rather than a rendering of competencies that are expressed in working drawings, schedules and sub-contracts. As such it firmly locates design within a realm of scholarly research questions, as distinct to design’s default, professional orientation that focuses on the search for, and delivery of a ready answer.

3 Carter, Material thinking, 7.
12 Viktor Shklovsky, Zoo, or Letters not about Love, (Emwood Park, IL, Dalkey Archive Press, 2001), 103.
13 ‘Quattro stagioni’ is Four Seasons, with reference to the pizza topping that has four different flours dividing the circular pizza into four quadrants. This term was first used in the context of design thinking by Wolfgang Jonas, drawing on the work of Peter Schwartz, The Long View, (Doubleday) 2004, After method.
15 Carter, Material Thinking, 11.
The use of post-occupancy evaluations (POE) amongst architecture practitioners has diminished over recent decades, with research into the human use of buildings becoming largely the domain of sociologists and in-house commercial-in-confidence studies, rather than publicly available architectural forums and media. Despite this, many architects recognise the value of and need for learning from post-occupancy evaluations, of various kinds. Teaching the principles and practices of POEs is important in the training of future architects, sensitive to and ready to work with diverse client groups and on projects where novel approaches are being tried.

This paper analyses the collaborations between academics from the disciplines of architecture and sociology at The University of Queensland, and the involvement of a building developer, architectural practitioners, building managers and architecture students, in the evaluation of a new multi-residential building, with a focus on the new occupants’ experiences. This live research project addressed the public housing policy problem of ‘under-occupation.’ It did so by analysing the success of a pilot social housing scheme designed to assist older occupants to ‘down-size’ from three or four bedroom suburban public housing dwellings, to new, purpose-designed one or two bedroom apartments, thus freeing the larger houses for others with greater space requirements.

In this paper we discuss the effect of collaboration, in opening up genuinely novel research questions, and the presentation of real research to students, as a way of preparing them for professional architectural experiences. From preparing for interviews, to site visits and dealing with new terminology, the process of collaboration in traditionally siloed disciplinary areas has built capacities and developed avenues for future research based on mutual areas of interest across disciplines and into professions.

**INTRODUCTION**

The critical evaluation of architecture, including the critical analysis of specific buildings and the ability to reflect on one’s own designs, are essential skills developed as part of the professional education of architects, beginning in the University setting. Architecture has a strong culture of critique, with reviews of new architectural productions occurring in magazines, journals, newspapers, and online. Accordingly, students of architecture are taught that review is an essential part of the process of design critique, that can help to develop the design of specific projects, as well as their design skills and sensibilities more broadly. However, the systematic evaluation of buildings after the initial fanfare of their opening, during the long duration of occupation after the fleeting moment when they are new, has been waning in recent years. Post Occupancy Evaluation (POE) began in the 1960s and then enjoyed a resurgence, at least amongst academics asserting its relevance and calling for its reinstatement, in the early 2000s (see for example Cooper1). While in its earlier incarnation the POE was concerned with a holistic evaluation of a building, including the user’s perspective, more recent iterations are often focused on sustainability measures and metrics, ushering in a new term to reflect this change: building evaluation (see for example Pressier and colleagues work,2 and Meir and colleagues3).
Essential to the original POE method, born out of its roots in the environmental psychology movement of the 1960s, was an understanding of users’ needs on a psychological level, and interestingly this has continued most clearly in Australia in those situations where social and cultural factors are considered explicitly important to the success of a building, such as Aboriginal and Torres Strait Islander housing. In the Indigenous sector, POEs are still conducted both by researchers (for example Davidson and colleagues from the Aboriginal Environments Research Centre at UQ Architecture and the Australian Housing and Urban Research Institute (AHURI) more broadly), and architectural or lead contractor firms (see for example Arup’s). When POEs are carried out, many are marked commercial-in-confidence and not available beyond the staff of the firms immediately involved. They are rarely widely available, thus able to contribute to an ongoing development of design quality, and progress on design problems at the profession-wide level. Many POEs focus on a single point of analysis, either six or twelve months after a building is first occupied, with infrequent studies of long-term user experiences within the building.

AHURI funded research often encompasses both architecture and sociology researchers, and for good reason, as many sociology schools have maintained an interest in the ways in which housing in particular shapes people’s experiences. In contrast, architecture schools and researchers have, to a certain extent, focused on a building’s quantitative performance in response to questions of environmental sustainability. While these issues of sustainability are genuinely urgent, they are sometimes pursued at the expense of considering the social effects and implications of the built environment.

Against this background, and with a broad interest in the human experience of buildings, this project investigates ways to instill architecture students with the concepts, and capacity, to advocate for, conduct, and utilise POE information. While many students may not go on to formally use POEs in their careers, their ways-of-being an architect are shaped by experiences in architecture schools in which POE principles are valued, and the interdisciplinarity of evaluating buildings and their users’ experiences are embedded in the curriculum.

THE PROJECT
Associate Professor Lynda Cheshire, a sociology researcher and member of UQ’s HAUS (Housing and Urban Studies) research network, initiated the project by inviting network members to form a team. The network’s members, an interdisciplinary group of researchers with interests in housing, the built environment and the social sciences, were invited to join a low-budget research project investigating a new-build social housing apartment project in suburban Brisbane, designed to accommodate existing social housing tenants, who were ‘down-sizing’ into apartments to free up their family homes for larger family households. The project aimed to “identify the factors associated with tenants’ willingness to move (or desire to stay) and to track any changes over a three year period in reported levels of satisfaction among those who move and those who do not”. This presented an opportunity for architecture students to participate in a live research project, learn about tenant surveys and participate in interviewing, interact with the not-for-profit developer BHC, and hear about how this group of architects and building managers proposed to learn from this group of tenants. An important aspect of the project was its focus on in-depth information rather than a one-off survey approach, exemplified in its plan to interview tenants over a three year period - monitoring their satisfaction with their housing over a relatively long duration, thus helping to assess the viability of this new model of housing for future projects.

Researchers from UQ Architecture proposed two cohorts of students to be involved in the project: 16 Master of Architecture (M Arch) research students from Associate Professor Naomi Stead’s class focusing on this project specifically, and 19 third year undergraduate Bachelor of Architectural Design (B Arch Des) students undertaking a design studio entitled “Clients and Culture” with a sub-theme of social housing, under the guidance of Dr Kelly Greenop. This paper reports on the students’ participation to date through the first phase of the research project, and details the additional activities and some preliminary analysis of student’s experiences from both cohorts.

Both groups of students undertook several site visits as part of their studies, the M Arch students visited the new apartments into which tenants were moving, and a few were part of the interviewing team for the research project. This aspect of the project was logistically difficult because of the requirements for a nimble response to tenant’s agreement to be interviewed about their house moving experiences. We were keenly aware that moving house is a stressful, and at times, even traumatic event in the lives of many people, especially those who may have been in
a family home for decades, and a sensitive team was needed for interviewing. Seven tenant interviews were conducted in this phase under the guidance of Lynda, with students participating in interviewing two of those people. The seven interview transcripts became the primary data for the Masters cohort, and the interviewing experience for the two students who participated was enlightening in terms of the skill required and their relative inexperience in this field.

Another aspect of the research that was initially planned for the MArch cohort of students was not, in the end, able to be realized. Initially, Naomi had hoped to be explicit about mixing methodologies, spanning between Lynda’s sociological expertise, and the students’ architectural skills – particularly in visually documenting a dwelling, in its built form, its furnishing, and traces of human occupation. Given the level of the MArch cohort, the students had quite well developed skills in measuring, drawing, and photographing a dwelling, as well as plan analysis, and setting all of this information out in an accessible visual format. So the plan had initially been that the students would visit the interviewees in their existing, ‘under-occupied’ public housing dwelling, and in addition to interviewing them, would (with their informed permission) make a documentation of the house, its size, layout, and garden, as well as the way their possessions were arranged and displayed and fitted into this space. The idea was that this rich visual record would not only complement the testimony in the interviews, but that it could also later be used for comparative purposes later, when the same occupant and possessions were moved to the (much smaller) purpose-built apartment. It was also projected that this information could be used as a prompt in later interviews, as occupants reflected on what they had gained, and perhaps lost, in the transition between the two dwellings.

As the subject transpired, however, this documentation could only take place for one of the interviewees’ dwellings. One of the students who was involved with the interviews was also able to take a quick photographic record of the dwelling, and subsequently to produce plans of the house, and later analyses of how this house compared to the new apartment. So while this single instance of architectural documentation was not as complete as had been hoped, it did provide a rich and promising precedent for further methodological collaborations in this area in future.

This cohort had a series of weekly lectures and discussions, of which Lynda attended half, providing guidance and acting as a critical interlocutor to students’ assumptions about social housing, tenants’ desires and how buildings work for clients. A series of guest lecturers also participated including BHC board member and architect Eloise Atkinson; two of the architects of the apartments from Brisbane firm Arkhefield; and UQ Architecture honorary senior fellow Dr Greg Bamford – an expert in the social settings within housing.

Joining with the Masters students, the B Arch Des students also participated in a series of joint site visits to social housing settings. The first was to the apartment block under investigation, for a tour of the building as the first tenants moved in, the second was a longer field trip to Melbourne open to both groups with 22 students participating, primarily from the undergraduate group, who each received a travel subsidy to attend. This three-day visit included touring social housing from the 1960s (see Figure 1) and some under renovation or renewal now, as well as speaking with housing managers about masterplans to totally renew a decades-old social housing estate in Melbourne’s inner south. The students also met with professionals from the social services sector, who were working in support roles for social housing tenants and homeless people (see Figure 2), and who shared keen insights into housing adequacy and the importance of social housing to the social and urban fabric of a city, and its residents. A final field trip was undertaken in Brisbane, visiting a separate social housing apartment block completed by BHC in recent years, to hear from the primary architect, and also the building manager, nearby service providers and all-importantly, a tenant from the apartment who volunteered to show students and researchers his apartment and answer questions about which aspects of his home worked and which did not (see Figure 3). While these activities do not constitute post-occupancy evaluation per se, they do expose students to types of building users usually hidden within their educational experiences.

The M Arch students used the seven interview transcripts and a literature review of their own particular area of interest to come to a focussed analysis of social housing taking up some aspect of the apartments or social housing more generally for an in-depth analysis. In this, their architectural skills and methods assisted them in some areas (coming up with original and imaginative areas for enquiry, grounding an abstract theoretical literature in concrete case studies) while they struggled with
Figure 1. Visiting social housing in Melbourne, field trip, with discussion by community garden worker.

Figure 2. Visiting social support facilities in Melbourne, guided by staff.

Figure 3. Visiting social housing in Brisbane, with talk by architects from Cox Rayner.
other, more customary sociological methods (for example in coding and analyzing the interview transcript data). The B Arch Des students developed a series of client profiles for their project to design sixty social housing apartments on one of five real sites in inner-Brisbane, including some provision for a socially useful facility to be shared with the surrounding neighbourhood residents. Students were tasked with meeting the specific needs of clients, based on these profiles, which were re-written following the Melbourne fieldtrip. Interim and final critiques of the B Arch Des work included critics from the profession who had experience with social and community housing and M Arch students contributed to the interim critiques as ‘senior peers’ providing feedback.

**DISCUSSION AND ANALYSIS**

This collaboration between architecture students and both architecture and sociology researchers revealed the overlaps between the disciplines. Skills essential for architects can be developed using explicitly architectural approaches, complimented with an implicit reliance on approaches from allied disciplines, such as sociology.

The sociological approach to housing experience analysis included: seeking to understand the social construction of meanings of home including its extension beyond the physical property to incorporate the garden, neighbourhood, neighbours etc and the way these influence their perceptions of the house; examining the connection between self and home across the lifecourse – i.e. how connections to home are built up over time and given meaning via symbolic encounters and life events; and how social housing tenants’ experiences of, and decisions around home, are shaped by broader political and institutional forces and how these structural processes interact with individual agency and choice.

The ways in which students in this project examined these themes included participating in the interviews, reading sociology text in the courses, and hearing sociological perspectives on housing through researchers’ perspectives. The involvement of the project architects, of both the housing under evaluation and other social housing, was critical, especially as it involved deep questioning by both students and architecture researchers. They were able to interrogate the extent to which the abovementioned concern with tenants experiences, the meanings of home, and how agency were manifested in the projects – that is, how architects synthesized their ‘sociological’ knowledge into a design response. Students learned that architecture practitioners embedded these concerns into their design approaches, possibly because of their work in these specific types of projects, but also because good design concerns itself with broader themes and acknowledges the impact and importance of design decisions.

The sociological approach to researching the housing experiences of tenants within the live project was easily accepted by both students and the architecture researchers from the school because of the existing social science and theory teaching that UQ Architecture students have received within the school both in design and other subjects. UQ Architecture design studios have a close relationship with the research centres within the School, leading to an embedding of humanities and social sciences within the school’s design teaching.

The student learning experiences as part of this project can be categorised into several types of learning: interdisciplinary; architecture-in-practice; and contextual. These categories help us to identify the benefits provided by this kind of learning experience.

**INTERDISCIPLINARY LEARNING**

The students in both cohorts learned discipline-specific language and research methods, from sociological approaches to housing. Moving outside the infamously impenetrable ‘archi-speak’ and learning the language and practices of sociologists, but also developers, building managers and service providers, helped to break down the disciplinary silos that can prevent dialogue and mutual understanding.

A key factor in the success of this aspect of learning was the respect and good will extended to students by members of other disciplines and the tenants themselves. Community workers and building managers in particular saw the students as ‘junior architects’ and acknowledged their nascent professional knowledge and articulated their pleasure that students were interested in community problems and economically disadvantaged tenants in particular. Students were similarly positive about the possibilities of learning from those with experience in the social housing and homelessness sectors, and were highly engaged in questioning and discussing their point of view about architecture and housing in particular.

The participation of the two M Arch students in the tenant interviews was a learning experience for the whole cohort. These interviewing students
acknowledged the difficulty of interviewing with minimal training; what they imagined would be a simple task was revealed to be a very difficult one. The improved quality of information from interviews lead by Lynda, a highly experienced interviewer, was noted by both the students interviewers and their class-mates reading the transcripts. Nevertheless the students, recognized interviewing as a viable future technique applicable to architecture practice and considered the rich information garnered by the interviews incredibly useful. The analysis of interviews including learning to code and identify key themes in interview texts was an important lesson from sociology that assisted in their more in-depth analysis of tenants’ experiences.

As interviewers, the students learned how they become co-producers of knowledge. The revelation that tenant interviews were harder than they expected was a realization for the students that tenants were not vessels filled with information about their housing ready to be tapped. Instead, for tenants their thoughts about housing were often unfounded, emotional and personal. Interviewing required careful thought, guided questioning and experience to help interviewees ‘discover’ their own feelings and opinions about their homes. The students thus learned that the ‘quality’ of the data gained through interviews is contingent on a number of factors: the skill of the interviewer; the interactional dynamics between the interviewer and interviewee; and the willingness and ability of interviewees to articulate their feelings and experiences through the medium of talk. In part, students’ position as trainees learning how to ‘do’ interviews may have helped them in this regard. The tenants who were interviewed by students were happy to talk with them because they were students: both had grandchildren at university and wanted to help with their studies.

ARCHITECTURE-IN-PRACTICE LEARNING

The involvement of architects responsible for the design of the apartments being analysed by the M Arch cohort, and those who had designed buildings on our site visits, added considerably to the learning experiences of the students from both cohorts. Through the use of the new apartment building as a case study example, the architects were able to articulate and demonstrate the complexity of a real project, and the constraint and opportunities that it offered. The architect’s skill in overcoming significant site disadvantages – that rendered the site unsuitable in the eyes of commercial developers – demonstrated valuable lessons to the students: that design quality can result in not only a better project, but open up the possibility for a project where none might otherwise exist. Students were able to see how architectural design had developed the viability of the project that was made possible only through skillful design decisions, opening up the opportunities for increasing social sustainability and community justice through the provision of decent housing. The reality that architects have to solve complex problems and the quality of their resolution will affect not only the ‘ultimate living conditions of their clients, but preceding that the viability of a socially useful project, was both daunting and inspiring to students.

Other experiences as part of the project that are particularly applicable to future practice included the students realising the limited knowledge and understanding that non-architects have about architecture. Listening to building managers, service providers and tenants speak about buildings gave students from both cohorts an insight into how architecturally enculturated they had become. Learning to speak with people about buildings using lay-language (for example, asking a question in a way that an interviewee can understand) and addressing topics that might seem trivial or banal to architects, such as doing the washing or owning a dog, provided a powerful re-framing of architecture from the ‘outside’.

LEARNING IN CONTEXT

Students’ learning on this project took place in a research context where the grounding of questions in a research literature, was a key part of their tasks, even for the undergraduate students. This provided them with a model for future design and research tasks, rather than learning content only. The research setting in this case included ‘real’ elements, which we hope encouraged students to care about both processes and outcomes. Dealing with housing clients in particular and reading their transcripts or even meeting them face-to-face aimed to humanise housing tenants for students, and also to contextualise the need for social housing in Australia. Some Australian students commented that they were surprised that the housing tenants seemed ‘just like us’ in many ways; while in contrast other tenants’ experiences of homelessness, family violence and social dysfunction, or the reality of being a member of the working poor in Australia, helped many students to recognise and acknowledge their relative privilege. By contrast some international students brought with them and articulated their familiarity with their own experiences of social disadvantage.
with social housing and experiences of its normality in their country of origin, globalising the discussion and consideration of housing. In this way students’ own backgrounds and those of the cohort were able to further develop the context for social housing and that housing is a profoundly personal experience, but of overarching social importance.

Finally the banalities of logistics and planning fieldwork trips for both cohorts, from risk analysis forms, to scheduling appointments with service providers around their commitments, highlighted the context of the mundane but unavoidable realities of the world. Student’s inability to attend more than two tenant interviews because of scheduling difficulties, and the constraints of ethics approvals and fieldwork plans help to raise awareness of how difficult it can be to do good work within a context of constraint. Nevertheless the profound reality of fieldwork was a major benefit of the project.

CONCLUSION

Our interlocking student projects, supporting and linking to research, have, we hope, built a basis for increasing student involvement with Post Occupancy Evaluation at UQ in both architecture and sociology. We argue that the live nature of the project, the complex fields of interdisciplinary studies and the engagement with a variety of stakeholders from the project have helped to create a setting conducive to the development of a professional identity within architecture students. Dall’alba argues that ontological – ways of being – changes are necessary for professionals to become expert in their field.\textsuperscript{10} While we acknowledge that content learning is important, immersive setting such as design studio,\textsuperscript{11} can be complemented by other immersive settings such as a research project matched to studio, or a stand-alone research project. We hope to further develop and analyse the outcomes of students’ learning experiences as the research project progresses in the coming years.

ACKNOWLEDGEMENTS

We acknowledge with thanks to the participants in this project, the students who assisted with fieldwork, contributors to the course: Tim Morgan from Cox Rayner; Jemima Rosevear and David Langley from Arkhefield; Eloise Atkinson from Diecke Richards Architects and BHC; BHC and Department of Housing Staff who facilitated site visits, tours and tenant interviews.

\textsuperscript{7} Cheshire, L. (2015) Personal communication (email).
\textsuperscript{8} BHC was formerly Brisbane Housing Company. It remains a not for profit housing organization that develops housing, primarily multi-residential, for low-income earners under various forms of subsidy.
\textsuperscript{9} These are the Architecture Theory Criticism History (ATCH) research centre and the Aboriginal Environments Research Centre (AERC) both based in the School of Architecture.
n order to promote productive and valued collaborations among future Built Environment professionals, this paper considers how students are able to locate their self within a collective setting. The self is always complicit in collaboration, in that knowing where you stand, what you have to give, and how to receive and internalize the ideas of others precede any valuable interface.

In undertaking this endeavor, the paper examines the framework of the ‘Analogical Studio’ established by Lebbeus Woods, and builds his preliminary explorations of this model. Woods suggests that the rich landscape of the city, to which each individual building contributes and in which differences are accepted and conflicts negotiated, provides a model for the organization and development of the design studio. Under this model, the individual remains legible in the outcomes, rather than being subsumed in the process of the common effort.

The application of this model to projects other than group design projects is tested with reference to a Design Communication studio project carried out in 2013 entitled ‘Wanderlust’. As the course objectives explicitly asked students not to design something, alternative foundations for learning, methods of value creation, and relationships between projects and the students working through them were opened up. Rather than identifying site conditions as common ground, drawing operations and media became the landscape of commonality. Overlaid on this, through a focus on the transitory stages of the project, students became aware of their individual biases, choices, and desires, in relation to those of their peers, and worked to communicate these selfhoods.

In the ‘Wanderlust’ studio, developing individual projects are considered as a collaborative landscape. Through an adaptation of Woods’ model, design becomes a method of locating the self in relation to others, to site, to wider architectural contexts and to a growing personal oeuvre.

Within the university, the acquisition of collaboration skills is considered a vital part of preparing graduates for the professional workplace. Following the observation that collaboration within the workplace is enacted by groups of people coming together, the dominant means for introducing collaboration into the university is through group projects. This method is built on two assumptions that I will interrogate in this paper. First, that university design studios should mirror or attempt to re-create the conditions of the current professional setting, and secondly, that the only way for students to come to value collaboration, and develop tools for working collaboratively, is by working in groups.

If architectural education limits its aims to the production of graduates for current practice, it reneges on one of the fundamental university roles – to discover, to critique, and to develop. This production-style education can only be supported if we agree that current practice is perfect, or if not perfect, then unable to be changed. Following this critique, it quickly becomes apparent that university cannot reduce its aims to the re-creation of current conditions, but should instead look to understand the underlying mechanisms of practice, and, where possible, enable transformation. In an educational context, this becomes a question of how we can most effectively enable graduates to develop tools to positively engage with, and even intervene in, the existing conditions of practice.

Despite some progress away from the Beaux-Arts model in recent years, current design studios continue to encourage students to independently develop ideas, which are then judged, in an isolated review situation against peers, to determine which is best. This system also forms the setting for the group projects that attempt to encourage collaboration. The opportunity for the formation of a truly open,
collaborative model is often undermined by this high-pressure, competitive environment, especially as despite work being carried out in groups, students are often given individual grades. Where grades are awarded to the group as a whole, some students see this as an opportunity to reduce their engagement, while those left to pick up the slack feel undermined by the process. While it could be argued that these same effects are noted within practice, the development of animosity towards the very idea of working with others at an early career stage seems counter-productive to the aims of enhancing collaborative practices in the future. Further to this, group projects do not define strategies for interaction – which are usually in place in the workplace. This can often result in students becoming wary of others.

Amidst this overarching focus on group projects, the role that individual projects might play in aiding understanding of the value of collaboration, and developing skills required to facilitate effective collaboration, as well as enabling the student to develop methods of disciplinary critique, is rarely discussed. One of the key aspects of developing the collaborative potential of students, which is often conversely limited by group projects, is the development of the self. Graduates often reflect on their experiences at university as being a time of ‘finding’ or ‘growing into’ themselves. As young adults, architectural students learn to transition from trying to do the right thing, ‘ticking the boxes’ or doing what will please their tutors, to producing work which has a kind of internal logic, which they are proud to present and are able to articulate the value of the work to a deeper level.

Despite this key transitional aspect of university life, architectural courses, looking to remodel the traditional notion of the architect as an individual genius, often shy away from discussion the self.

While by no means do I want to reinstate this model, I wish to make a stand for the value of the self within collaborative processes, including within collaboration.

While working with others, individuals must be able to freely express their own ideas – which means they must be able to produce, value, and then communicate them. In this sense, the self is always complicit in collaboration. Knowing where you stand, what you have to give, and how to receive and internalize the ideas of others precedes any valuable interface you might have with them. In order to promote productive and valued collaborations among professionals, we need to consider how students are able to locate their self within a collective setting. They must not be required to sacrifice the self to an expected norm, and certainly not to mold or curtail their ideas to a pre-conceived end product. Establishing a greater focus on the role of the self within collaborative efforts would allow universities to prepare students to play roles in the evolution of practice into modes as yet unknown to us.

Two central questions come out of these conditions: How might students come to value collaboration? And how can graduates develop the skills to enable them to play valuable roles within collaborative settings in the workplace? It is to these conditions and these aims that this paper is directed. In response to ongoing changes in the practice of architecture and its field of operation, this paper looks to suggest ways in which we might better formulate the conditional relationship between the university design studio and practice itself, such that we begin to cultivate a terrain of engagement that allows us to better enable collaboration when and where it matters.

THE MODEL: ANALOGICAL STUDIO

The Analogical Studio is a model developed by the late paper architect and architectural educator Lebbeus Woods as a response to the contested ground between university and practice outlined above. The idea of an analog is to be “like something else in some ways but not in others” which immediately releases the design studio from mirroring the profession. As a model for collaboration and individuality, Woods proposes the city itself. He suggests that the rich landscape of the city, to which each individual building contributes and in which differences are, on the whole, accepted and conflicts negotiated, might provide a model for the organization and development of the design studio. Woods pushes for exploration of the ways in which individual projects might be embedded in, and generative of, collaborative landscapes. He suggests that design studios that operate on basic principles of collaboration provide a more embracive and effective method of nurturing individuality, or the self.

A proponent of open discussion, Woods used the open forum of an online blog to document his reflections on two courses in which he developed the Analogical Studio model: Buffalo Analog, run at the State University of New York at Buffalo in 2004, and LA Analog, also run in 2004, at the Southern Californian Institute of Architecture (SCI-
Arc) by Woods and James Lowder. Both studios began with individual analyses of specific sites in their respective cities. The students then developed a range of “appropriate analogical studies”, which Woods does not detail, before establishing interventions, communicated in model form, which were presented as components of a collaborative construction developed by the group as a whole. Woods worked to create a common territory within the studio between students, as a site for individual ideas about space to be brought into relation with one another. He suggested that this “urban analog space” would “contain complex interactions of people and their ideas”, with the goal of creating an “analog of urban processes and formations, a parallel with the actual city, to better inform us about the city itself.”

The studio groups were understood as communities, in which individual aims, concerns, interests and project developments both challenged and enhanced the richness of relations. This “urban analog space” was manifest in the physical space of an open cuboid, “eight feet on each side”, within which the students constructed models of their individual projects. Students needed to negotiate with others for space within the cube, and manipulate their projects in response to the community conditions.

Contained within this model is an implicit critique of the profession of architecture as it is currently constructed, and more explicitly, a critique of the way in which the studio is formulated as a mirror of the profession. In his blog posts, Woods reflects on a number of strategies used within the studio, which enable it to transcend this traditional relationship. Woods notes the design problem as the central point of preparing an analogic studio, as it forms the “place and occasion for the weaving together of many strands of thought, work and knowledge”. In the traditional studio model, the problem is established by assigning site and programme. This echoes the framework of a professional architectural competition, with in-built
undertaken as individual investigations. Both projects were understood as existing in the context of latent spatial desire; the other re-purposed them in different manners: one developed an imaginary model, and testing the application to non-group projects, without either emulating or opposing a determinist, complete end-product. The analogic studio embraces complexity, with Woods noting that it provides greater opportunity for a "shift in the angle of viewing and understanding a situation or complex set of conditions...one that gives the opportunity to see the familiar in new ways."6

Woods also makes the important distinction that in the production of the collaborative model, the individual remains legible in the outcomes, rather than being subsumed in the process of the common effort. Each student's three-dimensional model stands alone, and forms part of the overall landscape. In addition to this, the collaborative system in place in the LA and Buffalo Analog studios largely removed the hierarchical role of the teacher, suggesting that no single individual can have the correct answer to the problems posed. Rather, the teacher becomes editor and overseer of the system.

In these key ways, the Analogic Studio sets in place a framework for the valuation of the self through design. As their productions are not required to fit existing preconceived project outcomes, students are invited to engage with problem, responses, and communication of design analysis. With these basic tenets in place, students are positioned to develop valuable and effective interfaces with their peers in the negotiation and construction of the shared space.

EXTENDING THE MODEL

Building on Woods’ preliminary explorations of this model, and testing the application to non-group projects, the Wanderlust Studio was held at Victoria University of Wellington (VUW) in 2013 with 2nd to 4th year students. The studio comprised of two major projects of equal value, which set up their own individual value systems and decide which aspects they will focus their exploration on, opposing a determinist, complete end-product. The analogic studio embraces complexity, with Woods noting that it provides greater opportunity for a "shift in the angle of viewing and understanding a situation or complex set of conditions...one that gives the opportunity to see the familiar in new ways."6

As a pair of projects, the Wanderlust Studios can be considered as testing ground from which to consider two questions about the frameworks for collaboration within the university. First, how might non-group projects support collaboration? And secondly, what value can non-design studio papers, or more minor studies, bring to support the more traditionally collaborative architecture studio projects, without either emulating or undermining them?

Both Wanderlust Studio projects operated through a process of weekly tasks, which provided a framework for experimentation, echoing the role played by the eight-inch cuboid in the Buffalo and LA Analogs. The tasks themselves were often oblique, and required interpretation on the part of the individual relative to their personal projects. In this way, the work itself became complicit in the formation of the tasks. Alternatively, when a student felt the project losing direction, they re-considered the task in order to reinvigorate the project. The processes of making and analysing were intertwined. Where the focus of design studios is often on techniques, this
Figure 2. Composite Projection Drawing from Wanderlust by Paul Dey

Figure 3: Site Analysis Prosthetic, Emilia Atkins.
studio focused on the value, appropriateness, and relationships between techniques. The obliqueness of the tasks also promoted discussion of how a task might be interpreted, or warped, or stretched, or re-envisioned. Students engaged in lively debates over their interpretations, taking joy in helping one another unlock the tasks in meaningful, individual ways. Site-appropriateness and situated production took on new meanings.

As the tasks were unveiled weekly, students were faced with the difficulty of having to adapt their projects in response to the ever-changing brief. The self was the mechanism for the coordination and integration of the varied aspects of the project into one cohesive space. This process meant that students were not set on producing the best final finished product, but rather, quickly understood the value of testing, conferring, and developing threads through different design methods. Overlaid on this, through a focus on the transitory stages of the project, students became aware of their individual biases, choices, and desires, in relation to those of their peers, and worked to communicate these selfhoods.

In response to this, where Woods defines the analog space for students to feed into – the large physical cuboid – in the Wanderlust Studio the analog space was not predetermined. Rather, it became evident through the processes of design communication. However, following the model of the Analogic Studio, the collective landscape was the 1:1 space of the studio itself, rather than a scale model of another external construct. The students were not asked to design discrete houses and negotiate placing them in a row, as is a typical method of collaboration incorporated in many design studios. Instead, as the course objectives explicitly asked students not to design something, alternative foundations for learning, methods of value creation, and relationships between projects and the students working through them were opened up. Rather than identifying site conditions as common ground, drawing operations, techniques and media became the landscape of commonality. That is to say that the analog, as in the city, was the material communication across spaces between individuals. It was developed and shifted through the project, even becoming the projects, and was formed in interaction with multiple selves. This analog liberated the self in ways that were understood to affect the primary space.
CONCLUSIONS

Although defined as a Design Communication rather than a Design Studio paper, it quickly became apparent through the Wanderlust Studio that within the architectural discipline, communication methods and design are critically interlinked. What is not so evident is that through design or communication, the maker is able to better locate the self. I use the term locate in two senses here, that they are first able to find themselves, to see themselves made visible through design, and secondly, through design, are able to re-orientate the self and to choose where and how to locate themselves. This dual self-awareness allows for a positioning of the self relative to others, which predicates future valuable collaboration.

Looking beyond the role of the group project within the design studio is critical to the success of collaboration goals within the university. The Wanderlust Studio suggests that non-group projects, through project set-up strategies including complexity, focus on the transitory stages of a project, and integration of the unknown, are able to develop a sense of self through design. As a non-design focused studio, the more open process environment enhances student engagement in discussion and allows them to develop and come to value open working interfaces with others. In the 'Wanderlust' studio, individual projects can be considered as a collaborative landscape. Through an adaptation of Woods' Analog Studio model, design becomes a method of locating the self in relation to others, to site, to wider architectural contexts and to a growing personal oeuvre.

Figure 5: Wanderlust Overlay close up, Paul Dey.
ABSTRACT

In 2013 QUT Interior Design and Fashion Disciplines partnered to design the Catwalk for the After Darkly Graduate Fashion Show. The ephemeral work (catwalk canopy and cinematic affects) was developed through collaboration between the authors based upon an undergraduate interior design unit ‘Filmic Interiors’ in which students were tasked with designing a fashion show. Filmic Interiors exploited the potential of film to influence, understand, and develop novel interior spaces through consideration of mise-en-scene, cinematic effects and atmospheric design strategies engaged by key film directors Jean Pierre Jeunet and Darren Aronofsky. The design outcome represents a hybridisation of student design proposals, contemplating both film and emerging collections from graduate fashion students.

The work explored a number of iterations each testing material qualities and immaterial cinematic affects, as a means to develop new space. The process was led by experimentation undertaken by the designers through previous studio explorations surrounding the theme of ‘Strange Space’ and design practice ‘Making Strange’ (Lindquist & Pytel, 2012). In doing so, the work paralleled the material formations of ‘obsessive collections’ and ‘making do’ evident in Jeunet’s scenography, rendering uncanny hybrid space (Ezra, 2008). Evocation of the
immaterial found in much of director Aronofsky’s work, also became critical in the atmospheric experience intended for the show.

This paper explores the process of collaboration and material ex-perimentation in design, approached through a filmic lens. It provides insight into what happens when one enters into what can be termed an ‘ecology of production’, whereby the experimental making becomes the collaborative agent between designers, disciplines, and between stage and spectators. Finally it underlines the importance of ‘finding the work’ through material making and testing rather than through more controlled formalistic responses.

INTRODUCTION

In 2013 QUT Interior Design and Fashion Disciplines partnered to design the Catwalk for the After Darkly Graduate Fashion Show. The ephemeral work (catwalk canopy and cinematic affects) was developed through collaboration between the authors based upon an undergraduate interior design unit ‘Filmic Interiors’ in which students were tasked with designing a fashion show. Filmic Interiors exploited the potential of film to influence, understand, and develop novel interior spaces through consideration of mise-en-scene, cinematic effects and atmospheric design strategies engaged by key film directors Jean Pierre Jeunet and Darren Aronofsky. The design outcome represented a hybridisation of student design proposals, contemplating both film and emerging disciplines exchanged craft, and spaces of making and testing rather than through more controlled formalistic responses.

The After Darkly design and production process demonstrates a multi-faceted, collaborative approach to designing event space. Filmic qualities engaging with the material and immaterial through interplay of canopy installation, light and diegetic sound informed a spatially intense promenade framing bodies from entry to interior. Here all aspects material, immaterial, audience, garments, production team, and the spaces of production contributed to and traversed normal boundaries of collaboration. As spectator became spectacle, disciplines exchanged craft, and spaces of making determined the making, the project took on an extended transformation, what can be termed an ecology of production. The following paper unpacks the key contributors and collaborators of After Darkly, followed by a discussion into the theory of ecology and its context within the design of the QUT graduate fashion show.

AFTERDARKLY

The QUT Graduate Fashion show is a keystone public event within the university calendar. The show is a platform for future talent to be showcased to prospective fashion houses and public alike. After Darkly sought to widen this engagement by showcasing design collectively through cross discipline collaboration with QUT Interior Design as co-conspirators of the fashion show design.

Serendipitously, the Interior Design program had been working with filmic themes within the first year course, complementing the invitation to engage in a production defined by an atmospheric condition, mysterious and seductive, as alluded to in the Dickensian title.

As with any fashion show, the design for After Darkly involved layers of complexity; the desire to showcase both aspects of design without trumping the other, considerations of technical and production requirements whilst maintaining a filmic sense, issues surrounding materials, constructability and adaptability, the (in)experience of the team, time pressures within program and of course, the negligible budget. Throughout the project these layers seemingly collapsed into a holistic approach where design thinking and varied approaches were adapted, and merged into a flow of cumulative practice to realise the work.

The project was scheduled around key stages or thresholds where designers/contributors entered into the collaborative team. Following an initial series of meetings by staff, the fashion directors (graduating designers) were nominated and presented themes surrounding the After Darkly concept early 2013. The production designers for the show were chosen through a selection process of proposals put forward under the Interior Design program: Filmic Interiors. Filmic Interiors called for students to analyse and adapt filmic themes into proposals for the fashion show. The focus here lay in developing understandings around cinematic effects and mise-en-scene techniques engaged by film directors to transpose filmic space to that of the fashions how.

The decision to select two design proposals for the show was strategic in that practically the production work load would be shared, but first and foremost, that the work would go through a process of hybridisation, which merged and adapted concepts as preparation for the ensuing broader collaboration and ultimate realisation of the show. The proposals were inspired by the directorial oeuvre of cult film makers, Darren Aronofsky and Jean Pierre Jeunet and their respective work.
Black Swan (2010) and Delicatesen (1991). Each proposal drew from divergent themes surrounding the immaterial and material, yet found a common ground in the treatment and interplay of the audience spectator. These form background to an understanding of how an ‘ecology of production’ became apparent, whereby all agents, film, fashion, designers, technicians, material, space and spectator, inform and transform normalised boundaries of collaboration.

FILMIC INTERIORS AND STRANGESPACE

Aronofsky

Darren Aronofsky’s films are accepted both as a sublime experience and an exploration of the sublime (Laine, 2015). He considers the materiality of the body in juxtaposition to the immateriality of the soul and in doing so allows for the experience of the sublimely uncanny to form through cinematography (Sobchack, 2000, p. 204). Here, while enabling one to think what is often failed to imagine as a concept of reason, the limits of imagination are pushed, much like the infinite cosmos, or the staggering power of nature (Laine, 2015, p.130). At the behest of the collaborating team, the immaterial of light and sound seen in Aronofsky’s Black Swan (2010), becomes the material of After Darkly forming an uncanny atmospheric expression. The immaterial created moments of surrealism, illuminating the psychology of the garments and the psychology of spectators.

In idiosyncratic style, Aronofsky’s Black Swan examines human pathology deeply rooted in humanism, by employing the irrefutable shock value of the human condition to communicate psychological and physical horror. ‘Walk behind’ or tracking shots allow the audience to focus on the human experience with the body as the lens, creating dramatic effect and tangibility. A representation of this approach was attempted in After Darkly playing on the psychology of experience/show, through replayed diegetic sound at a tethered narrow entry corridor to the show. Though the recorded sound was somewhat diminished in execution, the design of the narrow lengthy corridor, proceeded by the vast open seating and catwalk space, with its’ clang of furniture and people, created an elusive muffle through the thick curtain at the moment of entry.

In Black Swan Aronofsky finds the core of his humanist cinema through differentiating between the disembodied Black Swan and the embodied white swan. This is presented through alternating wider angled body shots with extreme telephoto close-ups to reflect distortion and personalisation of extreme emotion. Here, the audience’s perspective is constantly questioned. The engagement between film and spectator can be transferred to that of design and spectator, where meaning emerges through a fluctuating relationship or interplay concerning the spectator’s body and the designed environment. For After Darkly, the collaborative team sought to place the audience in the space of the garments – situated amongst the catwalk, where spectator became spectacle and co-collaborator. As designers became mediators an interactional and ever evolving phenomena occurred. By facilitating interactive relationships not only between people but also between human and material, socio-spatial connections were shaped.

Jeunet

Jean Pierre Jeunet’s cinematic approach drove key components of the experimentation and materiality of After Darkly. Trademark elements of Jeunet’s work such as ritualistic behaviour and obsessive collections (Ezra,2008,p.1.) led the material making of the main canopy. The physicality of knotting and obsessive repetition of the canopy form, evoked his dark underworld schemas, yet also drew from engagement beyond the screen to that of the collaboration with fashion director Bianca Banen and the rope work used in her collection ‘Beautiful Suffering’. By borrowing from one to inform the other, a crossing of boundary of sorts, the collaboration provided a practical yet engaging aesthetic, forming an uncanny system of suspension for the main canopy and feature of the show.

Beyond the occluded entry corridor, the catwalk space was based in style upon Jeunet’s Delicatesen (1991), whereby the audience and models became ‘characters in the set’. The show commenced through a shared processional experience where the openings of the canopy and the threshold to the audience space became the key transitional zone of spectator to spectacle. This transition became a point of tension in experiencing the interiority of the space as a clear shift in character took place upon each spectator’s entrance. Their role in the production as spectator was challenged as they realised they were for that moment the spectacle in the same position that would soon expose a series of scheduled narratives (collections) they were to view. This technique issued throughout Jeunet’s films as he references memory and history within the everyday object. The landscape of the canopy transformed through the lighting, sound and aesthetic of each
collection, resulting in a subtle shift of interiority as each story would unfold.

A component of the physical making was driven further by Delicatessen’s repeated thematic elements such as tunnels and pipes in generating a response to the interior space. Drawing on the architectural promenade, a series of framed shots revealed in stages the relation of the body to surrounding space. The influence of Jeunet’s work is most evident in the physicality and construction of the canopy as it takes an everyday object (stretch fabric) through an intensely accumulative collaborative design process referential to that of his own rigorous filmic approach.

Spatial planning occurred through a narrative that spoke of characters in terms of a series of close up and medium shots as they engaged with the space. The use of light and shadow (chiaroscuro) to alter a sense of time, location and change in collection was aided by the underlying immaterial qualities of the performance deftly woven into the overall atmospherics of the event that drew on the collective works of Aronofsky.

The immaterial effects of Aronofsky’s Black Swan and material approach of Jeunet’s Delicatessen resulted in a hybridised spatial experience that altered the way in which traditional cinema techniques can be applied to the interiority of a space. Further, through progressive collaborations with design disciplines and spectators, each actor’s role became crucial in the overall experience of each showing.

**STRANGE SPACE, MATERIALMAKING**

Material making and testing of After Darkly’s production design was influenced by previous work undertaken in a complementary Interior Design program that explored strange space through material engagement. Extensive experimentation with dough, pasta, and other substances had been explored in response to generating membranes themed around the body and public performance.

The program looked at how material elements influence the way the body interrogates space through repetition, space and form through act of hybridisation. Working with material qualities, bodily engagement was achieved through the activation of a space (moving components, pulleys, expanding forms) resulting in spectators becoming the spectacle and performer in the work. This experience and process overlaid and further developed the concept for the show, from the canopy design itself and theatrics of the collections, to the cross disciplinary production of space amid a deeper material investigation. The notion of **interior ecology** has stimulated a further conceptualisation of ‘Making Strange’, whereby discipline processes were merged to result in new proposals of space.

**MaterialMaking**

The initial response to the brief began as a series of sketches and discussions that looked at hybridising the design student’s work from two very definitive approaches, the ‘immaterial’ and ‘material’ as discussed above. These underlying approaches were evident through the entire collaborative process taking turns to further inform, and bring in other collaborators to the production.

Material experimentation began as the students tested a series of different fabrics at a scale of 1:1 in a small, low ceiling room (Figure 1). The focus here was to develop a voluminous tunnel quality reminiscent of Delicatessen. The elasticity of each fabric suggested the potential of the form through a familiar engagement of knotting and stretching associated with the obsessive elaborations of Jeunet’s work.

A shift in interior condition occurred as the canopy was transferred and manipulated through a series of associated sites piecing fragments together to create a material solution. Each space afforded a further developed solution and condition similar to that of the final scene where the canopy was to be installed. The temporality of each spatial setting informed the next and the potential of the material form. Transportation between each space gave further insight to the final transportation implications of the work. From this constant transition, a flexible system was generated from rudimentary information at hand, to ensure the intended characteristics of canopy were maintained for its final place of installation. Jeunet achieves a similar effect on the viewer through his filmic style of cinema du look with his films delivering persistent allusions.

Each site of making brought on board a series of new collaborators, where relational thinking allowed for alternative design concepts to be embraced and undergo further experimentation (Figure 3 and Figure 4). Through this production the process of making and materiality of the canopy was further tested and developed. This procession drew on different design and technical disciplines overlapping with theoretical limitations to bring the work to life. It was through this progressive collaboration of articulation as opposed to working
in isolation, that the canopy found its final iteration.

Making, through material experimentation and testing at 1:1 was vital in understanding the properties and potential of the work – the design could go only so far. Paper and testing allowed the team to work through systems of suspension, theatrical engagement, spatial pragmatics and bodily engagement. Flaws in the material were exploited as opportunities rather than imitations, developing the characteristics of the canopy further.

The work transformed physically through the different environments; through lighting implications, bodily interaction with form, growth (in length and depth) and development of idea which saw the work take on another life.

Installation on site opened up further challenges for installation and collaboration where engagement of risk through action promoted invention to form a critical perspective. It was not until installed that the true scope of the work was understood. As a result, the development of the form was heavily influenced and articulated by intensive collaboration between the authors, stage production and directors.

The final stage and ultimate collaboration occurred through audience participation within the interior as discussed previously. This stage pushed the traditional notion of collaborative practice beyond existing boundaries as the design intention was to actively involve all in the production. As Popov notes, ‘to produce space, we must produce the relationships between boundaries and objects’. (Popov, 2010, p.96).

ECOLOGY OF PRODUCTION
The After Darkly Show design represents an applied collaboration between students of fashion, design, and technical professionals in that it presented
opportunities for design themes and concepts to be tested, negotiated and realised through its fabrication for the signature QUT event. This interplay between designers and professionals was strengthened through a respect for the shifting environment which is design, a discipline inherently in a state of flow. The significance for this collaboration however, lay in what can be termed as an ‘ecology of production’, of which experimentation played a critical role.

The term ecology, as suggested in the recent IDEA publication *Interior Ecologies* (2010), was originally transposed from the natural to human sciences in the mid-20th century. Stewart and Sandringham (2010) note that:

> Ecologies are characterized by ongoing, open-ended, animate negotiations within and between complex entities. Understanding human practices as ecologies brings to view the dynamism of their internal transformations, shifting border conditions and renegotiation of external relations. (in Lee, 2010, p.14)

Ecological themes have in recent years promoted a revolutionary lens over the position of design, with a focus upon how these internal or border conditions and interrelations manifest, no more so than within Interior Design. In a design context with collaboration at its core, this ecology not only refers to the inter-relations themselves, but how these interrelations inform a renewed adaptation of the design process. Lee (2010) highlights that a critical ecological approach to design can enable ‘expanded locales for experimentation and research’ and ‘offer a critical perspective on the transformation of spatial and material worlds’ (Lee, 2010, p.6).

Designing and realising the *After Darkly* Show was predicated upon material experimentation, within and between collaborators. As discussed earlier, freedom to experiment with materiality through prior Interior programs empowered the designers to cross curriculum boundaries, and apply this material knowledge to the new task of designing event space. From the initial introduction of the interior design team to the greater production team, adaption of inherently fashion based materials within the show’s design, became the catalyst for mutual engagement of an experimental process. Experimentation with elastic fashion fabric, provided multiple derivations of the primary concept, but also provided fashion designers a familiar means to contribute to and enhance further the developing concept. The fabric also enabled technical staff to deepen atmospheric considerations (eg. lighting/sound/staging), due to malleable, translucent and reflective properties it provided. Experimentation with these aspects, throughout the conceptual development, fabrication and installation phases of the project, informed a deeply novel approach to event environments, and also a deepening of knowledge development and application between collaborators. Key here was the hands on process, or the interplay of material making and testing than through more virtual or controlled formalistic responses. The physicality of the diverse spaces of production also became an agent in the development of the work, and finally, the spectator/audience extended the boundary of collaborative production, in the role they played in entering into and inhabiting the space.
REFERENCES:


In 2012 a collection of architecture and design schools in Auckland, Wellington and Christchurch came together under the umbrella of FESTA to realise a city of light within central Christchurch, devastated by the events of recent earthquakes. The aim of this project was to re-introduce life back to the city centre and provide the community of Christchurch a central city destination for one night.

The large scale fabrication projects offered to students from 2012–2014, in collaboration with FESTA and other Architecture Schools, required students to realise built projects at a city scale. The learning that goes with taking a project from concept, scale model to mock-ups and full scale fabrication involves constant testing and re-testing of solutions, of failure and advancement. Large scale fabrication projects require students to work in a continually reflective way, responding to a number of variables, including very real ones of budget, site, client and technology.

This paper reflects upon these live build projects and the requirement of students to continually explore design responses and develop their solutions through exploring an iterative design environment of prototypes, impressed upon them through the requirement to test and evaluate design proposals based upon real and theoretical design criteria.

The most important quality in an architectural education would appear to be that of designing, given that this is the area the majority of time is spent. The importance placed on design would suggest that we believe that the act of designing can be taught, that when a student leaves his or her education they will be a better designer than when they entered. The primary means for exploration of design in an architecture programme is the Design Studio.

The traditional process for an architectural Design Studio is for a design brief, or project, to be set to students by the studio master to which students will present a series of responses for individualised critique and subsequent advancement. These proposals are normally (but not always) drawn from a limited study of precedents and adapted for the established conditions and will consist of drawings and physical and digital models. This will often be to establish some level of competency with regards a building typology or architectural idea, the back and forth occurring until such time as the learning objectives are met or, more often, as the project deadline materialises. Design process in this case will be disposed to focus on particular aspects deemed necessary for an architect to understand and forms an important part of one’s architectural education, exposing students to important characteristics of critical thinking, planning, composition, environmental considerations, technology, site, context and the like. Through this process a student becomes aware of things that they are required to understand as an architect but there is little opportunity for them to extend the exploration beyond the aims set out by the brief. Students are, as Donald Schön puts it, problem solving rather than problem setting and as such, have little opportunity to understand the process of designing.

"From the perspective of Technical Rationality, professional practice is a process of problem solving. Problems of choice or decision are solved through the selection, from available means, of the one best suited to established ends. But with this emphasis on problem solving, we ignore problem setting, the process by which we define the decision to be made, the ends to be achieved, the means which may be chosen. In real-world practice, problems do not present themselves to the practitioner as givens. They must be constructed from the materials of problematic
situations which are puzzling, troubling and uncertain.”

Design Studio forms the heart of architectural education and “emulation” is a key part of the learning. It is curious that architectural studio teaching in its usual form tends to limit students to seek and apply solutions to a known problem of an architectural typology. We know that students will tend to produce the obvious and this will reduce their capacity to understand at a meaningful level what is being asked from them.

Ruth Morrow discusses the relationship between Design Studio projects and Live Projects and that Live Projects may be set up to serve a different role from Design Studio projects. While we agree that Live Projects introduce students to a range of alternative skills, particularly around collaborative agency, it is the relationship between the two in terms of the process of iterative designing that the following case studies seek to explore.

FESTA LARGE SCALE FABRICATION STUDIOS.
The large scale fabrication studios undertaken as part of the Festival of Transitional Architecture (FESTA) presented an abstract problem to students to solve, namely to realise temporary architectural projects at a city scale for public consumption for a single night. The students were drawn from architecture and design departments at the University of Auckland (SoAP), Christchurch Polytechnic (CPIT), Auckland University of Technology (AUT), Victoria University of Wellington (VUW) and Unitec.

In each of the programmes (2012, 2013 and 2014) the installations required interaction with the public as well as engagement with a local client. In every case projects started out with a zero dollar budget. Many ‘firsts’ occur in this project; the first time students are required to work collaboratively, the first time students present or market themselves externally, the first time students negotiate council regulations, the first time students engage with a client, the first time students realise a project at full scale.

These ‘firsts’ are of course generalisations but serve to contextualise where the project sits within a student’s education and the multitude of new challenges that are faced with such a task. They also highlight were the normative studio experience, which focusses on the individual, might exclude exposure to a number of necessary skills required by students for their professional careers. Additionally, in having very little precedent for the outcome there is an emphasis placed on discovery, on the iterative nature of the design process as new challenges are faced and solutions pursued.

The focus will be on the programme offered in 2012, the first iteration of the projects with FESTA. As the FESTA event evolved over three years so too did the framework within which the projects sit, largely driven by stricter council controls. These first projects then offer greater diversity to choose from.
when analysing the student approach.

Small teams of students, 4–6 in number, initially presented preliminary research and exploration to a jury panel. Students were encouraged from the outset to make things and explore the physical properties of light and materials. This led to a number of highly inventive ideas at a conceptual level with great capacity to be scaled up to a city sized realisable structure.

Through working with a variety of media and scales students are able to better understand the full consequences of their design decisions. What begins as a small jelly cube with a light inside (and perhaps questionable architectural value) might come to be an entire interactive field of light for people to walk through.

The projects undertaken in Christchurch required economy of means. The projects had to be transported from Auckland to Christchurch (ideally within the standard airline luggage limits), be erected within a day for a single night event and then removed without trace of waste at the end of the night. This moved students into the direction to explore the qualities of light and lightness, both the medium of light and materials with physical lightweight characteristics.

The following case studies examine some of these issues.

**SILHOUETTE CARNIVAL**

The initial concept for this project was established by a group of Chinese International students based on their understanding of traditional Chinese Shadow Theatre. The project used the notion of projection of a light source onto a body so that the silhouette could be viewed on a translucent surface. This meant that the origin of the light could be small but had the challenge to construct a suitable surface onto which the silhouette could be viewed.

The initial group were combined with a group of students whose original project sought to create free-standing objects from construction materials, to build on the concept of the Terrain Vague. The two teams were merged due to complimentary skills.
and also as each project offered possibilities for exploration to the other.

With the lighting aspect of the project generally understood, the combined team set to explore methods for constructing free-standing projection screens. This necessitated engaging with issues of construction at an early stage to test how materials would react in an external environment. The initial layout for a concentric arrangement of planar elements began to give way to more three-dimensional shell type structures that an ‘actor’ could inhabit. This began to work with the associated client for the project, the Free Theatre Christchurch who began to programme activities that would engage with the built structure. New challenges were added by where structures could be picked up and moved yet still remain free-standing when not in use by the actors.

Another layer of detailed design exploration was therefore required to examine how the structure would connect to the ground. The project site shifted from sealed to unsealed surfaces several times as negotiations regarding the overall project boundaries ensued. A solution that could meet either condition was required.

As the design developed the footing connection began to inform how the overall shell structure could be formed, with curved members springing from a single point. With a basic shape becoming finalised, further criteria for the material investigations for the shell covering were established. The group established the parameters by which the material needed to perform; the ability to receive and transmit a shadow, the ability to warp and twist to a form, the ability to absorb and allow wind to pass through and the ability to give some element of rain protection. Experiments again were undertaken initially at a scale model level and then at half and full scale realisations.

Throughout the process students realised the need to gain new skills for construction as well as learning how materials and means of fabrication will affect design decisions. Some learned to sew while others to weld and all of them to tie knots! The success of this project could be measured at many levels; the integration of two design concepts and cultural
backgrounds provided a fertile environment for growth and learning from one-another; the ability for the design to respond to a variety of physical conditions including a last minute change of site; and the ability for the project to remain successful at a social level by enabling public engagement when in the final moments it became apparent that the client wouldn’t be able to partake in the event.

Reflecting on the work carried out by this group of students we clearly see them setting themselves problems to be resolved, a critical aspect of learning to understand the design process. Alongside this the number and variety of solutions presented emphasise how iterating enabled the students to solve the problems they set themselves in their realisation of a large scale architectural installation.

ARCHROBATICS

The team Archrobatics started life as Spherical Sounds, a scheme utilising glowing spheres to illustrate the call of a Tui, a native New Zealand bird. The intent was to create a structure suspended overhead, establishing an environment below for the public to engage with. This project underwent the most radical of formal transformations of all the groups and finally resulted in an extremely elegant structure.
In working through variations of their initial design proposal the idea that appeared achievable at a small scale was becoming unwieldy at full size. In setting about resolving the design challenges presented by the initial scheme students concluded that it was proving too expensive and unreliable to construct, not to mention posing physical danger, and the group came to the conclusion that a change in direction was necessary.

With a focus on achievability and simplicity the group looked at a single point of vertical suspension from what would be a crane hook, 30 plus meters above the ground. The pyramid type structure that was emerging was used to suspend the spheres from the initial concept within. At this time a rigid structure with steel cables was imagined with the spheres being the light emitting object. As continued exploration into materials, including the spheres and alternatives were undertaken, a decision to omit the spheres altogether and focus on the shapes that could be formed by the structure itself was made. As considerations regarding site and flexibility were also included greater levels of flexibility were considered and explored for the overall structure eventually resulting in rope forming the guiding members. In testing materials criteria were established by the group where wind loading would be the dominant factor given the height of the structure, along with lightness, the ability to accept light cast upon it from LED light sources and the ability to flex and hold a shape under tension. The group eventually settled upon agricultural bird netting.

Grounding the structure was another design challenge, met mostly through the use of deadman weights but also through the filling of empty sacks filled with rubble from the site itself. Through testing of the construction technique using rope, netting and lights and a variety of scales and settings the group were confident that they could quickly erect and adjust their full scale scheme onsite. The particular success of this project lay in students’ ability to identify there being an issue with the initial design proposal. What might be considered a failure provided the basis for the group to better understand their constraints, establish priorities and reset their design problem, demonstrating their learning from earlier setbacks. Learning from failure is an important aspect of design and failure can be considered a success if students are able to demonstrate learning from it. Failure additionally highlights to students that design solutions can change for any number of reasons, again encouraging them to iterate in their design thinking. In being able to re-establish the design problem, goals and objectives, the group was able to achieve one of the most successful outcomes of the evening. All material was transported on the aeroplane, the project was erected in a short period.
Peter McPherson, Archrobatics, LuxCity, 2012.
of time with site specific adjustments to the overall shape incorporated and de-installation of the project took moments with zero waste left behind, save for what was already found onsite initially. The project itself had an ephemeral quality to it during the daytime and as day turned to night the beauty of the three hyperbolic forms came to life on a city scale.

CONCLUSION

Design is an iterative process. Much learning is achieved by failing. James Dyson states it took 5127 prototypes and 15 years to get his famous vacuum cleaner right. He compares this to Edison who said, “I have not failed. I’ve just found 10,000 ways that won’t work.” 10, 000 failures that resulted in 1093 patents. With each failure, the problem is better understood.

The two case studies presented here highlight two key components of the design process; iteration and failure. In exposing students to these types of projects failure becomes a core part of the learning. In confronting failures the reasons to alter a design, to iterate, become more varied and tangible to students. In better understanding the reasons for altering a design alongside the setting of their own design problem, students become more engaged and aware of their thinking and process. This is in contrast to the traditional student and mentor Design Studio relationship where design is guided and the student can remain removed from the process of understanding the problem.

A key component to establish this understanding is the production of the architectural object. This is in contradiction to James Benedict Brown’s findings whereby less than 10% of respondents in his research considered construction to be an essential component of the Live Project. In engaging with the making of something, students are moved outside of the teacher-student learning relationship and the realisation of the architectural object becomes linked to the design process itself, the distinction between design and process is blurred and the two become linked in the students mind.

Through an open brief with the emphasis placed on students to set their own design problem a process of iterative exploration becomes the only way in which a successful outcome can be achieved. These projects equip students with an understanding of not only how to solve problems but also how to set them. And that in order to achieve a positive outcome, the design, and the design problem, is required to be interrogated over and over, through failure to success.

---

The Sensory Meal: A Performative Interior Design and Theatre Collaboration

KIRSTY MÁTÉ
University of Tasmania, Australia

JACQUELINE POWER
University of Tasmania, Australia

HELEN TRENOS
University of Tasmania, Australia

An ocular bias permeates the pedagogy of design – exploring form, visual colours and textures; light and shade; connections and details to provide a visually aesthetically balanced design. This ocular bias in architecture and design has been discussed by thinkers and philosophers such as architect Juhani Pallasmaa and philosophers Peter Sloterdijk and David Levin.

There is perhaps no other activity that takes place that best utilises all of our senses than participating in a meal. For this reason, the senses play a critical role in a setting that is designed for the consumption of food. As educators, undertaking the task of teaching how the senses play an essential role in restaurant design is also dominated by the ocularcentric. ‘The Sensory Meal’ project was developed for second year interior design students to participate in a haptic experience for consuming food.

For the first four iterations of the project a sequential experience was created where the senses, initially deprived, were slowly revealed as a variety of courses were served. In the last execution of ‘The Sensory Meal’, an interdisciplinary approach was undertaken, integrating interior design with theatre students and academics to create a sensorial consuming performance.

Each group of students had their own disciplinary learning expectations but were united within the one project. As an outcome of the project, the interior design students were asked to integrate the learning into their restaurant studio designs and the theatre students likewise applied the learning to the design of performance theatre. This paper will discuss the process and outcomes of learning, and will provide a critique of the collaborative process that both made the project possible and, we will suggest, resulted in enriched learning outcomes.

INTRODUCTION

Interdisciplinary and collaborative approaches to teaching and learning “are often devised in response to anticipated synergies between disciplines, complexity, ‘wickedness’, the richness of ‘real world’ contexts, and as a means of students developing graduate capabilities.” This approach, with a focus on the senses, was taken to assist students in interior design and theatre studies to reconceptualise space and performance.

The senses play a critical role in the human understanding of our environments and yet even in the field of design for the built environment, and as we will demonstrate, their importance is increasingly diminished in the experience of the spaces we inhabit.

The University of Tasmania’s (UTAS) program in interior design promotes the integration and understanding of the sensorial realm to lessen the ocular focus that traditionally dominates design and design education. This is achieved through a number of different mediums and across various units including what is termed in the school ‘learning by making’ projects, where students are involved in typically full-scale working models to more fully experience and understand the particular learning objective of the assessment task.

This ‘immersive’ learning experience has been used to explore the importance of the senses in restaurant design for second-year interior design students over the past several years through what has been titled ‘The Sensory Meal’ (‘TSM’), where students participate in a meal they prepare while the lecturers manipulate sensory deprivation and revelation to the experience. In 2014 an opportunity to collaborate with the university’s theatre students emerged providing a platform to explore these issues in an interdisciplinary context.
Interdisciplinarity and its cognates are contested terms. This paper will use a working (and as yet unpublished) definition of interdisciplinarity established by the current Office of Learning and Teaching research project Multiple Measures at Monash University, Melbourne, for education in the creative arts and humanities:

"Interdisciplinary (ID) describes a set of value positions and practices in creative arts learning and teaching that are commonly collaborative, inquiry-based, and/or practice-led."v

In both design and theatre there is a close alliance with a variety of related disciplines in practice as well as in learning and teaching contexts. However, enabling collaboration to occur within an institutional setting, where disciplines are separated and siloed by School and Faculty divisions can present practical challenges. At UTAS the Interior Design and Theatre programs are located in different schools and faculties but accommodated at the same campus in buildings only metres from each other. Despite the obvious potential for interdisciplinary praxis based on proximity, other factors such as differences in timetabling; variances in learning outcomes and assessment criteria; and pressures to cover critical, core curricula required reconciling across the disciplines and added additional complexity to the project’s instigation and orchestration. However, with a shared desire to explore the possibilities of this collaboration, these cross-faculty differences were reconciled and a cohort of students enrolled in 'The Sensory Meal': 16 from interior design and 7 from theatre.

WHY A SENSORY MEAL?
It has been noted by many, that interior design can be dominated by an ocular sensory bias and yet sensorially inclusive, haptic solutions are recognized as having superior experiential qualities to those that are monocentric in their sensory resolution. As Juhani Pallasmaa has recognized: “An architectural work is not experienced as a collection of isolated visual pictures, but in its fully embodied material and spiritual presence." The senses play a particularly critical role in a setting that is designed for the consumption of food. As Shonquis Moreno states in ‘Eat Out!’ restaurants can “create sensual experiences that transport us to places that are outside ordinary experience even when they live inside our bodies.”

To emphasise this essential role of the senses in restaurant design, ‘TSM’ project was first developed in 2010. These first iterations of 'TSM' staged the setting of a meal within the class room, where across the different courses, various senses were either deprived or revealed, providing the students with an immersive and controlled experience highlighting how the manipulation of the senses could alter the experience of a diner.

This controlled setting created an orchestrated performance, reminiscent of an immersive theatre performance, where the students took on the role of an interactive audience and the lecturers as stage directors. This realisation of a theatrical setting instigated some initial thinking on how this project may form an interdisciplinary collaboration with the University Theatre Program. After all, the cultivation, preparation and consumption of food has been conceived as performative within performance studies:

“Food, and all that is associated with it, is already larger than life. It is already highly charged with meaning and affect. It is already performative and theatrical. An art of the concrete, food, like performance, is alive, fugitive and sensory.”

METHODOLOGY
When conceiving ‘TSM’ in its interdisciplinary format, it was anticipated that the students would be able to use each other’s disciplinary knowledge sets, whilst also gaining increasing confidence in their own expertise. Specifically, the interior design students would be introduced to and have the opportunity to interrogate the performativity of their practice, and the theatre students introduced to spatial stagings that are particular to interior design thinking. ‘TSM’ provided an interdisciplinary learning context founded on a collaborative student-led experience.

This collaborative learning environment is one in which students drive the experience, with their lecturers as guides or facilitators to help them navigate ‘unfamiliar seas’. As explained by Roberta S. Matthews: ‘the goal of any collaborative task is to engage students with each other in order to shape a response that represents their understanding of that discipline.’

PROJECT DESCRIPTION
Students were asked to design and create a complete experience from preparing food to the staging of a meal in the theatre studio. A tight budget of $200 was given for all expenses including materials and food.

At the start of the project the students were organised into two groups – participant or facilitator. With each role came a general expectation of the type
of input into the overall experience. The facilitators took on roles as designers, stage managers, directors, performers and determined the types of food to be prepared. The participants took on the role of chefs and diners.

After the initial briefing, the theatre students led an hour workshop. They identified three main areas they needed to address. Firstly, given that they had not previously met, ice-breaking/getting to know activities were seen as essential. The theatre students were mindful of the fact that their interior design colleagues would be coming into an unfamiliar and possibly intimidating space (a theatre black box space) and asked to undertake theatre activities. Secondly, the theatre students identified the importance of activities that would help build a sense of ensemble, and facilitate collaboration: “Working together as one cohesive unit seemed like a task in itself. The workshop that assisted in breaking down those initial barriers of discomfort did assist in combining personalities and developing trust amongst the group.” (theatre student)

Thirdly, given the primary focus of 'TSM', the theatre students focused on performance training exercises aimed at developing sense-awareness and full-bodied spatial-awareness. Recognizing that within their discipline, they are encouraged to enrol all the senses when engaging with space, they saw this as a valuable contribution to the project. Exploring the rehearsal studio through movement, touch, sound, smell, and by depriving some senses such as sight where students were guided by others not only helped the students to get to know each other but for the interior students, in particular, provided them with new ways of exploring and understanding the space they were to transform into a sensory meal.

From here on the participants no longer took part in the creation of the experience and were not privy to the brief’s main objective of a sensory experience but were asked to prepare specially designed food
ABSTRACT

for the final event at the direction of the facilitators. The facilitators brainstormed how the event should take form and decided to harness the experience into 4 zones: a hot zone, a cold zone, a soft zone and traditional restaurant. Over the next week, both groups created 'The Sensory Meal'.

In the hot zone (see Figure 2) participants sat in a huge sandpit complete with ‘sand toys’ under hot lights and intense heating. No drinks were offered and the meal comprised of couscous which was eaten with their hands. In the cold zone (see Figure 3) participants sat on hard milk crates, their feet in buckets of ice, a wet towel around their necks and fans blowing on them while they ate ice-cream. In the soft zone (see Figure 4) participants were guided into a tent like structure filled with cushions and ‘fairy lights’, their feet squelching in buckets of jelly while they sucked jelly through a straw. Lastly in the traditional restaurant (see Figure 5) participants were seated at a table with a red velour tablecloth spotlit by a bright upper light and waited on by two formally dressed waiters who served them pizza, pasta and wine. At each zone, the participants were blindfolded for the first few minutes of their encounter and re-blindfolded at the end to be guided by the facilitators to the next zone and experience. Each encounter took about 10 minutes with 4 groups of 4 participants rotating through the various zones.

REFLECTIONS

Initial obstacles for the organisation of ‘TSM’ were reconciling differences in timetabling structures and learning outcomes. In discussion with lecturers and students, timetabling was organised outside of normal class time for the formal student gatherings in planning stages 2 and 3 and the execution of ‘TSM’ Stages 6, 7 and 8 (see Figure 1). Preparation (Stages 4 and 5) was completed in the students’ own time and organised to suit their own availabilities. Timetabling of stages 1 and 9 could be completed in normal class time for each discipline.

Learning outcomes were tailored to meet the requirements of each discipline. In the first instance, the theatre lecturer needed to locate a unit to house ‘TSM’ to enable the participation of the theatre students. In the Theatre Program there are special-projects units aimed at complementing the curriculum and enabling lecturers and students to take advantage of learning and teaching opportunities as they arise. These special-projects’ units have learning outcomes that focus on making work and contextualising the work within contemporary theatre practice. The
assessment tasks reflect this and can be nuanced to fit the specific nature of the projects undertaken. For ‘TSM’, the theatre students were assessed on 3 major tasks: design and delivery of the preparatory workshop; conceptualization, design, production, stage management, facilitation and participation in ‘TSM’; and a work-in-context paper, which included critical analysis of the event, situating the project in terms of contemporary performance theory and practice, and a statement of how ‘TSM’ may inform any of their future devised works.

‘TSM’ itself was not an assessable task for the interior students; however, the students were asked to apply their learning from ‘TSM’ into their hypothetical design studio restaurant projects and provide two visually communicated scenarios from the event to serve as precedents for their work. The students were also asked to write a 250-word reflection in response to – What did you learn from participating in ‘The Sensory Meal’? and How has ‘The Sensory Meal’ informed your design response?

An ethics requirement for the learning outcomes of student participation was the most problematic. As ‘TSM’ was being used for research by the academics, students had to be given the option to opt out of the task and an alternative task devised. This task, therefore, had to be individual in nature and yet still provide similar learning outcomes to the participants of ‘TSM’. The lecturers therefore decided that should this issue arise these students would be critical observers and not participants of the process.

A key aspect of the collaborative experience is enabling students to reflect on their own disciplinary knowledge. As Roberta S. Matthews asks, “How can collaborative learning be used to help students understand what it means to study the essential content of this discipline?” The theatre students observed, for example, how their knowledge and skills in lighting design could be applied beyond traditional theatre contexts. This was affirmed by their interior design collaborators: “The different lighting within all spaces taught me about how important this aspect of design was to creating a particular mood and experience.” [interior design student]. The students were also able to (re)cognize key concepts and terminologies in their own disciplines, viewing them through interdisciplinary eyes. The theatre students for instance, found the interior design students’ use of the term ‘volume’ to describe space as informative, providing them with a new way of conceiving performance space. These insights can also be observed in the initiation of ‘active’ concepts by the theatre students and ‘material’ resolutions by the interior students. For example, lighting was used to actively create space in the formal setting by the theatre students (Figure 5) but used to enhance the space of the soft zone by the interior students (Figure 4). The students recognised and appreciated these different approaches, the interior students utilising this in their future designs.

Reflections from the interior design students
Time was allocated in-class to assist the students to develop their reflections. Students spent time writing rather than drawing during their studio. They were introduced to Borton’s reflective framework What? So What? Now What? and asked to use this to structure their responses.

Extracts from responses to the two questions are provided below. The students focused on a range of issues in their reflections but had a particular emphasis on acknowledging the transformative effect that the senses have on experience and the importance of applying this within their design work. The development of visual scenarios from the experience to serve as precedent was included in the task in the recognition that many design students provide precedents for projects of which they have no haptic experience. All too often students provide precedents that underpin their design thinking that have only been viewed as an image in a magazine. Students reinterpreted lighting and colour from specific spaces during ‘TSM’ (Figure 6) volume and even shifted their focus from the interior to the theatrics of the food in their supporting visual images.

Interior design student responses to the required questions:
1. What did you learn from participating in ‘The Sensory Meal’?
“Designers have the power to change experiences through enhancing or confusing the senses.”
“…consider all the different ways of dining and how food can make you feel just by the noise, temperature and what surrounds you.”
“…expanded my thought process with connecting my design to the emotions and senses of my clientele…”

2. How has ‘The Sensory Meal’ informed your design response?
“Manipulation of volume … to create a more intimate space to help encourage focused conversation between parties and the whole restaurant has the feeling of compression and release as you enter …”
“[The Sensory Meal] has informed my design response with thinking about the fun side of dining.”

“It has proved to me that experimentation is key in regards to design…”

“Through my design process, I attempted to create a different dining experience through the theatrical engagement of preparing food.”

Reflections of the theatre students
For the theatre students, ‘TSM’ provided an ideal platform for investigating definitions of ‘performance’ and ‘performativity’, key (and sticky) concepts not only in contemporary theatre discourse, but also pertinent to a growing number of disciplines, notably architecture and design. ‘Food/Eating/Dining’ became the focal points and triggers for this interrogation. In particular ‘TSM’ opened up new ways of conceiving space and sense awareness:

“Overall, ‘The Sensory Meal’ project has expanded my concept of how space can be used and how senses can be explored in both contemporary performance and design.” (theatre student)

Furthermore, ‘TSM’ enabled the students to engage with Immersive Theatre—an emerging and significant genre of contemporary theatre which brings together “a variety of art forms” and looks ‘to exploit all that is experiential in performance, placing the audience at the heart of the work.’

This was viewed as an extremely valuable contribution to the Theatre Program curriculum:

“Immersive work is inarguably on the rise within the contemporary artistic world. More and more works that offer an ‘experience’ as opposed to the usual voyeurism of theatre […] As a theatre student being trained in fairly traditional ways of theatre-making, I was excited to be given the opportunity to experiment within this sub-genre of theatre.” (theatre student)

One of the most significant challenges the students faced was “finding the working relationship with a new group of people within a short space of time.” (theatre student)

Solutions were offered to pave a way forward:

“Whilst we did establish trust between the interior design and theatre students, particularly with the workshop, it would be beneficial if this relationship could be further developed. To assist this relationship, for the initial brainstorming session, I would divide the group into smaller groups to ensure everyone had a chance to voice their opinion regardless of their personality and avoid any feeling of ‘them’ and ‘us’. Working in smaller groups could also generate a wider diversity and mass of ideas.” (theatre student)

A WAY FORWARD
It is evident from the student feedback and observations of the lecturers that this collaborative experience opened new ways of exploring the senses relevant to their own disciplines that perhaps, would otherwise have been left dormant. This learning has been further evidenced in work the students have undertaken post ‘TSM’. The interior students for example used many sensory exploits in their following design project including detailed explorations of heat and cold, light and dark, soundscapes, even taste for a bathhouse studio project. The value of sensory, kinaesthetic experiences has informed the theatre students framing of their
own individual performance projects, including extending this to film: “this project has made me consider the possibilities of transforming the viewing of a film into an entire sensory experience.” (theatre student).

While this collaborative process between interior design and theatre students has shown benefits to deeper learning for the students involved, this particular interdisciplinary collaboration could also provide benefits within the built environment industry to explore and more fully understand the ‘performance’ of habited spaces.

“The Sensory Meal” is undergoing current iterations as we write, to further explore links between the two disciplines in educational and industry settings to investigate “…the richness of ‘real world’ contexts…”

---

i  Kate Tregloan, “Re: Definitions for Interdisciplinarity Etc.” June 5, 2015, email.
iii  Terms include multidisciplinarity; cross-disciplinarity; interdisciplinarity; relational interdisciplinarity; exchange interdisciplinarity; pluridisciplinarity; modification interdisciplinarity; translasciplinarity and hyperdisciplinarity (Kwai Wise, “Hyperdisciplinarity and Beyond: The Beginning or the End? Enabling Interdisciplinarity in the Creative Arts,” in The CAEITN Papers The Refereed Proceedings of the Creative Arts Learning and Teaching Network Symposium (Creative Arts Learning and Teaching Network symposium, Hobart, Tasmania: Tasmanian College of the Arts, University of Tasmania and the Creative Arts Learning and Teaching Network, 2013), 192–318.)

---

---
Our ageing population is a looming problem for economies worldwide. One of the most important aspects to this unprecedented demographic shift is the need to adapt existing built environments for those with declining mobility, visual acuity and mental capacity. As a result the healthcare sector will need to develop new modes of service delivery, while care providers and funding agencies will need to find new sources of revenue. Increasingly, larger cohorts of the population will require new, integrated forms of care that operate across scales, agencies and places.

This high-level prognosis indicates a complex set of problems and a rich vein of research questions that need to be addressed in order to solve them. Inter-disciplinarity, mixed research methods and collaborative engagement among a broad base of stakeholders offer the opportunity for new insights. Design, with its capacity for innovation and integration, can address this complex set of problems involving multiple stakeholders. This paper explores the initial stages for a new program of design research for aged care that integrates three large academic disciplines: design (strategic, industrial and spatial), health (psychology and community) and business. The researchers will collaborate with relevant partners in government, community and private sectors.

Central to the research program will be a series of four design studios that will act as vehicles to present a range of possible solutions to the problems. Each studio will explore specific design for better care in Residential Aged Care Facilities (RACFs), single family homes, apartments and hospitals. The varied disciplinary perspectives will interact with the design process through informing, briefing, critiquing and appraising. Importantly for the research design, the studios will run consecutively over two years, to progressively review, refine and adapt inputs, processes to capture and make the most of emergent findings and new questions that arise.

INTRODUCTION: THE AGEING POPULATION AND CONSEQUENCES FOR PROVISION OF AGED CARE SERVICES.

An increasing ageing population is a looming problem for developed nations worldwide: by 2050 it is predicted that the number of older persons — our post WWII baby-boomers — in the world will exceed the number of young for the first time in history.1 This demographic shift, together with growing numbers of elderly choosing to ‘age in place’, highlights a need to adapt existing built environments for declining mobility, visual acuity and mental capacity.2 Dementia is “a group of symptoms affecting memory, thinking and social abilities severely enough to interfere with daily functioning”3 and typically affects the elderly. Research shows that the environment is an important factor in the conditioning and effect on well-being and behaviours of all people but in particular, people with dementia. Thus, an increasing incidence of dementia, its associated conditions and the need for care arrangements and supportive environments is a significant and unprecedented challenge.4 The challenges for both public and private healthcare providers can be met by applying evidence-based design principles to develop new models of care. These will be necessary both in...
the retro-fit and re-use of existing buildings and in the development of new facilities within future dementia-friendly communities. The principal advantages lie in its independence as a form of academic research, and in it potential to think more freely than otherwise. Architectural design studios have greater creative and critical freedom to explore scenarios without the constraints of bureaucracies, budgets and timeframes.  

People experiencing dementia often have other health conditions compounded by memory loss, confusion and agitation. As a result they may experience a fall, a burn or an incident resulting in admission to acute care in hospitals from which they rarely return home. The initial reaction to such problems has tended to be institutional, clinical or pharmaceutical solutions. Our project asks: how can Evidence Based Design (EBD) transform and expand the possibilities to a better integration of dementia enabling principles? Evidence dating back more than 30 years provides support to the beneficial effect that a well-designed environment has upon people living with dementia and this research has allowed for various sets of principles to be derived in order to guide designers for the future. The innovation in this project is the integration of such evidence into an inter-disciplinary collaboration premised on the value of direct, experiential feedback and knowledge-transfer processes. It considers the architectural design studio as a vehicle for generating a range of design solutions within a relatively quick timeframe. The principal advantages lie in its independence as a form of academic research, and in it potential to think more freely than otherwise. Architectural design studios have greater creative and critical freedom to explore scenarios without the constraints of bureaucracies, budgets and timeframes.

CURRENT STATUS OF DEMENTIA CARE IN AUSTRALIA

Dementia care is provided in private homes, hospitals and residential aged care facilities and the latter is by far the most common. Other forms of housing for older people such as retirement villages may have a mixed range of health services available but they do not operate 24-hour services for people experiencing dementia. It is projected that by the year 2050, the number of people living with dementia in Australia will triple from 320,000 to 900,000 while global figures will rise with roughly the same proportion to 115 million. The cost to society in high-income countries is comparable to that of cancer, heart disease and stroke combined. There will be more demand for improved facilities in residential, community and private care with ever-increasing levels of care needed as advanced stages of dementia require comprehensive professional support. For most people, this means moving to a nursing home, or what are now termed Residential Aged Care Facilities (RACF). This move is not just about needing levels of care that families and partners can no longer provide: it has an impact on personal identity, social status and sense of home – a shift that can feel all the more acute when suffering from dementia.

The average family home is not equipped for people suffering with dementia. Although they can be retro-fitted they are often inadequate for those at the late stage. Hospitals are acute care facilities for the provision of curative, life-saving interventions and medical practice. Neither the design nor models of care currently offered by hospitals support the needs of people experiencing dementia. RACFs are neither home nor hospital. The models of health care provision catering to requirements ranging from facilitating the social needs of individuals to the provision of shelter and the intimacies of personal hygiene and nutritional requirements. The aim is for residents to live well, pain-free, long term in an environment they will (usually) remain in until the end of their lives. The design of their environment plays a fundamental role in well-being of residents, carers and families. The publication of Australian Housing and Urban Research Institute’s (AHURI) Report no. 88 “Aging in Place” has meant that these facilities have needed to provide higher levels of care for which they are no longer equipped. This is not just a question of space, or “beds”; it has implications for staffing, implications for compliance and therefore implications for design. RACFs have typically been BCA Class 3 Buildings (residential building … of long term or transient living for a number of unrelated persons) but increased levels of care means they need to ‘upgrade’ to a public health care BCA Class 9 building and in fact now have their own sub code: Class 9c.

While RACF’s remain the most common form of residential setting for people experiencing dementia, social changes are impacting on existing thinking about design and models of care. The Mornington Centre in Mornington, Victoria by Lyons for example has used evidence based design approaches to challenge existing care models. While Wintringham Specialist Aged Care by Allen Kong Architects has a philosophy of care that allows dementia suffers free access to outside areas (Figure 1). This is a departure from designs which emphasise locked, secure environments with minimal unsupervised movement between internal and external parts of the building.

There is an increasing demand for facilities and
services that reflect these changes in society such as making accommodation flexible enough for life-partners to continue to share their lives and not in separate bedrooms. This extends to opportunities for co-location of parents with their adult children, given people are now living longer and numbers in this category are increasing. There is also a sharp increase in the demand for home care services, for people able to stay in their own home. Twin Parks Residential Aged Care Centre in Reservoir, Victoria is one such facility. Management is working with the students and teaching staff to further explore how evidence-based design can help them adapt their existing structure to meet these new needs. The scale and layout of the building is such that the implementation of Dementia Enabling Principles will bring forth a complex set of problems that a series of studio-generated solutions can help solve (Figure 2).

RACFs are also organisations whose staff and resources aim to provide a service. Fundamentally, they are businesses that operate as ‘for-profit’ companies in response to the growth in the number of age persons, coupled with shifts in government ideology that favour a free market. The market forces that drive up the prices of all accommodation are playing a greater role in influencing the availability, location and quality of RACFs. Again, this has a number of policy and design implications. In addition to this new focus across the environmental design disciplines is the need for:

- the healthcare sector to develop new modes of service delivery – to accommodate the increase in demand for services and the increase in complex-care needs12
- funding agencies to find new sources of revenue
- new, integrated forms of care that operate across scales, agencies and places

**POSITIVE EFFECTS OF WELL-DESIGNED ENVIRONMENT**

The positive effects of a well-designed environment are showcased at an almost ‘urban’ scale in the Dementia Villages built in De Hogyeweyk, Amsterdam and planned for Mahal Cielo Village, San Luis Obispo, California by Frank van Dillen and Michael Bol of Dementia Village Architects. Alzheimer’s Australia are also working towards Dementia Friendly Communities in regional Victoria and a new village designed by Allen Kong Architects is planned for Caulfield Hospital (Figure 3). There are numerous case studies throughout the world that also attest to this although more evidence based research is required to test their effectiveness.13 They are based on the overarching concept of de-
Figure 2. Ground floor, site plan and elevations of Twin Parks Residential Aged Care Centre, Reservoir, VIC. Source: Twin Parks Residential Aged Care Centre

institutionalisation and create a front-of-house sense of a normal, social and interactive life that at the same guarantees safety and provides freedom. Meanwhile, backstage provides high standards of care from teams of qualified professionals. Therefore, good design may be a form of non-pharmacological therapy that creates an enabling environment for residents, families and carers through such spatial and architectural elements as carefully arranged zones, clear layouts and visual connectivity.

WHAT STILL NEEDS TO BE DONE
This high-level prognosis indicates a complex set of problems and a rich vein of research questions that need to be addressed and the design studio can act as a vehicle for their resolution. Although the outcomes of such newly-designed facilities and communities are promising, more focus is needed on retrofitting existing domestic settings at different levels of care and in different physical settings: hospital, residential aged care, mixed apartment blocks, and suburban homes. For Australian designers, the majority of case studies come from Europe, the United Kingdom and the United States. Thus, more work remains to be done to develop new models relevant to Australasian contexts, considering society, urban structures, regulations, service models, climate and materials. Secondly, conventional design approaches are not doing enough to address existing and future needs and are not necessarily based on research evidence. For instance, Fleming et al have argued that many facilities for people with dementia are built with little translation of the substantial body of evidence available to inform design. In designing such facilities, architects are often limited in time and budget, and have to deal with regulations and other requirements from local government administration. As a result, they often have to rely on more conventional “safe options,” which may have worked reasonably well for “low care” settings, but may not work for people with dementia. Finally, design solutions have not taken a sufficiently multi-disciplinary approach. Facilities for people with dementia are likely to affect residents’ behaviour, health and well-being as well as staff members’ performance and well-being. Thus, design of such facilities needs to address broader issues such as health, psychosocial, organisational, and cultural issues.

USING DESIGN STUDIOS TO TACKLE THESE ISSUES
We argue that design studios, in which students work with an inter-disciplinary teaching team using principles of evidence-based design (EBD), can be an effective means to address the issues discussed above. In particular, design studios in a new, inter-disciplinary Faculty of Health, Arts and Design, Swinburne University of Technology, provide a unique opportunity in this context. The structure of the Faculty offers potential for students to tap into a wide range of resources relevant to dementia-related facilities such as psychology, physiology, nutrition, occupational health, sociology and communication. This project will investigate how design solutions for dementia produced in studios can inform the design and planning of facilities that cater for people with dementia.

EVIDENCE-BASED DESIGN (EBD)
EBD informs decisions by architects and designers at various stages of the design process based on the best available scientific evidence, and is currently being applied in the design of hospitals, schools, hotels, restaurants, prisons and residences (Figure 4). The design impact on health has been a focus of EBD, involving the use of evidence obtained from rigorous research conducted in health sciences. This studio aims to apply the principles of EBD in the area of aged care, specifically for dementia enabling environments. Students in the design studio will use and interpret research evidence available from the current literature in making design decisions (Figure 5). Presenting potential design solutions
based on evidence is relevant, as research evidence is often not prescriptive. For instance, “small-scale” care environments are known to have benefits to older adults with dementia, but there is a scope of interpretation in realising this as a built form. EBD is thus both an art and science.21

The design studios will generate design outcomes based on evidence, which can then be used as a form that embodies the particular evidence. The freedom of a studio’s learning environment allows for a wide range of design solutions to be produced in a relatively quick time frame of a twelve week semester. In design studios, descriptive and abstract evidence will be converted into a visual form that is accessible to a broader range of stakeholders. Students’ experiences of EBD and working within a multidisciplinary environment will provide further data through the use of questionnaires and interviews. EBD-based research projects, such as this, respond to two of the top five priorities highlighted by the National Health and Medical Research Council’s Dementia Research and Translation Priority Setting Project:22

[4.] Optimise clinical care for people with dementia in complex care settings and at different stages of the disease; and
[5.] Increase the self-determination and independence of a person with dementia.

The studio also keys into the report’s call for better collaboration, increased education and the development of an evidence base for new approaches to care.

INTER-DISCIPLINARITY

The interwoven research questions that come emerge when dealing with a field such as design for dementia need to be tackled by a team with a range of competencies, backgrounds and experiences. Staff teaching in the studio hail from three academic disciplines: (1) strategic, industrial and spatial design, (2) psychology and community health and (3) business. This expertise will be integrated with industry collaboration through the provision of input into the unit’s content and brief development. This includes practicing architects who specialise in dementia design, carers and families of people with dementia, managers of RACFs and Alzheimer’s Australia who will also provide an immersive dementia experience workshop.

One aspect of the team’s areas of expertise is strategic design. While the traditional approaches to design centre around discrete solutions for specific problems — i.e. product, services, spaces/buildings — Strategic Design applies the traditional definition of design to systematically challenge what we are and will be facing in contemporary society: aged care, education, healthcare. It redefines how we approach problems, identifies opportunities to act upon, and develops more complete and sustainable solutions. Strategic Design is in fact about the crafts of decision-making, negotiation and implementation — an essential element to face the issues outlined above. By bringing (strategic) designers into the conversation from the beginning where key decisions are made, wider and more comprehensive inputs are used to frame the problem, embedding designers in key stages allows for rapid iteration through ideas so outcomes are still relevant when they are developed. Using design to use end users also smooths this process, by collaborating across silos and by working in quick iterations will create more effective and improved outcomes by reducing duplicate efforts and targeting solutions to provide real value.

The pedagogy of this unit is founded on the espoused advantages of interdisciplinary collaboration where several disciplines contribute to (and to each other’s) learning There is value in skill sharing, working across disciplinary lines, engaging other designers, non-designers, users, and stakeholders to find design opportunities in social systems. It therefore differs from crossdisciplinary or multi-disciplinary approaches as we are actively examining an issue, in this case ‘dementia’, from multiple perspectives, leading to a systematic effort to integrate alternative perspectives into a unified or coherent framework of analysis.23 Klein notes that educators are split on whether inter-disciplinarity is an old concept or a new one and whether it is primarily an educational concept or lies outside the university in government, industry and the professions.24

---

Figure 5. EBD and Health. Source: Diagram by authors
There are many examples in the health sciences where the centre of the activity is clinical-based problem solving, this design studio, will practise interdisciplinary inquiry with interior architecture students, where research and fabrication insights are shared.

According to The National Council for Teachers of English (NCTE 1995) “educational experiences are more authentic and of greater value to students when the curricula reflects real life, which is multi-faceted rather than being compartmentalized into neat subject-matter packages”. Repko identifies four cognitive abilities which are fostered through inter-disciplinary inquiry. These are:

1. Perspective-taking techniques that focus on the capacity to understand multiple viewpoints on a given topic and the differences between disciplines.
2. Development of structural knowledge composed of factual information and process-based information needed to solve complex problems.
3. Integration of conflicting insights from alternative disciplines: giving rise to an intellectual challenge to find ways to account for these, thereby engendering careful and creative thinking rather than a reversion to a single disciplinary explanation.
4. Inter-disciplinary understanding: seeing an issue from an array of perspectives and recognizing how each approach influences one another.

To this we can add ‘risk-taking’: having teaching and learning experiences that move beyond the original parameters of set tasks to explore new materials and forms, tackle controversial or uncomfortable topics and advocate for change.

The cognitive abilities outlined by Repko seem laudable in today’s professional practice and it seems sensible to work at inter-disciplinarity as argued by Campbell where there is a conscious attempt to overcome the “ethnocentrism of disciplines” found in external and internal relations in university departments and academic disciplines.

THE STUDIOS
The varied disciplinary perspectives will interact with the design process through informing, briefing, critiquing and appraising. The studios will be run as a series over the space of two years so that inputs, processes and outputs can be progressively reviewed, refined and adapted to capture and make the most of emergent findings and new questions that arise. Each studio will explore specific places and modes of care in relation to four scales: beginning with RACFs; then moving onto single family homes within dementia-friendly communities; apartments, and hospitals. The first, which is the topic of this paper, focuses on retro-fitting and/or renovating existing RACFs to provide enabling environments for people with dementia. Students and teaching staff will be working with managers of residential aged care centres who have either a compliance or market-driven need to upgrade or extend their existing accommodation. It will produce design solution for small-scale living as it has already been found to improve cognitive and functional capacity, reduce aggressive behaviour, increase social involvement and reduce the percentage of residents on anti-psychotic medication from 50% to 16%. It has also greatly improved the work environment for caregivers who experience less physical and mental stress.

The studio is the first in a proposed sequence of four for students enrolled in the Interior Architecture honours program at Swinburne who have not yet dealt with an elaborate building type. Its principal unit learning outcomes focus on the analysis of environmental, cultural and social issues and the experience of interior space in response to key sensorial qualities. They are also required to evaluate the living conditions of different cultures and apply key qualities of space and design tools through designing, sketching, model-making and graphic composition. The format is a one hour lecture and a three hour studio session typically on the following day in groups of sixteen to twenty. The lecture format allows for students to be given both theoretical grounding and design tools to apply in the studio, while the sequence is structured to focus on the different aspects of the design process. This will also be the space where a number of guest lecturers, including the client, will outline the specifics of dementia, dementia design and the project’s socio-economic context.

Representatives from Alzheimer’s Australia, carers and families of dementia patients, RACF managers and architects specialising in dementia design will deliver lectures alongside the typical set covering aspects of site and brief analysis, connecting concepts to realities, spatial quality and communication skills. This also includes access to Alzheimer’s Australia Virtual Dementia Experience that has been developed as an experiential learning exercise for healthcare professionals.
Figure 6. Conceptual Task 3, Proxemics mapping and application to care facility. Source: Sarah Ianno
PUBLIC
THE DISTANCE BETWEEN STRANGERS GENERALLY 1.2 - 1.6 METRES IN ORDER TO FEEL SAFE FROM OTHER PEOPLE. NO INTERACTION OR COMMUNICATION
SOCIAL
COMFORTABLE DISTANCE FOR PEOPLE IN A GROUP - SLIGHT CONNECTION AND ABLE TO COMMUNICATE AND INTERACT BUT STILL AT A SAFE DISTANCE

MYKI QUEUE
TURN SPACE CLAIM TO DROPS OF USE A RESOURCE - PEOPLE STANDING IN A QUEUE WITH APPROXIMATELY 5 METERS BETWEEN THEM. A LOT OF PEOPLE WALKING PAST ON THE RIGHT HAND SIDE

SWINBURNE LIBRARY
USE SPACE - AREA AROUND AN INDIVIDUAL FOR THEIR USE - APPROXIMATELY 1 METER BETWEEN PEOPLE SITTING NEXT TO EACH OTHER IN ROWS USING THE COMPUTER

DINING
SOCIAL AND PUBLIC SPACE - COMMUNAL DINING AREA WHERE ALL RESIDENTS COME TOGETHER

ACTIVITIES AREA
SOCIAL AND PUBLIC SPACE - COMMUNAL AREA FOR RESIDENTS TO SOCIALISE AND INTERACT WITH EACH OTHER
Figure B. Conceptual Task 4, Case Study and Dementia Enabling Principles Audit. Source: Caitlin Maney
Figure 9. Conceptual Task 4, Case Study and Dementia Enabling Principles Audit. Source: Samantha Ellsworth
Work for the studio is broken up into three separate projects that build upon each other throughout the design process. Project 1: Research and Exploration is a series of conceptual tasks that use model-making, photography and diagramming to explore spatial, material and structural qualities of space in relation to the brief. It also includes proxemics mapping, a practice audit for the application of Dementia Enabling Principles and case study analysis of existing RACFs that focuses on emotion and atmosphere.

The next phase, Project 2: Development of Design, brief development in close collaboration with Allen Kong Architects. Students will work in groups to document and communicate the physical and phenomenological qualities of site. By the time they begin Project 3: Execution and Representation, students will have a clearly formulated design intent and continue work within their groups to produce a schematic plan for the facility. They will then be assigned a specific space to individually develop a detailed design in atmosphere, spatial quality and materials. Students will explore the interconnectedness of large-scale thinking with support of on-the-ground user experience to uncover the complexity and thereby to develop a range of solutions for a dementia enabling environment.

CONCLUSION
This study aims to explore new models of care places and practices of care by using design studios as a vehicle to integrate research evidence and involve multiple stakeholders in an interdisciplinary context. The studios will provide a range of evidence-based design solutions, which could be employed and developed further by architects and care providers to address the needs of people with dementia. Given that an increasing aged population will place hitherto unprecedented demands on present models of care for people with dementia, it is important to begin futureproofing both the physical environments and the service models required to meet what will be an ever-increasing need. Because people with dementia have care needs that range from physical to emotional, a clinical, purely finance-based model is not sufficient. This research aims to explore and develop alternative models of care through a collaborative, inter-disciplinary approach that aligns with evidence-based methods widely used in the area of health sciences. It argues that design studios can provide a rich context for developing a series of solutions to be integrated with other forms of quantitative and qualitative research methods in order to move towards developing new models of care.


26. ibid.


In 2009, a student project run at Victoria University (VUW) was put forward as an entry to the US Department of Energy’s (DoE) bi-annual competition, the Solar Decathlon. The entry was awarded a place as one of 20 winners who would compete on this international stage in 2011, against the other best university entries around the world. The 19 other student teams selected included one from China, one from Canada, and one from Belgium, with all other challengers coming from the United States – primarily from nearby East Coast states, but also including an entry from California, and one from Hawaii. The New Zealand entry was the first ever entry to be accepted from the Southern Hemisphere. This was a considerable achievement and to compete would prove to be a considerable challenge, requiring the application of significant collaboration. From the country in the world that is the first to see the dawn of the new day, the name of the project was: First Light.

COMPETITION AIMS
The journey started with a former lecturer at Victoria University, Roy Fleetwood, who ran a course for students to design an eco-friendly home. The assignment brief was to take the aims of the Solar Decathlon and to design a house that would meet the brief. Student groups of four students were put together randomly, and several teams produced a house that met the brief, but only one team’s project was deemed by Fleetwood to be worthy of continuing onward and entering it into the official US competition. The competition itself is for each team to design and build a house, assemble it in Washington DC (on The Mall, America’s almost hallowed ground) within a week, and run the whole house for ten days solely off solar power generated on site. This is a task that is beyond the majority of house-designers and house-builders to achieve, so to expect it to be completed by teams of only semi-skilled architectural students, within such a short time frame, is a big ask indeed. Each year some teams fail to complete some of the tasks, and each year millions of dollars are spent corralling efforts around this task. The aims of the competition are generally towards the raising of awareness in alternative energy sources as well as a considerable up-skilling of the architectural student population.

It should be noted that 2011 was the fifth time this program had been run by the US DoE, and that the program had become embedded in many US schools of Architecture as a pinnacle of achievement, in effect becoming the architectural equivalent of the Olympic games for nerdy creative students. The word Decathlon in the title is used deliberately – there are 10 competitions, held over 10 days, with scrupulously independent judges and podium places of bronze silver and gold. It is always open as an international competition, with a German team winning two years running, but because of the significant obvious costs involved, domestic (USA) teams have an inherent advantage. Teams from other countries have an inherently difficult task, none the least of which is shipping logistics.

FIRST LIGHT TEAM
The results of the First Light team are now almost legendary (at least, within New Zealand). Victoria University decided that the team proposal was worth supporting, and that they would provide university back up at all levels, including financial support as a last resort. The student team had to go out and sell the scheme to raise the money for the project: they succeeded in getting sponsorship for the entire project, both for individual elements (doors and windows sponsored by Eco-Windows) and the overall scheme (the project becoming officially known as the Meridian First Light House). In the end, the project competed at an extremely high level, with the First Light House winning First Prize in Engineering, Energy Balance, and Hot Water generation, a tantalizingly close Second Prize in Architecture, and Third Prize in Market Appeal, as well as Third Prize overall. A Bronze medal in your first Olympics is not a bad result to have. The first for Engineering was particularly pleasing for the team, especially as no engineering students were involved in the project, and so the result speaks to the quality of work undertaken by students from both architecture and building science. The four
original students completed their work as Master of Architecture thesis projects (Farrow, 2012; Jagersma, 2012; Nuttall, 2012; Officer, 2012). Staff members have covered the competition in papers published over the past few years (Danielle Meyer, 2011; Marriage, 2010; 2011, 2012). The project also attained First Prize in Clever Wood Solutions at the NZ Timber Design Awards in 2011 and won a New Zealand Architecture Award for International Architecture at the NZIA awards in 2013.

To fully cover the scope of what happened in the competition is beyond the capabilities or aims of this paper, and has been covered productively by others as noted above. This paper instead looks at the pedagogic aspects of incorporating a project such as this into the standard learning objectives and teaching methods of a school of architecture. On the face of it, the project seems both daunting and unfeasible for a school in New Zealand, and yet the project went ahead and succeeded beyond wildest dreams. On the other hand, if the project was such a success, why is it not being done again?

The four student theses tell the story behind the story: each of the students examining a different aspect of the project, closely following their primary roles in the project. Farrow (2012) examines the work to the interior, Nuttall (2012) writes of the planning logistics and building of the project, Jagersma (2012) details the mechanical, electrical and seriously technical parts of the project, while Officer (2012) discusses the trials and tribulations of trying to select the right management structure to guide the project. As would be expected on a project of this complexity, all of these aspects had issues at various times, and indeed the project is revealed to have been at the brink of being cancelled on more than one occasion.

UNIVERSITY INVOLVEMENT

The brief from Patrick Walsh, the Pro Vice Chancellor (PVC) at Victoria was simple: “go there, and win”. That dictum drove the team onwards – the notion of losing was not an option. But that wasn’t balanced in the minds of the student team when the meetings with the Project Managers instead promoted the concept that the budget was uppermost. The PVC had notably not said –“go there and win on a limited budget”.

The university had issues not only with the selection of the best management structure (as the project was student initiated and student run, trying to install a ‘Project Manager’ at a later date was fraught with difficulties), but also attempting to retrofit the project into a standard university course structure was problematic too. The standard arrangement of courses in the BArch, BAS and BSc degrees at Victoria University were devised to give students a rounded education through set courses that span the breadth of several years, through trimesters of 12 weeks each. The First Light project, on the other hand, required a continual presence of up to 30 hand-chosen students, to work long into the night for up to a year, designing, drawing and constructing one single project – an intensely technological one-bedroom house powered by the sun. The standard model of students being present for 12 weeks and then going away on a 3 month long summer break was not appreciated by the organisers of the project, who faced periods of their ‘elite workforce’ having to go back to their home towns to work over the university holiday period.

It is difficult to cajole students to come and work all through their holidays, foregoing holiday earning potential, but even more so for the sake of an elite student project that may not even happen.

UNIVERSITY SUCCESS

The aims of what the University planned to get from the Solar Decathlon project have never been publicly fully outlined. While support from the higher echelons of the University was readily forthcoming, in the backing of the project and the mandate to ‘go there and win’, there are likely to be further, perhaps unwritten goals to the First Light entry. One aspect amongst this was to raise the public profile of the University. This it has achieved: the First Light project was highly successful at raising awareness via many different media. Official media releases had to conform to the dictates of the Solar Decathlon governing body in the USA, and thanks to the media team at First Light, media interest was high. The high quality graphic standards of the project were rigidly enforced through the guidance received from Chris Meade at Designworks (one of NZ’s foremost branding companies). The high technical standards achieved by the project in terms of mechanical and electrical components is likewise attributable to the excellent support that the team got from key sponsors such as Leap (hot water), Mitsubishi Black Diamond (solar cells), and Fisher & Paykel (electrical appliances). For instance, Mark Elmore, technical director at Fisher & Paykel, authorised a special production of a 2-burner ceramic induction hob for the project, hitherto not available to the NZ market. The whole project was, in Public Relations terms for the University, money well spent on raising the
public profile of the University and attracting more foreign students to the Schools of Architecture and Design. Arguably, the project is the most high-profile student architectural project ever in New Zealand, and notably at Victoria University, not at Auckland.

PEDAGOGICAL SUCCESS
The success in this aspect is more difficult to ascertain. The leading four students completed M Arch degrees (on top of their B Arch degrees), so that is a clear success. Knowledge acquisition by these four students was evidently intense, including: dealing with CEOs of major companies (hence overall key project sponsorship by Meridian Energy), presentations to over 50 different companies and industry organisations, regular meetings with the Vice Chancellor and the Pro Vice Chancellor as well as weekly meetings with the Head of School, meetings and presentations with the former Prime Minister (Hon. Helen Clark), Minister of Finance (Hon. Bill English), Government Science Advisor (Dr Peter Gluckman), the NZ Ambassador to the USA (Hon. Mike Moore) etc. This core team of four young architects have gone on to develop their own company First Light Studio (FLS).

The wider team (26 students) on the project gained less certain benefits. Hard work was undertaken for long hours, and 4–8 weeks spent in Washington DC assembling, running and disassembling the house, through the mechanism of new Special Topic papers set up with specifically First Light oriented objectives. They still had to complete their regular studies as well, with only some staff members willing to give dispensations for work on the First Light project and in some (rare) cases, students had to drop courses so that they could partake in the First Light project. The lecturers at Victoria seemed at times unaware of the significance or importance of competing in the Solar Decathlon project, and requests for leniency and alternative assessment methods were not always met with agreement. As an example of an alternative viewpoint: an alliance was set up with Fanshawe College in London (Ontario), who had not been successful in entering the Solar Decathlon themselves, but their staff and students were keenly willing to help, volunteering to twice drive a return trip of 1700 km across North America to assist in the project assembly and disassembly phases.

The most difficult aspect to ascertain is the good to the students in the wider School view. With some classes re-oriented towards the First Light project, there was a perceived risk that the more regular projects undertaken (eg. regular project design of a Museum or Art Gallery) were not being covered by a project which, no matter how complex it was, is still a very small house. Educators needed to balance the learning outcomes of being involved with a high stakes project such as First Light and the subsequent acquisition of specialised knowledge in that small field, with the wider view – albeit less intensely focused – afforded by a regular, more general project topic. Coupled with this was the knowledge that while 20–30 lucky students would be selected to go overseas to work on the house project in Washington DC, the remaining 100–200 students from their year would not leave NZ and would thus not be ‘competing in the Olympics’.

To help combat these issues, different tactics had to be made. Special topic courses were set up, with specific Course Learning Objectives oriented towards the First Light project. Assignments set were assessed on the basis of the quality of the work being undertaken by that student. Numerous students enrolled – and some of those students would end up being selected for the team that was sent to accompany the house to America – but some others of those students did not make the final list and did not get to go. But issues such as a maximum number of Elective courses also came into play, with students disinclined to enrol for further courses if there was no perceived academic benefit to them – ie accumulating credits that they could not use on their current degree. Other issues included the stark reality that the Solar Decathlon competition required a dedicated member of the team to be the Health and Safety Officer (HSO) – so while some members of the team got to design and draw and build, the HSO instead had to sit and watch safety videos in order to pass the USA’s required level of Safety standards: far less fun. Assessment of the work of the student who inherited that particular student role project may have seemed far removed from the standard training of an architecture student, but the standards achieved by that student can be gauged a little by the First Light Team eventually winning a special commendation as the Most Safety Conscious team in the entire competition.

In retrospect, the university should probably have made some different decisions. Indeed, as a means of teaching, the results were not perfect. Some of the team members who worked the hardest on the project, subsequently failed to achieve the required academic levels in other papers they were enrolled in, and so failed some courses – purely because of the dedication to the overall project.
While that is admirable in the case of the individual student, it is likely seen as less admirable in the case of the student's parents. The plain truth is that the standard means of running an undergraduate architecture degree program does not necessarily correspond well with the needs of a single-focus competition such as the Solar Decathlon.

ALTERNATIVE ROUTES TO SUCCESS
One possible different route could have been the one taken by the University of Wollongong (UoW). Following the success of the Victoria University of Wellington (VUW) entry, Australian universities were interested in also entering the Solar Decathlon competition. Representatives from UoW came to NZ to discuss the way forward with representatives from VUW, and it was evident that they had one significant advantage over the VUW model—they already had a team structure at UoW that tackled a large project every year. For UoW, their regular project at the School of Engineering was to design, build, and run the resulting car in the Grand Prix, in Formula SAE (Society of Automotive Engineers). An article in Computerworld notes that:

‘Formula-SAE is a worldwide competition sponsored by the Society of Automotive Engineers in which students from 500 universities worldwide build a racing car. Most Australian universities with engineering departments participate.’

While not as technologically advanced as Formula 1 Grand Prix, Wollongong’s success and continual involvement in Formula SAE has left the University with institutional knowledge on how to run an annual student-based learning project. This was evident in UoW’s entry “Illawarra Flame” to the 2013 Solar Decathlon China competition, where they succeeded in taking out the First Prize overall, beating all the home territory Chinese teams. UoW also succeeded by collaborating with another tertiary institution, the local TAFE (Technical and Further Education) technical college. In the 2011 competition, an equivalent pairing with VUW may have been to team with students from WelTec, or Whitiara Polytechnic, or even with the Schools of Architecture and Engineering at the University of Auckland. For a number of (unpublicised) reasons, this did not happen. Instead, the contracting company Mainzeal was contracted to build the house for VUW (despite Mainzeal not being a residential builder). Awkwardly, shortly after the completion of the project (but, we presume, for wholly unrelated reasons), Mainzeal went into bankruptcy.

FUTURE SOLAR DECATHLONS
The question is often asked by students—‘when are you doing it again?’ The Solar Decathlon has now spread wider, with Solar Decathlon Europe, Solar Decathlon China, and the Solar Decathlon USA now being run in California. As yet, there is no Solar Decathlon Australasia, and so regardless, the same issues of transporting across the oceans will always be at the forefront of any entry from New Zealand (and a major hindrance, both logistically and financially). The price of competing will always be high for a team from New Zealand. There are no immediate plans.

References:
10. Pat Walsh – speech to the student team, (Wellington, Victoria University, May 2011).
A Collaborative Research Program to Develop an Urban Model for Achieving Positive Development in Christchurch (New Zealand): Results and Perspectives from Studio Christchurch Summer School 2015.

ALESSANDRO MELIS  
The University of Auckland, New Zealand

ALEXANDER FIGG  
The University of Auckland, New Zealand

EMANUELE LISCI  
The University of Applied Arts Vienna, Austria

During recent years, the rebuilding of the city of Christchurch, badly damaged by the earthquakes of 2010–2011, has stimulated a significant amount of interdisciplinary debate in New Zealand around measures to improve the resilience and sustainability of cities.

Studio Christchurch, a "Christchurch based research and design platform", involving New Zealand and overseas universities, has participated in this debate since 2012. As a result of its collaborative design laboratories, innovative and radical ideas on the future of the city are presented to the citizens, to the Council, and to developers. Eventually these can become starting points for new urban planning measures and best practices in the city’s rebuild.

Taking into consideration such a possibility, this research analyzes the outcome of Studio Christchurch Summer School 2015, extracting a model of development for the city on which to set an applied urban study; moving beyond conceptual design to an object of applied research. Here we suggest an implementable urban scenario where seismic retrofitting also becomes an opportunity for sustainable retrofitting of the city, with a particular focus on the production and management of energy. Key points of intervention are formed that may progress Christchurch toward a paradigm of positive development.

Collaboration, the distinguishing feature of Studio Christchurch’s work, becomes essential to the implementation of this model, hence prompting our research question: How do we engage different stakeholders and professional figures to implement and materialize this model of positive development?

1. STUDIO CHRISTCHURCH 2015

Four years after the main shock that destroyed the Christchurch CBD, the re-consolidation of the urban fabric of the city is still at an early stage. For this reason, in January 2015, public institutions (The City Council and CERA, The Canterbury Earthquake Recovery Authority), showed interest in giving new impetus to the rebuild, suggesting the possibility of mixed-use, medium-density development of the areas surrounding those initially featured in the Recovery Plan.

Studio Christchurch, in collaboration with the City Council, focused the research topics of the 2015 Summer School (8–31 January 2015) on these aspects, proposing (in addition to a plan for the areas around the Cathedral, developed by students of Victoria University of Wellington) a new urban scenario for the areas South (Fig.2), East and North of the green frame outlined by the Blueprint Plan.1

One of the final outputs of the Summer School was a master planning project (Fig.3–8) for five adjacent sites within the South Frame, developed by a team of academics, professionals and students from different universities (The University of Auckland, Christchurch Polytechnic Institute of Technology, and guest students from the University of Applied Arts Vienna). Here, five satellite groups designed in conjunction with a framework plan which proposed a strategy of positive development. The master
plan resulting from the work of the school can be described by four main planning and design actions:
A. Creating a smart grid network to manage energy (to be extended for water and waste).
B. Densifying and diversifying the urban fabric.
C. Improving the microclimate of the urban environment.
D. Increasing connectivity through the improvement of walkability and alternative transport.

2. RESEARCH QUESTIONS
The 4 main actions proposed in the master plan for the South Frame take up the challenge of making Christchurch not only resistant to earthquakes but also widely sustainable and climate resilient. What emerged after this work was presented; was that at the moment not all the stakeholders are totally aware of what this could mean for the future development of Christchurch. Stakeholders might question why we should put extra effort into the rebuild, asking; is it not difficult enough just to restore what was destroyed?

There is perhaps an implicit bias toward thinking that the city before the earthquake was a nostalgic model to be repeated, however recent sequences of events have proved the failure of the old urban model. Thus it makes little sense to simply restore the city to its previous condition. With this in mind, how might we rebuild the city?

In a simplified interpretation, the contribution of Studio CHCH is aligned with the thoughts of Janis Birkeland in answering this question, implementing a strategy of "positive development". Here the planning actions aim "to reverse the impacts of the current system of development, to increase the ecological base and public estate, and improve human life quality". To transform this statement from a preliminary stage that is at the moment just intentional, to an object of applied research that can produce real results; we should ask the question: could an urban model such as the one proposed in the South Frame be able to inject the future of Christchurch with a virus of positive development?

Here we consider; what are the indicators of positive development? Can we test, through numerical simulation, the effectiveness of this urban model prior to implementation in a real urban plan?

3. BUILDING A BASE OF DISCUSSION
Overall, globally, we know that buildings represent the largest sector of energy consumption; Pérez-Lombard et al. (2008) report between 30 and 40% depending on the country.3 In NZ these data are confirmed in excess due to great dependency on car transport and poor performance of housing stock. Christchurch is no exception.

To transform these points of weakness into the strengths of a new urban system, we start from a few basic design and planning actions which might trigger virtuous circles. In our hypothesis those actions are:
- The generation of energy from clean sources using existing building surfaces (PV and other energy harvesting systems);
- The use of power generation features as passive devices (envelope) so as to promote the reduction of energy consumption;
- The use of energy generated to implement alternative electric public transport;

To build a platform for discussion this research aims to enable the comparison of different ways of developing these three actions through very simple rules within an urban plan. This was possible after having produced a data set describing two scenarios, A and B, representing in a simplified model two differing urban plans with different set rules on urban development (Fig.9).

The degree of success of these implementations was then defined comparing the two scenarios, using a change ratio B/A (Fig.12–14).

Calculations were performed with the aid of a set of digital tools such as QGis, Rhinoceros, Grassshopper, Ecotect (Fig.10–11) and Excel spreadsheets.

3.1. Scenario A
Currently in the South Frame region we find mainly commercial buildings. In a simplified calculation, we then consider that in proportion to floor area, totaling 8,990,102 m2, buildings are consuming energy as in a typical commercial building:
125kWh/m². Scenario A, a mono-functional scenario, helps us to understand what might occur if without changing function and volume parameters of the city, we introduce a rule to retrofit existing buildings with energy producing envelopes that eventually can also be used as passive devices (e.g. double skin facades systems) to decrease the energy loads. Scenario A takes the form of a minimal intervention in comparison to Scenario B.

3.2. Scenario B

Scenario B uses the same functional assumption of scenario A and the same rule of energy producing envelopes, but also considers two other actions to transform the urban environment. The first of these is the construction of an urban canopy. We think that this urban canopy can be realized with a general urban rule which states that each private developer must build a segment of canopy on property boundaries which face the street, similarly to the veranda requirements in Auckland and other NZ cities. As a second rule we suggest that all the areas between the canopy and the existing building which at present occur as single level parking, can be optimized to increase green space in the city. This is made possible with a consolidation of parking to multi-story buildings that equal proportionally the single level parking areas that they replace. With the space that remains, we expect a ratio of 50% green, 50% bicycle path, walkway, public space and water features.

3.3. Public transport

Currently public transport in Christchurch plays a diminished role. The main consequence of this is the need for large, high speed arterial roads in accordance with the low density of housing and lack of pedestrian presence within the urban centre (pedestrian absence being due also to the difficulty of covering long distances and crossing the street). These issues were further aggravated after the earthquake but were inherent elements of the urban model.

Our model takes into account a future need to reinforce public transport in order to counteract the current trends. More specifically, we try to test if in our scenarios, we might be able to sustain a fully operative sustainable bus fleet for all of the city, larger than the present one (Christchurch today has a fleet of 214 buses, 200 run by the Red Bus company and 14 by Go Bus Christchurch Ltd.).

Current state of the art transport technologies suggest that a sustainable bus fleet can rather reasonably be provided:

A – Using busses that implement FCHEV (Fuel Cell Hybrid Electric Vehicle) technology that uses hydrogen fuel cells as well as batteries.

B – Using busses that implement BEV (Battery Electric Vehicle) technology.

According to the data extracted from the case study of the ZEBA Fuel Cell Bus fleet operating in Oakland, California, a vehicle similar to the FCHEV typology has an effective consumption per year of roughly 173 MWh of energy (here we consider the energy necessary to produce the 5040 kg of H₂ per year required by those busses, using solid oxide cells for water electrolysis).

Instead, according to the data extracted from the recent case study of the Wiener Linien electric bus fleet, operating in Vienna, a vehicle similar to the BEV typology has an effective consumption per year of roughly 40 MWh of energy, 4.3 times less than the ZEBA busses. The data suggest that the best option is to replace the existing fleet of busses in CHCH with a pure EV technology. Hydrogen fuel cell technology can be considered in the future as we expect an increase in efficiency. The process of electrolysis can be taken into consideration as an alternative to the sale of excess of generated energy through hydrogen storage.

3.4. Private transport

Due to the extension of the Canterbury region, we acknowledge that a number of residents, (continuously moving in and out of the denser urban centre of Christchurch) will own and use private vehicles. These can be designed into the system through the encouragement of electric vehicle technologies such those mentioned previously.

Our hypothesis is that these vehicles can be supplied, similarly to public transport, with surplus energy generated in the urban model. Learning from other experimental smart grid projects, the introduction of private electric vehicles to plug into the grid will constitute not just a further possibility to use the energy produced, but also a chance to store it in the batteries of vehicles and, when needed, to reintroduce it back into the network.

An example of such a model can be found at the GM E-Motor Plant, in a project done by ‘TimberRock Energy Solutions Inc.’ where a web based software application ‘De-MAP’ handles complex data and energy flows which allows ‘Transactive Energy,’ in turn allowing ‘market participation by distributed energy resources (DER),’ which facilitates the workings of renewable energy production technologies on a local scale. We suggest the use of
Tesla Model S vehicles (or similar); using DC Fast charging, a significant volume of Li-ion battery storage, and a series of inverters which link via AC EV charging to the wider local grid. It may prove difficult to sell energy surpluses from the cars back to the grid, thus we might look to a fleet of EVs as a plausible alternative method of energy storage. This could require further study.

4. A macro-scale intervention

Results show that Scenario B, even with an initial cost of almost double that of scenario A, could be more preferable due to the opportunity for the sale of surplus energy; recovering the initial investment in the same period of time as would be needed to recover that of Scenario A.

If we take the region of the South Frame as a significant and homogeneous sample of the industrial areas of the city (Fig.1), having found an analogous typology of urban fabric, we can speculate on a possible macro-scale intervention.

The South Frame region of Christchurch forms of an area of 474,710 m² that corresponds to 2.08% of the full industrial areas totaling 22,844,145 m². This means that the total cost for developing Scenario B in all of the industrial areas would be ~12,900,000,000 NZD. This cost can be recovered in 5 to 6 years. Having the solar panels last a lifetime of 25 years before they suffer a decrease in performance, the installed systems in Scenario B for all the industrial areas would produce a financial gain for the city of around 40 Billion NZD over 20 years (comprising ~1,270,000,000 NZD per year x 20 years saved and ~914,450,000 per year x 20 years gained from the sale of surplus energy), which corresponds to the current estimated total investment toward the rebuild of the city.

5. NEEDS OF AN INTERDISCIPLINARY STUDY

Due to the condition of this being pioneering research, the model studied here has various limitations (e.g. extrapolating the data produced for the South Frame to the entirety of the industrial regions), in particular, as soon as a variety of parameters are introduced, the calculations may be subject to changes.

- What if, instead of extrapolating the data of the South Frame for all the industrial areas of CHCH, we considered buildings with state of the
art technology, with a continuous update in of cartographic information throughout time?

Because Christchurch at the moment is continuously changing and buildings rapidly appear and disappear from the urban scene, this will require an in depth study, where not only are GIS experts appointed for accurately mapping field conditions, with checks on site to solve uncertainties, but also authorities and developers share their data on future intervention plans.

Currently the CERA map online platform is one of the few examples of how this diachronic cartographic database can be implemented, but by sharing the information in an open platform, using GIS technology, having a specialized team to review continuously a vector format cartographic database, this could be done far better, providing, almost in real time, information on changes in the urban fabric.

– What if, instead of considering that Scenario B can be implemented in one phase at a cost of almost 13 billion dollars, this scenario was implemented over a period of time X by different developers, at a cost Y, for each developer?

Our study model at the moment is a static model that does not consider time as a variable. A further study will have to consider what results could produce a dynamic implementation of the retrofitting scenario. For this purpose, collaboration within a multidisciplinary team of professionals will be required.

Ideally, a simulation of this scenario could be developed with the aid of digital tools, to produce a report with a complex set of data from which we might start studying real legislative measures to be inserted in an urban plan, to reach the wider objective. Besides the design decisions on the urban model (similar to the initial rule-set defined in our research for scenarios A and B), the competences required to perform a complex simulation will be; mathematics (to define the best functions to describe the complex system), economics (to define a business plan that considers the market dynamics that could affect the development of the project), and programming (to write algorithms and software for simulation).

– What if we introduce a dynamic feedback loop in the elaboration of the model?

Of course, if this study model is to become the base of a real process of development in an urban plan, the implementation process cannot be just linear, going straight from design decisions to realization with a top-down approach.

The physical and economic dimension of the intervention, in addition to the number of people involved, require a negotiation of the design decisions to be developed. Then, supposing to have a team working on the update of raw cartographic data, a separate team working on the elaboration of the simulation model to provide the data to support the decisions, it will be necessary to have a third ‘feedback team’ that continuously provides
Below:

Studio Christchurch Master Plan: South Frame Unitary vision; presented to Christchurch City Council 04/02/2015.

Fig.3. Introductory slide and Strategy overview. (Six Explanatory slides omitted due to document limitations.)

Fig.4. Master plan and Proposed typologies.

Fig.5. Public transport route (e.g. tram.) and Integrated parking structures.
Fig. 6. Pedestrian boulevard and Green spaces. Studio Christchurch Master Plan: urban canopy concepts; presented to Christchurch City Council 04/02/2015.

Fig. 7. Canopy as a new urban infrastructure for energy harvesting and microclimate improvement.

Fig. 8. Hypothesis of energy storage through hydrogen production.
design decisions to be tested, and that negotiates these decisions with the legislative authorities, stakeholders and users.

This third team will again be a collaborative structure where interdisciplinary competencies will be required; e.g. to design not just for cost, functionality and efficiency, but also for beauty, to understand and manage the social and political dynamics of the city, to communicate and negotiate decisions with stakeholders and users, and to address the work of other teams and communicate with them.

6. WIN-WIN STRATEGY

From the collaboration of Studio CHCH 2015 between several universities, the City Council and members of numerous local organizations; what emerged was only a first potential to develop a model of positive development in the city.

Amplifying this collaborative experience, building a hypothesis on a real macro-scale implementation of an urban model, our first findings shows that this intervention could potentially produce a massive gain for the city through the generation of energy and the improvement of outdoor qualities, also contributing to:
- CO2 reduction;
- Fine particle reduction (with a positive effect in terms of health);
- Heat Island Effect mitigation;
- Walkability improvement.

For the most skeptical objectors, we aimed to show how a larger investment of capital could not just be recovered in 5–6 years, but could also generate a potentially huge economic gain for the city over a longer period of 25 years, a financial gain able to cover the entire estimated cost of the Christchurch rebuild.

The discussion on how this model can be developed in more in depth, through a dialogue with different professional figures, local authorities and stakeholders; aims to enlighten the possibility to fuel a wider research program involving three essential multidisciplinary teams.

These are just the first steps toward the definition of a win-win strategy for the future of Christchurch, where courageous choices in the rebuilding of the city could lead parties involved toward long term increased wellbeing, definable in other words as increased resilience of the urban environment, not just to earthquakes but to climate change and associated issues of sustainability. This is understood as achieving positive development.
Fig.10. Annual cumulative radiation analysis in Scenario A (Derived from: Ecotect Analysis software)

Fig.11. Annual cumulative radiation analysis in Scenario B (Derived from: Ecotect Analysis software)
Fig. 12. Spatial analysis comparing Scenario A and Scenario B.

Fig. 13. Cost analysis comparing Scenario A and Scenario B.


OTHER REFERENCES

Fig. 14. Energy and Water analysis comparing Scenario A and Scenario B.
Wonderstuff & Turbulence: The RMIT Building 36 Project

VIVIAN MITSOGIANNI
RMIT University, Melbourne, Australia

Wonderstuff & Turbulence: The RMIT Building 36 Project was a research-led design studio that I co-led with Paul Morgan Architects (PMA) which ran in the Master of Architecture Program at RMIT (2014). The studio was a live project in its early stages to reimage an existing leased building as a new learning environment to suit two academic units. The studio was one part of a wider learning environments project which was a collaboration between my design-practice research project called The Speculative Campus Project (which explores generative design processes and university learning environments in which the social spaces are the predominant model), of which the studio was a part, the RMIT School of Architecture and Design, PMA and RMIT Property Services, who were the client and commissioned the studio and larger research project. It also involved two user groups for the building and the building owner. The project brought together a series of research projects and industry partners to collaborate on a wider research project, using a specific building as a test case. PMA was also commissioned independently to work on the feasibility study for the project and provided live information on the building and feasibility process.

This paper will discuss the project and collaboration as well as the complex, time-based diagram of collaboration which was developed to illustrate and manage the complex collaborative process. It will do so within a wider proposition which the research-led design studio is discussed as an avenue to not only integrate research and teaching, but also to pursue multiple research trajectories, drawing together a wide number of participants and expertise. It will be framed within the proposition that we need to stop thinking of the studio as a subject or course and see it as a dynamic (and strangely efficient) agent to pull together the culture of an architecture school by congregating a number of people, disciplines, competing ideas, industry partners, research projects, research outcomes and, most importantly, by facilitating public communication among these individual studio cohorts. The paper will also draw on over 14 years of developing pedagogical structures for these types of collaborations and consider the immense potential as well as the more problematic aspects and limitations of these types of studios.

BACKGROUND:
The seed for the Master of Architecture Design Studio that would become known as WONDERSTUFF & TURBULENCE: The RMIT Building 36 Project, came from Darren McKee (the then RMIT Property Services Executive Director) and the RMIT Building 36 building owner. RMIT Property services wanted to investigate the requirements to develop Building 36 with an internal fit out of six floors to meet the expanding requirements for RMIT English Worldwide (REW) as well as housing the offices of RMIT Training. There was an ambition for the building to match or exceed RMIT’s innovations in learning environments achieved through their ambitious building program (of which the Lyons Swanston Academic Building was the most recently completed example on the City Campus). RMIT Building 36 is located on a prominent site on the Swanston Street spine in Melbourne, opposite the RMIT Storey Hall Annex (by ARM Architecture) and RMIT Building 8 (by Edmond & Corrigan), with a view to the new RMIT Building 80 or Swanston Academic Building (by Lyons). It is a six story leased building which houses RMIT English Worldwide (REW which is part of RMIT Training) as well as the School of Media and Communications.

The original proposal was for students to develop designs for this venture. Before discussing this specific project, we will take a slight detour to consider a few lessons learnt from previous foundational projects which directly influenced the shaping of this project.

The Docklands New Quay Follies (2001) was the first project of what would later be known as the RMIT
Architecture Community & Industry projects" The project came to RMIT through Karl Fender, then of SJB/FKA Architects which is now Plus Architecture who were the architects for the New Quay precinct in Melbourne’s Docklands (then under construction) which along with MAB (the developers of the project) approached RMIT to have students involved in the design of 3 “follies” (which later became two low rise retail pavilions) whilst exploring collaborations between artists and architects 1. I developed and led the original studio titled L*O*A*D*E*D (2001) assisted by Stuart Harrison and with input from Karl Fender, SJB/FKA and MAB and after an interview process RMIT engaged 3 artists, David Rosetsky, Alexander Knox and Callum Morton to co-teach the studio. The project was set as a competition that was completed in the studio. One project team was selected by a jury 2. The designers of the winning project (Jessica Liew and Sherry Anne Kwok) were then employed by Plus Architecture to work on the design development, documentation and delivery of the project under the offices guidance. The project was built in 2003 and won a commendation in the commercial section of the Victorian AIA Awards (a first at the time for such a collaboration).

This project was one of the first of its kind at RMIT and through its execution we identified a series of issues (which were addressed at the later stages of the project) that were not evident at its conception. Since the intention that the design was to be built we negotiated that the competition prize remunerated the student for their design and we were also conscious of the IP of the students, negotiating naming rights for the project – in this case “RMIT Architecture students Sherry Anne Kwok and Jessica Liew with FKA/SJB Architects”. We also negotiated with FKA/SJB a salary commensurate with a design architect in an office not a student architect given that the students were undertaking a lead architect role for the project.

Based on their knowledge of the New Quay project as a model of engagement, I was subsequently approached by the Docklands Authority (later VicUrban now Places Victoria) to work on an Amenities Block at the then unbuilt Docklands Park (by ARM & Rush Wright Landscape Architects). I coordinated the project which was run in an Elective Subject led by architect Dean Boothroyd and artist Callum Morton, with input from ARM/Rush Wright and Docklands Authority. Run in a similar mode to New Quay project, one student project was selected (by Beng Kiet Wee) who was subsequently employed by ARM to work on design development and documentation of the project which was completed in 2005.

A key consideration that arose from these projects was to ensure that we were not effectively competing with professional practice as well as ensuring that the students were acknowledged and compensated for their design work. After reflecting on the New Quay Follies project we ensured that a wider research project be developed in the Docklands Park Amenities Project and – with their agreement – we charged the Docklands Authority in excess of what an architect would for schematic design of a similar project, in order to ensure that there was an investment in the wider research project and collaboration, rather than the mere production of a design. In that way
the a wider project would developed as research or a contribution to the wider knowledge base of the discipline.

While at the time we went to great lengths to protect the students and their IP (again the project credits were RMIT Architecture Student Ben Kiet Wee with ARM) it became evident through the process of the studio – that we hadn’t considered the studio leader’s IP and that it was important to also acknowledge the studio leaders contribution. Studios are directed environments and in this case concentrated several experts around the student learning experience creating an ideas rich environment. In addition students learn from other students in that environment. The studio leaders create a world of ideas, introduce concepts and techniques developed over years of experience. This is why projects are produced through the studio environment that the student could not necessarily have produced alone, when completing a competition for example. This need became apparent because when the designs when disseminated they were discussed as “student projects” which is not inaccurate, but does not provide the entire picture, because the designs were produced under the guidance of the studio leader and in a specific studio environment. It is also important from a professional practice viewpoint to not infer that students can act alone as professional architects (prior to qualification). The attribution of “RMIT Architecture student” as a preface to the students name was an attempt to capture the context the work was produced in and the “with ARM/Rush Wright” an attempt to acknowledge the professional context that subsequently enabled the design to be realised (including professional indemnity insurance and project delivery expertise). Although neither of these at the time sufficiently acknowledged the specific studio environment.

A major shift since 2003 is that Universities have shifted into better articulated research cultures and at RMIT we continued to better articulate what a research-led design studio is. Most of us use the design studio as a way of thinking through what a future research project might be and as highly speculative rather than teaching what we already know. After these foundational studios we have had numerous others working with local councils, community organisations and so forth, and they have subsequently focussed on working in the spirit of “the public good” rather than for commercial clients – some examples include to add value to limited council budgets or seed projects for community organisations. We also developed a number of principles around these projects in order to address the issues noted above and shaped future studios in different ways preferring in the majority of cases to structure design studios as one part of wider research projects – or as a place for multiple research projects to come together to form a new project – rather than producing completed designs by students intended for construction.

WONDERSTUFF & TURBULENCE: Shaping the wider New Learning Environments Project.

As previously noted the original proposal was for students to develop designs for the building and RMIT Property Services also wanted a Feasibility Study (including cost, consideration of services, decanting and so forth) for the building. After initial discussion and keeping in mind the previously mentioned lessons I suggested that an architectural practice be commissioned for the feasibility study and that a concurrent and wider research project could be developed which would provide a series

Top: Docklands Park Amenities Block by Ben Kiet Wee produced in an RMIT Architecture Elective coordinated by Vivian Mitsogianni and led by Dean Boothroyd and Callum Morton shown at the end of the Elective (2003)
Bottom: Docklands Park Amenities Block by RMIT Architecture Student Beng Kiet Wee with ARM (2005)
of speculative scenarios for the building, focusing on repeatable models for University learning environments, which could subsequently be used by the commissioned architects to inform, this, as well as future building projects. Architecture students could engage in one part of the wider research project by undertaking a linked Master of Architecture design studio.

RMIT Property Services also agreed to join the research project (which we called New Learning Environments) as a partner and to additionally engage the architectural practice that would be commissioned for the Feasibility Study to join us concurrently as a co-tutor in the Design Studio in order to provide live information on the building throughout the feasibility process. Selection of the Architect was made by RMIT Property Services from a shortlist of approved architects from their tender pool for this size project, and upon consultation, selected Paul Morgan Architectsxii. The idea at the time was that after the Feasibility Study was completed the building project, would be open for design tender as per the usual RMIT process. PMA also brought together a team of building services consultants for the feasibility study and whose input was also made available to the studio through PMA.

While live projects are now commonplace in universities the sheer volume and combination of collaborators and the specificity of the combination of different elements makes this studio potentially instructive to others. This projects complexity also included; negotiating the structural complexity of the series of research projects and outcomes; the requirements of managing the different collaborators varying timelines and requirements as well as the formation of the studio pedagogy which exposed students to this environment whilst also editing their access to it when required.

There were therefore a number of concurrent and intersecting projects and activities occurring of which the WONDERSTUFF & TURBULENCE: The RMIT Building 36 Project design studio was one part and which students in the studio would be exposed to. In order to make sense of all the different components and the deliverable outcomes from each and importantly to communicate the wider context to the different participants I developed a diagram of collaborationxiii.

The diagram shows the different projects and partners that are brought together for the wider

‘New Learning Environments’ design practice research collaboration as follows:

RMIT Property Services (on the top of the diagram shown as Industry Partner) are effectively the client, commissioner of the research project, funded PMA’s involvement in the design studio as well as being a collaborator (with a team including Darren McKee – Executive Director, Chris Rodda – Senior Analyst Space Management, Ben Hann – Senior Manager Capital Projects and Louise Allgood Program Manager PS Projects and the property owner).

PMA (on the right of the diagram shown as Industry Partner) were undertaking the Feasibility Study for the project and also had an ongoing interest on tertiary learning environments – through a series of TAFE projects – and brought this expertise into the design studio. The Building 36 user groups are also included in this section; REW (represented by Director Ann Wright and RMIT Training represented by CEO Rachel Holthouse) because PMA were primarily managing the user group consultation process.

The Speculative Campus Project (shown on the left), which is my design practice research project, brought to the studio an ongoing focus on two concurrent and interwoven investigations; experimenting with a ‘process-based’ architectural design approach as well as developing speculative design propositions for University learning environments, in which social spaces are the dominant model.

The WONDERSTUFF & TURBULENCE studio. I developed the specific studio curriculum primarily with Paul Morgan and with the assistance of Patrick Macasaet (RMIT) and Helen Duong (PMA). The studio name reflected this collaboration being a combination of a series of studios I had been running at RMIT called WONDERSTUFF and a series of studios that Paul Morgan had been running called TURBULENCE. The WONDERSTUFF component explored using a ‘process-based’ design approach whereby a process – consisting of a series of actions or operations – is choreographed in order to initiate and develop architectural designs (sometimes known as rule-based or generative design processes). Processes were developed which used the behaviour or organisational characteristics of devices and systems external to architecture in order to inform architectural design. The studios also explored research on University learning environments which cites the importance and potential of social spaces as active learning spaces and asked what might the possibilities be if we start to consider the social spaces on campus as the dominant type, as active learning spaces and erode classroom boundaries. What are the different configurations through which this might occur, what do they look like, how are they organised and what might they lead to?

The above interests were combined with Paul Morgan’s interest in what he calls exploring the “kinetics of the environment”, and included experimenting with the potential of Computational Fluid Dynamics software for generative design ends (as previously explored in the TURBULENCE series of studios at RMIT).

In the studio, through the production of architectural design propositions, we sought to provide examples of the potential of the generative processes for architectural design as well as the possibilities for new learning environments. These examples would serve as prototypes of the built and spatial possibilities of the previously cited explorations, as the research. This model of research is research through design, which can be contrasted with research for design and research about design, and relies on exploration through the production of spatial propositions.

The studio itself was dynamic and constantly in flux as the project brief routinely shifted as new live information was made available at different stages throughout the semester. The PMA Feasibility study was occurring concurrently and information on the building and brief was delivered to the students and this information was in turn mediated with the wider ambitions of the studios. Although there was a desire to engage with the ‘real world’ processes...
and constraints it is often not possible or useful in terms of student learning to directly transpose a client’s brief for a live project directly onto a design studio program. This is because it is important that the studio can also stand alone in terms of pedagogy and a studio’s learning requirements. For example in this studio we asked students to provide a new façade for the building even though this was not in the client’s building brief. This decision was driven through a studio pedagogical lens. The consideration was that even though we were dealing with a specific building the propositions were intended as typical, exploring high rise learning environments without considering the façade – or interface between the learning environment and wider urban context was seen as a big and unnecessary limitation for the students. In seeing the proposed facades, though the client group were prompted to reconsider the scope of the original briefing and to also speculate as to the possibilities for these facades for other RMIT campus projects.

Master of Architecture studios at RMIT typically have 4 contact hours per week across a 12 week semester with final presentations in week 14. The studio interspersed site visits and briefing sessions from various sections of RMIT Property services for example; on space-planning (with Chris Rodda, RMIT), RMIT’s visions and innovations for new
learning environments (from Darren McKee) and briefings from the user group with weekly process-based experiments focussed on new learning environments and research on contemporary learning environments and pedagogy. Studio sessions were located both within RMIT and the offices of PMA. The studio held two mid semester reviews, one internal with Carey Lyon (Lyons) amongst other experts from the discipline and one to the client and user group and expanded series of guests including experts in pedagogy and learning and teaching. These later sessions asked students to explain themselves away from a disciplinary context to people who were not necessarily architects. Feedback from students was that they found this a highly valuable experience in terms of developing judgement in being able to discuss ideas in an accessible but not overly simplistic way.

In the semester following the studio in interviews students reflected that the understanding in action of having to communicate design projects in different ways to different audiences was highly valuable. Students also suggested that they were encouraged by the overwhelmingly positive reaction to their projects by the client, collaborators and external members of the review panels and therefore suggested that they felt greatly reassured that what was seen internally as an experimental design approach that sought to challenge the boundaries of the discipline was seen to also have value outside the academy in a professional practice context.
THE PROJECTS.
While this paper focuses specifically on the collaborative process, an overview of the students’ projects has also been included for the reader as illustrations of some of the studio explorations.

Vicki Karavasil addressed the studio agendas by exploring a procedure based on igneous rock formation which works to splinter and shred concrete formal relationships providing an overlapping of programs as well as a series of differently scaled internal portals, offering a wide range of social and break out spaces within the building and a blurring of formal/informal learning. The shredding through a large internal void as well as other minor voids also forms multiple opportunities for views across spaces internally assisting an amplification of the social nature of the building, which is a typical challenge for high rise learning environments.

What was valuable about these experiments was the systemisation of the process for distributing social and spatial types throughout the building, particularly the juxtaposition of different programs and learning spaces throughout the building and their links to spatial/social typologies.

Jordan Wells and Trung Hau Lee addressed the studio agendas by using a procedural exploration based on penguin migration and solar and wind studies on the site along with digital scripting techniques to develop a porous façade which is responsive to wind and sun shading on the site. Internally they develop a flexible plan system with pod islands amplifying the social spaces and meeting and other rooms which can be used by students when not in use for teaching.

Marc Gibson used digital scripting techniques based on fluid dynamics and crystalline formation to explore porous internal circulation as well as detailed multilayered façade study for the high rise learning environment which explores an ambiguity of structure and ornament.

Matthew Lloyd developed the facade with a horizontal shifting process using the sun as a
Project by Vicki Karavasil (RMIT) showing a highly articulated multi-layered and thickened façade which provides student accessible spaces.

Project by Jordan Wells and Trung Hau Lee. Diagram showing analysis of the wind in Melbourne's CBD which was used as a generative element in the design of the building facade.
Above: Project by Jordan Wells and Trung Hau Lee. The facade was generated using wind analysis, the movement of penguins and the spaces created between them as an initial basis for an analogous compositional system.
Project by Jordan Wells and Trung Hau Lee. Floor Layouts. Spaces are created to encourage social learning and peer-to-peer interaction, open spaces are interspersed with “iceberg” rooms for quiet and meeting spaces.
Left: Project Marc Gibson. Façade view from Little LaTrobe St. Rheotomic process lines are expressed as a series of layered structural components.

Right: Project Marc Gibson. Façade detail.

Left: Project Marc Gibson. Perspectival section showing the circulation space which is greater in the education related program and recedes against the presence of commercial office zones.

Right: Project Marc Gibson Process Diagram: Rheotomic surfaces which were first used as a method of creating pattern and programmatic organization. The same process was layered to create varying elements in the building.
reference point and plotting a series of markers around the site. The repeatable façade module is then rotated based on the calculated values.

As well as these final propositions each student produced a series of iterative experiments and propositions which were captured in the semester following the design studio in a publication through which we curated and reflected on the design studio propositions and which will be provided to all the participantsxxvi.

“ideas-led venturous design exploration”. At RMIT we say that we are interested in “ideas-led venturous design exploration” that seeks to challenge the discipline and point to what it should do nextxxvii. This is an ethos of high experimentation. One of the aims of this studio was to demonstrate the possibility of engaging in venturous ideas based exploration and experimentation (that is often seen as a highly disciplinary concern) and illustrate to students by example, that speculative experimentation is possible within a professional practice context and can be used to develop propositions that are of value in the world and the profession. It is more common than not that generative design exploration is detached from site, programmatic concernsxxviii and therefore less common to find process-based or generative explorations that engage with real world concerns. In this project we saw a masters studio in which students are working to extend the knowledge base of the discipline – through process-based design methods and new learning environments and at the same time deal with very pragmatic series of issues and industry processes which architects face all the time when designing.

While one critique of architectural education is that the studio model itself hasn’t changed for many years, it is not the similarities that allude to change but the differences. The studio saw a pooling together of resources. By combining a series of research projects and concurrent live projects around the studio and having that contribution externally funded by the industry partners (in this case RMIT Property Services) we were able to provide students with access to a large amount of expertise and experience in a way that would have been difficult to achieve in a typically resourced design studioxxix. By subsequently disseminating the specific studio research as well as the wider research projects associated with this collaboration we are able to contribute one more iteration to a series of continuing and collective research projects.
The RMIT Architecture program is regularly approached by commercial organisations wanting to offer students ‘a great opportunity’ to ‘have their designs built’ and we always refuse suggesting that it would be more appropriate to appoint a registered architect.


Although Universities are routinely commissioned to undertake research for commercial or other external organisations which is a different situation.

This decision was based on PMA’s inclusion on the approved tender pool, the expertise practices in learning environments and because Paul Morgan had extensive experience leading design studios at RMIT.

The diagram was developed after discussion with Professor Richard Blythe, Dean, School of Architecture & Design.

The project was supported by the RMIT School of Architecture + Design (2013 onwards) and the RMIT Design Research Institute (2010–2012) where I was the founding Research Leader of the Future Fabric of Cities Flagship Program (RMIT DRI 2009–2013) for more information refer to http://www.designcentre.rmit.edu.au/programs/the-future-city/fabricated-city.

In addition I was also developing my own speculative design concurrently which explored process-based design experiments involving fragments of social typologies, dispersed through the high rise building, to explore (the implications of) an integrated and porous formal/informal learning field.

With students completed the design studio were: Vicki Karavasil, Marc Gibson, Jordan Wells, Trung Hau Lee, Matthew Lloyd, Sherman S.H. Tan, Bonnie Mills, Justin Choi, Rebecca McGlade and Renne Soulhbe.

Two of many examples which immediately followed these early projects were the “Town” Master of Architecture Design Studio (2004) led by Nigel Bertram with the Hindmarsh Shire Council in which students joined Masters Students from the RMIT Urban Architecture Laboratory to undertake urban design studies and a framework plan for the townships of Rainbow & Jeparit commissioned by the Hindmarsh Shire Council and the “Mode 02 Schools Project” Master of Architecture Design Studio (2003) led by Paul Morgan and Sophie Dyring in partnership with the Victorian Department of Education and Training and the Education Foundation to develop design practice research for primary and secondary schools in Victoria.

These studios are part of The Speculative Campus Project and commenced with the FORMFIELD series (RMIT 2010 – 2012) which later became WONDERSTUFF (RMIT 2012).


Refer also to Matiu Ward Ed. Paul Morgan Architects Uro Media, Melbourne, Australia, 2013

see Peter Downton, Design Research RMIT University Press, Melbourne, 2003

Participants and guests across the different reviews included Vivian Mitsogianni, Patrick Macasaet, Graham Crid, Susie Bass, (RMIT) Peter Gunn, Carey Lyon (Lyons), Paul Gough (PVC College Design of Social Context RMIT), Andrea Chester (DVC Learning and Teaching

DSC RMIT) Darren McKee, Chris Rodda, Louise Allgood and Ben Hann (RMIT Property Services), Anne Wright (RMIT REW), Rachel Holthouse (RMIT Property Services),

These students were part of The Speculative Campus Project and commenced with the FORMFIELD series (RMIT 2010 – 2012) which later became WONDERSTUFF (RMIT 2012).


Refer also to Matiu Ward Ed. Paul Morgan Architects Uro Media, Melbourne, Australia, 2013

see Peter Downton, Design Research RMIT University Press, Melbourne, 2003

Participants and guests across the different reviews included Vivian Mitsogianni, Patrick Macasaet, Graham Crid, Susie Bass, (RMIT) Peter Gunn, Carey Lyon (Lyons), Paul Gough (PVC College Design of Social Context RMIT), Andrea Chester (DVC Learning and Teaching

DSC RMIT) Darren McKee, Chris Rodda, Louise Allgood and Ben Hann (RMIT Property Services), Anne Wright (RMIT REW), Rachel Holthouse (RMIT Property Training), Paul Morgan, Helen Duong (PMA)

This included Associate Professor Andrea Chester Deputy PVC Learning & Teaching, RMIT College of Design & Social Context.

Students were asked about their experience in the studio and their perceptions as to the strengths and weakness of the studio.

Vivian Mitsogianni interview with Vicki Karavasil, Marc Gibson and Jordan Wells, RMIT Building 8, Swanston St Melbourne, 28th August 2014.

Students Vicki Karavasil, Jordan Wells and Marc Gibson worked with by undertaking an elective subject through which the publication was produced.

This is my typical introduction most commonly delivered at the Master of Architecture graduating exhibitions in my role as Deputy Dean and Head of Architecture & Urban Design at RMIT.

For a thorough discussion on this point see Mitsogianni, Vivian, Process-based Architectural Design: Context and Argument in white noise PANORAMA: Process-based architectural design (unpublished PhD) RMIT 2009, pp 69–57 9 (available via the RMIT Library) and also Mitsogianni, Vivian, Doubt, Dilemma and Building the Impossible: ARM’s Experiments with Process and Technique in Mongrel Rapture: The architecture of Ashtron Raggatt McDougall, Uro Publications, Melbourne, Australia, pp. 1136–1137

In the studio we also had access to the RMIT Property Services building project data base of drawings as well as a 3D Model of the RMIT Campus

provide by Lyons who were leading a project called New Academic Street (NAS) across the road.

Their designs Alexander Knox was subsequently commissioned to produce an artwork for one of the “follies”.

the designs

iv

v

vi

vii

viii

ix

x

xi

xii

xiii

xiv

xv

xvi

xvii

xviii

xix

xx

xxi

xxii

xxiii

xxiv

xxv

xxvi

xxvii

xxviii

ABSTRACT 93

i

ii

iii

xiv

xv

xxi

xxii

xxiii

xxiv

xxv

xxvi

xxvii

xxviii

xxix

ABSTRACT 93
“Design” and “Design” the Verb, Noun, Prefix and Suffix; Architecture Studio Teaching as an Epitome of Design Methodologies.

ANNABEL PRETTY  
Unitec Institute of Technology, Auckland, New Zealand

PETER MCPHERSON  
Unitec Institute of Technology, Auckland, New Zealand

This paper critiques three case studies of architectural large pre-fabrication collaborative projects in Christchurch; Lux City 2012/Canterbury Tales 2013/City Up’s 2014, from students from Unitec Department of Architecture. These were the student responses to FESTA’s (Festival of Transitional Architecture) call for projects to reinvigorate the city centre after the earthquakes of 2010 and 2011, for a 24-hour period over Labour Weekend.

The aim is to identify the use of design processes within the three case studies and with the aspiration to conclude that design processes are an integral part of an architect’s arsenal of skills; Architectural Education has embedded design methodologies (First Insight/Empathy, Preparation, Incubation, Illumination, Verification) within its core studio teaching, these case studies being directed and produced within BAS second year studio, and which characterize/personify these processes.

The English language (Anglo-Saxon) does not delineate the difference between “Design” as a domain and design as a process or methodology. Are we then confusing architectural students when we talk of “the design” (i.e. the scheme or programme) or “design” (the process through which one creates an architectural proposition) and how can we resolve this? Or perhaps it is not necessary? I hope to illustrate that the design process is epitomised within architectural practice/education.

According to Professor Sam Bucolo of Sydney’s University of Technology: “design should not be a noun but a verb, he says. ‘It’s a process and quite a rigorous process.’ So how do you think like a designer? ”Design thinkers” start with empathy (…)’ It’s a people-first approach.’ Design thinking is also integrative; designers try to draw as many threads together as possible” (…)

The word design etymologically is sourced from the Italian word Disegno meaning to mark out; however this is just its noun form; its verb form comes from the Latin designare “mark out, devise, choose, designate, appoint.” It also can be used as a “verb used with an object” and a “verb used without an object”. In general terms one can assume it means to make a drawing of a work; however it also is used as a description of “an object of the applied arts”. However the word Design within the Anglo-Saxon cultural norms has morphed and been substituted to describe many other things.
A recent discourse about design terminology provides an insight into the complex world citing a wide variety of adjectives, nouns, prefixes or suffixes to the word ‘Design’. Alastair Fuad-Luke describes this in his book Design Activism, Beautiful Strangeness for a Sustainable World.

This morphing of the word to encompass so much has led to an apparent design-washing akin to the so-called greenwashing/eco-sustainability washing of disciplines which has become an enormous taxonomy problem for not only the designer but also for the general populace; not only does the prefix of design get affixed to nearly all the so-called disciplines in Fuad-Luke’s diagram but it confuses both the designer and the amateur to the vast array of design-led frameworks which have co-opted the word when describing the functionality of being design-led. This ambiguity or plurality of the meaning of the word design often as not leads to architectural students confusing the process of design with the product of the design, or rather the architectural design proposition. This complex design paradigm will be partially unravelled by the case studies as demonstrated in Appendix 1–3.


The parameters of this paper will deal with the case studies over a three year period 2012 to 2014, where architectural students from the second year programme of the Bachelor of Architectural Studies (largely the entire student cohort roughly 90 students in 2012, 110 + in 2014, 30 odd in 2013) at Unitec Institute of Technology worked with the umbrella organisations of FESTA and Studio [ ] Christchurch to realize a number of architectural pavilions / interventions within the former red zone of the aftermath of the Christchurch earthquake of 04 September 2010 and 22 February 2011. Largely due to the intense size of the architectural projects involved this paper will really only seek to clarify the design methodology and process outcome of the Unitec students; this is no way reflect on the other architecture schools or staff but rather to address the plurality of the nature of the process from within the author’s teaching dimensions.

COLLABORATIVE DESIGN – FRAMEWORK-STAGE 1

2012 commencement of the project was pitched to the entire student cohort, led by all Lecturers (see Appendix 1) they were assigned into groups of roughly five with the expectation that they should research other architectural light pavilions and present their findings to a joint audience of both Unitec staff and students plus the students and staff of University of Auckland alongside CPIT and AUT. An expert panel of external academic and professional practitioners of architecture...
would judge the fabrication of these transitional architectural pavilions,

As the upshot of this was the collaboration necessary between a variety of Architecture schools, to create a design critique for 18–20 projects each of which only 6 would move forward into the second round of being matched with a client and moving to the prefabrication and council permissions. This was a huge learning experience for the students having to give a verbal presentation to students within other universities and to understand the scope of the variety of projects. The projects were ranked according to: 1) Design potential; was it feasible from a budgetary and from a locational aspect bearing in mind that the sites which the students designed for were a constantly changing feast due to buildings being demolished, and the Red zone being reduced in size. 2) Did it encompass the elements of a “city of light”? both in a literal sense and in a pragmatic sense as the predominate number of the students were designing, being based in Auckland for shipping to the site in Christchurch 1082km distance. 3) Was it great transitional Architecture?

Design by Committee – “It is commonly held view that good design results when projects are driven by an autocratic leader and bad design results when projects are driven by democratized group”\(^\text{12}\)

Students typically moved through the five stages of design methodologies, seeking research, preparing design solutions, incubating their ideas, however once they had pitched their ideas to an external panel of professional architects the next phase of the design problem occurred. The six projects, which progressed to the next phase, meant for a complex blend of personalities, cultures and expectations. This led to a complex iteration of the design process as students worked in their groups of five for a period of two weeks using Empathy or First Insight, Preparation, Incubation, Illumination, Verification, obviously some groups navigated the complex relations between students to realize a potential design outcome and this outcome was ranked by the external panel as to those which should progress to the second stage.
ABSTRACT 97

COLLABORATIVE DESIGN – FRAMEWORK – STAGE 2; RE-FRAMING THE DESIGN METHODOLOGIES

The numerous component design problems within the brief of at least 16 identifiable components (see diagram figure 16) which were impactful on the incubation of the design, meant that once the groups of five students had merged into a group of 18–20 students a re-framing of their ideas; to blend, merge and reassess the relevance of the ideas in order to then re-frame the solution meant for a complex process. Needless to say the reiteration of the concept of Ockham’s Razor became a necessity. Ockham’s Razor states “given the choice between functionally equivalent designs the simplest design should be selected.”

Ockham’s Razor (Latin, *ex parsimoniae*, which means 'law of parsimony') asserts that simplicity is preferred to complexity in design, exemplified by the notion of “*forms follows function*” variously attributed to 18th Century Jesuit Monk Carlo Lodoli and latterly Horatio Greenough and Louis Sullivan. Though not intended truly for design the concept has been appropriated into the vast array of schematics for working with design methodology. Whereas some groups had a “lead group” which often as not was the design concept, groups were merged together by the tutors involved in order to ensure that at least 16 or so identifiable problems were in different proportions. (See Figure 16.)

CASE STUDY – ARCHROBATICS

To navigate the design process and build a sense of community within a group and to glue the various design methodologies and cultures and knowledge base was a complex process. This re-framing of the idea concept was typified by a group in 2012 (Archrobatics) who had a complex idea to include

---

very large helium filled balls (2 m or so) with some of the concepts of previous groups, which include large strung up objects and a complex pulley system. This group went through an intensive reframing led by a number of the lecturers in a bid to work through their ideas rather than the steadfast attempt to hold forth with all the ideas from the five groups. The culmination of this was a need to refine, redefine and simplify in fact to exemplify the concept of Horror Vacui — a Latin expression meaning the “fear of emptiness” — to fill empty spaces with information or objects over leaving places blank or empty. Lecturers spent vast quantities of time with these students insisting on a clarity of concept and simplicity of ideas; this eventually occurred moments before drawings were needed for council permits. Using the simple idea of using the bird netting normally used to drape around the vineyards, the core concept was a lightweight material which had certain stretchiness on the diagonal which meant that the netting was cut into a sort of scalene triangle which under three points of pressure made for an impactful solution of concept and was in fact in 2012 was one of the most commented about “pavilions” due to its simplicity of structure.

CASE STUDY 2013 – ILLUMINATE
2013 saw a slight variation of the way in which the project was run in that the whole cohort of students was not invited to participate so that the final 25–28 or so students blended much more easily than in 2012, such that it was easier to manage even though all the design issues were still the same. For example windage became a huge factor in this project; one of the most successful projects was by a group of students “Illuminate” who quickly realised that the LED lights could be sourced cheaply and once taken out of their “housing” were quite easily able to be used in other ways. The concept was to make a modular hexagon repeating lightweight flexible structure which could be built up creating a dense like cloud which also had the notion of transparency and translucency. These were made from variously coloured drinking straws which lit up from the LED light source in the centre of the module; since the hexagon was expanded in the middle section it became rather like the concept of quilting to attach the modules together. Much testing to ensure they would last the pulling and grabbing from the crowd meant that a support system of small sticks was necessary within the drinking straws to reduce the fully flexible system. Ironically the group found that the most practical and easily sourced same sized small sticks turned out to be kebab sticks, which caused quite some issues on their health and safety report as to the ability to ensure that they were all removed safely from site at the end of the night. Probably the main reason that this was so success on the day was the ease with which the modular system could be changed due to site specifications (site specification changed regularly) the need to raise and lower the structure via four scissor lifts and the ability to make the structure on site albeit the students had created the hexagon modules in Auckland and transported them down to Christchurch via excess baggage on the plane; they were able to connect them to make larger modules in the days before the Labour Day opening which meant for efficient use of time. The simple structure once repeated meant for an impactful final resolution of design. (See figure 17, 18, 19)
three groups of five students merged they needed to work through the design processes to identify the most likely design concept, that would work and once they had identified that flexible ducting (Air-condition unit ducting) had similar properties to the slinky, the design could move forward. The problem for this group became that once they were one of the teams to have these large 12m x 10m frames a system of hanging the ducting became an architectural engineering problem. However, this was resolved by using scaffolding to bisect the large scale frame to hang the tubing free from the structure. This became one of the most cogent designs of the night due to the interactive nature of the design, with the ability for the audience to interact with one another via “talking down the tube” just like a childhood toy.

DRAWING DESIGN CONCLUSIONS

Over the three years of these projects, one of the defining conclusions which must be drawn is the impactful way in which working in a collaborative team, creating a small defined community within themselves, creating connections to other communities of practice, other institutes, communities’ retail partners within the greater community of Christchurch has led to a greater understanding of the design process. Learning to use these design methodologies via team collaboration and having an outcome which was then variously disseminated with a vast audience (30,000 in 2012 and 10,000 in each of 2013 & 2014) has led these students to define their own design thinking truly demonstrating the feed-back loop as described in figure 16 with the application of the design thinking overlaid within an architectural context and in particular these three case studies. The student groups constantly had to interpret the process for strategically identifying the problem and finding solutions to their many and varied problems both of design and of the design, both verb and noun.
Figure 20

Figure 21
BIBLIOGRAPHY
Bucolo, S. "Think UTS Business School, 2014, Mahlab Media
Hauffe,T. Design a Concise History 1999, Laurence King
McGraw Hill Education Italy
Thorburn, W. M. The myth of Occam's Razor, Mind 1918
Unitec Department of Architecture, Asylum 2013
Unitec Department of Architecture, Asylum 2014

APPENDIX 1
PROJECT DETAILS
UMBRELLA ORGANISATION – (FESTA) Festival of Transitional Architecture, Studio [ ] Christchurch
http://festa.org.nz
https://studiochch.wordpress.com
TITLE – LUXCITY
DATE – 2012
LOCATION – Christchurch Canterbury New Zealand
DESIGN – Architectural Light Pavilion’s
LEADERS – David Turner, Lester Mismash, Cesar Wagner, Peter McPherson, Annabel Pretty, Julian Rennie, Maurits Kelderman (Department of Architecture, Unitec)
ARCHITECTURAL DESIGNERS – Altitude, Archrobatics, Team Tensile, Soundcone, Silhouette Carnival, Tonic
COMMUNITY PARTNERS – Cassel’s & Sons, The Brewery, Beach Bar, Fledge, George Parker & Free Theatre, The Dark Room
WEBSITE –
http://studiochristchurch.co.nz/2012/08/22/altitude-2/
http://studiochristchurch.co.nz/2012/08/22/spherical-sounds-2/
http://studiochristchurch.co.nz/2012/08/22/team-tensile-2/
http://studiochristchurch.co.nz/2012/08/22/sound-cone-2/
http://studiochristchurch.co.nz/2012/08/22/silhouette-carnival-2/
http://studiochristchurch.co.nz/2012/08/22/tonic-2/
http://stajegrouparcw.stajegrouparchitects.wordpress.com/
www.facebook.com/tonicluxcity2012

APPENDIX 2
PROJECT DETAILS
UMBRELLA ORGANISATION – (FESTA) Festival of Transitional Architecture, George Parker & Free-Theatre
http://festa.org.nz
TITLE – Canterbury Tales Carnival
DATE – 2013
LOCATION – Christchurch Canterbury New Zealand
DESIGN – Architectural Light Pavilion’s, in conjunction with community partnerships
LEADERS – Peter McPherson, Annabel Pretty, Julian Rennie, (Department of Architecture, Unitec)
ARCHITECTURAL DESIGNERS – Team 2013 Highlight, Team Illuminate, Anamorphic Shadows
COMMUNITY PARTNERS – Pacific Underground (Tanya Muagututi’a, Mishelle Muagututi’a, Posenai Mavaega, Mark McEntyre), Smash Palace & Johnny Moore, Cassel’s & Sons, The Brewery – Zak Cassel’s
WEBSITE –
http://2013highlight.wordpress.com
http://teamilluminate.wordpress.com
https://www.facebook.com/TeamIlluminate2013
http://anamorphichadows.wordpress.com
https://www.facebook.com/anamorphicshadows?fref=ts
http://canterburytales2013.wordpress.com

APPENDIX 3
PROJECT DETAILS
UMBRELLA ORGANISATION – (FESTA) Festival of Transitional Architecture, Studio [ ] Christchurch
http://festa.org.nz
https://studiochch.wordpress.com
TITLE – City Up’s – The Future is Live
DATE – 2014
LOCATION – Christchurch Canterbury New Zealand
DESIGN – CityUps consisted of 10–15 large scale frames (approx. 10m x 12m)
LEADERS – Peter McPherson, Annabel Pretty, Julian Rennie, Maurits Kelderman, Graeme McConchie (Department of Architecture, Unitec)
ARCHITECTURAL DESIGNERS – Aurora, Influx, ING (Inspire, Nurture, Grow) Glow City, Scope City The Daze Maze
COMMUNITY PARTNERS – Black Betty’s, The Games Hall, Harry Knight, Cassel’s & Sons, The Brewery, RAD Bikes
WEBSITE –
https://auroralightsnz.wordpress.com
http://thenaturalsequence.wordpress.com
http://inspirenurturegrow.wordpress.com
http://kmglowcity.wordpress.com
http://scopecity.wordpress.com
https://luxcityunitec.wordpress.com

1 Photograph Annabel Pretty
2 Professor Sam Buolo, #Think UTS Business School, 2014, Mahlab Media
3 Thomas Hauffe, Design a Concise History p10 1998, Laurence King
5 Alastair Fuad-Luke, Design Activism, Beautiful Strangeness for a Sustainable World, page 1, 2009 Earthscan
7 FESTA Festival of Transitional Architecture http://festa.org.nz
8 Studio [ ] Christchurch, a collaboration of architectural programme predominantly in New Zealand http://studiochristchurch.co.nz
9 Annabel Pretty, Transitional Large Fabrication Architectural Design Propositions in a Post Earthquake Environment, The Virtuous Circle Cumulus Milan, 2013 P121 McGraw Hill Education Italy
10 Photographs Annabel Pretty
11 Photographs Annabel Pretty
12 Wendy Grossman, Designed for life, New Scientist, 05 October 2002 vol176, p 236
13 Bryan Lawson, How Designers Think – The design process demystified page 149, 2006 Architectural Press
14 W.M Thorburn, The myth of Occam’s Razor, Mind 1918 vol 27 p 345-353
16 Annabel Pretty interpretation of Kneller’s creative process as applied to case studies
17 Photographs Annabel Pretty plus Unitec Architecture Department – Asylum 2013
18 Photographs Annabel Pretty plus Unitec Architecture Department – Asylum 2013
19 Unitec Architecture Department – Asylum 2013
20 Photographs Annabel Pretty
21 Photographs Annabel Pretty and Department of Architecture Asylum 2014
This paper describes two collaborative design studios in 2012 and 2013 motivated by the need to educate building owners and the local public about the need to demolish or seismically-upgrade historic building stock in the Cuba Street precinct of Wellington. The studios operated as an active partnership with Wellington City Council and Heritage New Zealand. They addressed complementary issues and opportunities arising from the need for structural upgrading, heritage retention and adaptation, and from new building interventions in the Cuba Street historic precinct. The design studios also integrated teaching collaborations across parallel technology courses.

Key outcomes of the studios were the immediacy of context facilitating student engagement, the collective value of group production, peer-to-peer learning through complementary skill sets, diversity of group design work, synergies through clustering and negotiation, technical integration within the design work, and the extent of community engagement. The value of the [Re]Cuba applied, collaborative, and integrated studios as a means to engage students, and extend their learning is evaluated. Finally, the urban, architectural and structural significance of the studios and their collective outcomes are reviewed.

INTRODUCTION

This paper describes and reflects on two first year masters level architecture design studios and parallel integrated technologies papers that operated in a co-operative manner. It reviews interaction between the studios, the engagement of the studios with the local community context, and the outcomes of the studios. The projects arose from a partnership between the Wellington City Council, Heritage New Zealand, and Victoria University of Wellington School of Architecture. Two four month duration projects ran in the second Trimester of 2012 and 2013. There were inputs to the project from a group of architectural Practice Partners and Structural Engineers from Wellington as specialist tutors and critics.

In 2011 a fourth year studio was run in Christchurch prompted by the September 2010 and February 2011 earthquakes. Upon return to Wellington staff were unsettled walking down Cuba Street. Despite Wellington’s expectation of future earthquakes and rigorous earthquake structural codes, the ages, construction and poor condition of Cuba Street buildings was evident. If a large earthquake hit Wellington, the Cuba Street precinct would likely be affected in a similar manner to the devastated High Street area of Christchurch. Buildings, canopies, and fronts of buildings would topple into the street. Pedestrians would be injured and there would likely be loss of lives as occurred in Christchurch. A great deal of Christchurch heritage architecture had also been lost, and the same would occur in Wellington. Clearly, the architecture of Cuba Street needed an urgent structural transformation if it was to have a safe long-term future.

Cuba Street is the immediate environment of the VUW TeAro campus where the VUW Schools of Architecture and Design are located. Staff recognised the value in focusing VUW student architectural research on this urgent architectural problem Wellington faced as a community. There was an opportunity for students to apply their skills to this familiar environment, and to have inputs, influences and support from Wellington City Council (WCC), Heritage New Zealand and Cuba Street building owners. The 70 students represented a significant research resource. Not only could they help advance solutions to the problems, it would also engage them in a context where their collective design based research had enormous value.

The problem faced was twofold. There was widespread ignorance and apathy about the nature and extent of the seismic resilience problem and the...
need to resolve it by upgrading most of the existing buildings. There was also a level of antipathy towards local government-enforced strengthening and the value of architectural heritage among Cuba Street building owners. WCC has statutory responsibilities regarding the identification of earthquake-prone buildings. Owners who had preliminary structural assessments of their buildings completed by Council perceived that they were being required to spend money they didn’t have to seismically retrofit old buildings that were not worth the expense and effort. The precinct is designated the Cuba Street Character Area in the City Plan and has a collective formal heritage status with Heritage New Zealand. Many owners had little understanding of the implications of this heritage status and the role of Council and Heritage NZ. They perceived that there was limited opportunity to change or adapt their existing buildings because of the heritage status.

The [Re]Cuba architectural studios were an experimental partnership between the VUW School of Architecture, Wellington City Council and Heritage New Zealand. The two external parties actively working together with VUW on a single educational programme was unprecedented. WCC wanted to raise awareness of the need to seismically upgrade most of the buildings in Cuba Street, and to educate owners about a range of ways this might occur. VUW wanted students to engage in an extended ‘real world’ research led design studio, and was also concerned about the safety and potential change to the local built environment. VUW had further identified that the seismic problem had architectural implications at both building and city precinct scales. There was a risk that if a large group of buildings was lost much of the existing character of a finely-scaled, much loved if slightly grungy city precinct might also be lost. Heritage New Zealand was concerned about the potential loss of a significant amount of heritage building fabric, and the public perception that there were few options available for building owners faced with upgrading their buildings. There was ignorance about different ways of adapting and reusing heritage building fabric. The desires of the three parties were complementary and so a working partnership was formalised.

We proposed an ambitious project that considered the issues and potentials of all the buildings along both sides of the ten city blocks of Cuba Street.

The students would design a redevelopment of every building and site for the whole length of Cuba Street. They would also consider clusters of buildings and intensification of the city over time, as was likely to be triggered by the need for major investment required by the seismic upgrades. Students would first engage with the urban context, then the individual buildings, and finally with clusters of sites and buildings. Michael J Ostwald’s essay Binding Issues and Critical Strengthening was the key theoretical reference.

DESIGN PROCESS
An architectural practice model was adopted where students worked in groups. They were required to collectively draw and document the entire site with the subtlety and clarity expected in professional practice. Macro and micro mapping and cross-sections were created in groups that required co-operation and co-ordination to produce a consistent series of outcomes and share the workload. Common graphic formats were negotiated between the groups so that outcomes were consistent over the full length
There were opportunities for students to work with building owners. Owners’ needs would be addressed through the student documentation of a series of existing drawings of each building from Council’s extensive plan records of all the buildings provided to students free of charge. Students also made diagram-based critiques of the Council planning scheme that applied to the sites, and undertook Heritage Assessments and Condition Reports for their subject heritage buildings.

Stakeholder meetings with owners in Cuba Street were facilitated by Council. Presentations about the proposed project were made by VUW, WCC and HNZ staff. Findings of the project were to be made available to owners through the VUW architecture library, seminars, and publication. Some owners offered direct access to their buildings for the measured drawings component of the project, however that was not able to occur in 2012 because of health and safety concerns, particularly the increased risk to students from spending time in earthquake-prone buildings. The risk was brought into sharp focus with the 6.5 Seddon and following earthquakes from the 21st July 2013. It was a timely reminder of the importance of the issue we were dealing with. The earthquakes were of sufficient seriousness to cause the University to be evacuated and close its TeAro campus for two days on two occasions while the safety of its buildings was checked.

Based upon their initial research and analysis, students designed architectural interventions on two scales. At a building scale and at a cluster-of-buildings scale. The brief was to envisage how the buildings might be redeveloped and the sites intensified by 2035.

The design studios integrated teaching collaborations across parallel technology courses.
As part of their architectural designs the students had to incorporate and integrate seismic retrofitting schemes to meet the requirements of the Building Act and the parallel Integrated Technologies courses. Structural, construction, and services knowledge was integrated into seismic and architectural retrofit schemes for individual buildings. Students then designed seismic retrofit schemes for clusters of buildings complete with intensification and new work. It is rare for clusters of buildings to be tied and retrofitted together, even though there are a number of potential benefits, so this phase of the project was important design-based research into a new field.

**KEY OUTCOMES OF THE STUDIOS**

*Student engagement with the studio.* The VUW School of Architecture campus is in the Cuba Street environment. Student knowledge of place helped as they worked to bridge gaps between ideas and design implications. The project tested and extended their observation, analysis and documentation skills in relation to a place and context they had significant knowledge of and ready access to. Students learned to look deeper into physical contexts to determine underlying patterns and factors at work changing the built environment over time. They also learned to measure the effects of their design work in relation to a specific urban context and existing building fabric, and to do this through a range of scales. This occurred more readily and effectively than a conventional studio project as a result of the immediacy and insistence of the existing site and its ready-made buildings and urban context.

*Peer-to-peer learning through complementary skillsets.* Students learnt about the collective and multi-disciplinary process of designing public architecture. They found that there is considerable efficiency of effort possible through collaborative work in a design-based research format. Individual student aptitudes emerged and synergies between students occurred within groups. Diverse and differing experience, for example, with CAD programmes, or technical and graphic skills were shared between students with leadership and training roles adopted within groups. The pooling of initial research, and the design outcomes enhanced each of their presentations.

*The diversity of design work.* Existing buildings were subject to intensification of occupancy and architectural modifications to ensure their future relevance and viability. The historic qualities of the host buildings were respected to greater or lesser degrees. This variation in scope and approaches to the student heritage retrofitting designs highlighted the flexibility of adaptive reuse of heritage building fabric. The range of approaches included; Complementary Façade Design; Internal Augmentation, working from the inside out; Replication or extension of existing fabric and characteristics; Contrasting New and Old, existing and new, and rooftop additions; Strengthening from the Outside In – exoskeleton; Critical Editing where existing fabric is partially removed; Existing Building as Seed, providing underlying patterns for new work; Co-dependence where new and old coexist in balance; Building within a Building where new work inside is hidden on the exterior; Formal Separation where negative detailing accentuates contrast between new and old; Scale Contrasts with a big building behind a smaller original; Scale Transitions
where contrasting urban scale is mediated through new work (Fig 6); Architecture as Changing Heritage where heritage items are reused within new work as elements of a new building design; Major Surgery where poorly designed existing buildings are cut apart and become a hybrid new/old building; and Working with Historic Grain where completely new work adopts the underlying patterns of the heritage precinct as a means to repair loss of continuity and scale within an urban precinct as a result of previous amalgamation of sites.

**Synergies through clustering buildings.** The studio projects demonstrate a series of exemplar approaches to the seismic retrofitting problem. Synergies arise when buildings are considered together rather than as isolated islands. The seismic retrofitting of clusters of buildings shows great potential, including: tying two or more existing buildings together where retrofitted structure is evenly distributed between both buildings or mainly concentrated in just one; tying an existing building to a new building where the new building provides some or all of the retrofitting needs of the existing building, reducing the impact on the existing building; and tying an existing building to a new building where the retrofitted existing building is sufficiently strong to partially or fully support the new building.

**Technical integration within the design work.** Students integrated structural, construction and services information through their design practices, and design information with their technical papers. They developed their detail design and documentation at smaller scales through architectural working drawing sections and details. They learnt basic architectural competencies such as the ability to document existing buildings and produce simple clear existing drawings to act as base information for the subsequent redesign work that followed. They developed an ability to negotiate between technical and architectural demands in order to go beyond a functional response. Student designs exploited the expressive and tectonic potential of structure and its architectural implications.

The seismic retrofit project facilitated an architectural engagement with structure that does not readily occur in the technical integration in previous studio courses at the end of first year masters studio.

**Student engagement with heritage.** Initial student reactions to the project were mixed. The idea of working with existing architectural heritage was seen by some as lacking architectural promise. This resistance was soon left behind as a rich range of design investigations emerged. These interwove retrofitted structure with existing and new building fabric. A consequence of the contextual nature of the design work was that students worked in close relation to their peers prompted by a requirement to show peers’ work as adjacent contexts in their drawings, and to consider the effect of their work on the wider precinct. They were also required to create a single composite model of their own proposed projects within a 10m long 1:100 Cuba Street 2035 model.

This captivated and motivated students to a rare extent and created an unintentional and positive competitive component to the project. The model communicated a collective vision that individual projects could not, and it was also very effective in communicating the potential for change in the precinct to a wider audience. The integration component of the project extended the design expectations to structural, construction and services design and design detailing, and the testing of these within the design studio.

**URBAN, ARCHITECTURAL AND STRUCTURAL OUTCOMES**

Through the project students extended their understanding of the architecture of the Cuba Street precinct. Through the processes of working together on pre-design analysis and identifying potential seismic retrofitting synergies, they also identified opportunities for better urban design solutions. For example, a number of shared laneways became possible to access intensified parts of the relatively narrow and deep sites. Collaboration was found to be key, not only between the external consultants for the seismic retrofitting, but also with students working on neighbouring sites to achieve structural synergies and good urban design linkages.

Structural upgrading work required for earthquake-prone heritage buildings is interwoven with architectural implications and cannot be separated from them. To strengthen a building has significant consequences for the existing building fabric. New foundations for new structural elements required floors to be removed and new works to be built within the existing building. The same process occurs as walls are strengthened, where wall linings are removed back to the core structural elements of the building. Ceilings and upper floors are also be disrupted by new structure, which needed to be integrated with the existing in some manner and
connected to it. The sheer disruption and scale of the work requires care to minimise impact and maximise the value of the new work. Much of this making-good and remodelling subsequent to the seismic retrofitting, triggered consideration of fire ratings, escape provisions, and accessibility enhancement. Students found that there were also significant opportunities arising from the extent of the new work proposed. It was the ideal time to upgrade interiors and function, and to extend a building to improve its functional or financial performance. The extent of architectural work required in seismic retrofitting projects is clearly very much an architectural matter, despite a general perception it is solely or primarily structural engineering. Architectural heritage and integration of retrofit structure create a palimpsest with the host building. New layers of structure and architecture are too extensive to be ignored.

Student designs demonstrated the importance of the underlying historical smaller scale site sizes to the heritage precinct. A diversity of building vertical scales was introduced on several occasions to retain urban character. These projects demonstrated that transitions between scales and breaking down formal and spatial scale in larger scaled work could help recover and develop the Cuba Street special urban character in a manner that reflects its roots and essential qualities.

The extent of community engagement in the project was also noteworthy. There were a number of Public Meetings, lectures, presentations, exhibitions and publications in a range of media. There were significant inputs to the project from the range of partners, consultants and stakeholders. The project took on a life of its own attracting significant interest from the Cuba Street building owners and the wider community. There were articles published in Heritage New Zealand, Dominion Post, and Salient (the VUW student newspaper), coverage on a national radio programme, and an invited conference presentation was made to the NZIA. A separate publication (Southcombe and Charleson 2014) that
The collaboration between VUW, Wellington City Council, and Heritage New Zealand also leads the way forward for further projects. Our experience of both groups in terms of their ability to work collaboratively with stakeholders was noteworthy and the opposite of a stereotyped bureaucracy that many perceive in such organisations. The team approach to the facilitation of seismic retrofitting is a significant resource and supporting mechanism available to owners of earthquake-prone buildings that should be sought at an early stage in any project.

The collective design outcome is a large test case that found that we will likely lose some heritage buildings from Cuba Street in whole or in part, and that there will be a diversity of design quality in the seismic retrofits and new architecture that occurs. The consideration of clusters of buildings as a means to explore design alternatives and synergies that arise from larger sites with multiple buildings proved significant. This finding is an innovative approach there was no precedent for we were able to access, and that has been well received by building owners who typically address seismic problems as individuals rather than as a collective. Some new building and intensification of uses are likely to arise from the financial demands of redevelopment associated with seismic retrofitting. As a result of the project there is now some awareness of potential efficiencies for seismic retrofits in association with neighboring buildings, and the potential development synergies that come from collaborative redevelopment with shared public access. There is a fresh collective architectural vision presented by the project that is way greater than the sum of its parts. The [Re]Cuba project demonstrates that the vibrant character of Cuba Street has a potentially very positive hybrid new-new-old architectural future that is likely to emerge from the famed Cuba Character Area’s seismic challenges. As a studio it also demonstrates the amplification of learning that occurs through engagement with urgent local problems, collaborative and collective research, and working in association with informed actively contributing industry partners.

REFERENCES
Virtually There: A 4-Dimensional Digital Multi-Disciplinary Learning Environment

STEPHEN WARD  
University of South Australia, Adelaide, Australia

CHRIS LANDORF  
The University of Queensland, Brisbane, Australia

GRAHAM BREWER  
The University of Newcastle, Callaghan, Australia

KIM MAUND  
The University of Newcastle, Callaghan, Australia

Working within the architectural and construction industries requires skills and knowledge which encompass design, structural and constructional systems, technical and environmental services, communication and management. An essential part of a student’s education in the built environment is the integration and application of these core competencies, with learning traditionally enhanced through students visiting sites under construction. However, the ever increasing complexities of building technologies and the growth of consultancies specialising in specific environmental services contribute to a general student perception that environmental science is an area of specialisation rather than an integral component of architectural practice. In addition, the ability for students to access construction sites is becoming increasingly problematic, and with it the ability to contextualise learning as a realistic experience.

This paper reports results from an Office for Learning and Teaching funded project that investigates this issue. The project involves the development of an interactive inter-disciplinary digital learning environment based on time-based 3-dimensional (4D) visualisation and other resources associated with the design and construction of the University of Queensland’s Advanced Engineering Building. The 4D environment provides a realistic context for the development of simulated problems that activate student learning using a collaborative problem-based approach to enhance critical thinking skills. The paper considers the use of the 4D environment in coursework which aims to integrate teaching in technology and design, providing an analysis of the environment’s effectiveness and future use as a learning tool to supplement or replace more traditional modes of learning.

INTRODUCTION

Increasingly complex technologies and alternative project procurement in the construction industry have already significantly impacted on the recognised characteristics of design and construction professionals. In future practice, for example, it is anticipated that design will no longer be the primary domain of the architect, who will instead become the composer of the constituent building parts designed by specialists. The complexities of building technologies and the growth of dedicated consultancies in areas such as environmental services contributes to an understandable student perception that environmental science is an area of specialisation. However, professional accreditation requires students in construction related fields to integrate and apply specific core competencies across disciplines. Architecture graduates, for example, need to demonstrate an ability to develop a detailed design which includes establishing requirements for building service systems. These multiple professional standards are impacting on minimum curriculum requirements, and are becoming more extensive than can be covered by schools in the available time and resources.

In addition, the University sector is responding to a society where technology now pervades almost every aspect of our lives. It is generally recognised that students have access to more information than ever before, are increasingly mobile and globally connected, have diverse needs, and require flexibility to balance work, family and study commitments. The resulting emphasis on on-line and blended delivery of courses has required the adoption
of digital technologies and the development of new pedagogical models designed to enhance engagement of learners in their education. At the same time, it is recognised that work-integrated learning provides a means to apply disciplinary knowledge and skills in a real-world context. In construction related professional education, the site visit is recognised as a valuable means for students to understand the application of theoretical concepts, however the inherently dangerous and fragmented nature of the industry, the resultant stringent safety standards and larger class sizes all impact on the ability to adopt visits to construction sites as an avenue of learning. These issues indicate there are opportunities to explore alternative approaches to providing the benefits of work-integrated learning through simulated real-life contexts.

THE 4-DIMENSIONAL DIGITAL LEARNING ENVIRONMENT

It is within these contexts that a multi-disciplinary 4-dimensional (4D) digital learning environment is being developed to improve the balance between theory and practice in construction industry education, specifically in the architectural, building surveying, construction management and engineering professions. The web-based tool is founded on an existing digital environment utilising 75 high-resolution 3-dimensional digital photographic surveys taken during construction of the Advanced Engineering Building (AEB) at the University of Queensland. As part of the current Office for Learning and Teaching (OLT) funded project, this environment has undergone improvements to its appearance and usability, and has been expanded to incorporate other resources associated with the design and construction of the AEB such as drawings and contract administration documents.

The learning environment (Figure 1) provides a timeline – the 4th Dimension – which allows movement chronologically between surveys, a key plan for navigation horizontally between several nodes on a particular level of the building, and a vertical bar for navigation vertically between building levels. Within the learning environment, a mouse can be used to rotate each image 360 degrees horizontally and vertically, zoom in on particular areas to better assess detail, and enlarge the floor plan to move more accurately around the building.

In many respects, the tool is similar to other web-based applications already familiar to students who use them in their day-to-day lives. Applications such as Google Maps with Street View provide a similar mode of navigation and viewing via a 3D environment. This familiarity has led to ready adoption and intuitive use by students, removing the need for detailed instruction or complicated processes to access information.

The current project focuses on the multi-disciplinary use of the environment, with, students
enrolled in seven different courses coordinated by members of the project team at partner institutions involved in utilizing the 4D environment and invited to participate in an evaluation of the learning activities. The cohort of students across a variety of courses includes approximately 260 undergraduate and postgraduate Architecture students at the University of Queensland and University of South Australia, 300 Engineering students at the University of Queensland, and 750 Construction Management (Building) students at the University of Newcastle.

**HOW WAS IT USED?**

The first use of the 4D learning environment was with students enrolled in the course BUIL 3004 Architecture and Technology in the Bachelor of Architectural Studies program at the University of South Australia. A Building Analysis exercise was designed to facilitate an understanding of the integration of services within a multistorey institutional building through the observation of the construction and associated drawings of the AEB. Whereas the exercise in previous years required students to identify an appropriate building and source all supporting information for analysis, in 2015 the 4D environment was used as their primary reference point.

In this exercise pairs of students were required to work collaboratively to demonstrate their knowledge of the relationship between technology and design, including the analysis of the spatial integration of lighting, water and waste, electrical and communications, air systems, fire services and sustainable design considerations. Students were asked “How does technology affect the design concept of the building?”, and to demonstrate their understanding of technological solutions by analysing and using the information obtained through research, lectures and coursework notes. Their submission included the following key components:

1. **OBSERVATION**

   Through observation of the building’s exterior and interior spaces students were asked to provide a first impression of the relationship between the design intentions of the architect and the integration of servicing technologies. Students used a combination of photographic images, plans, sections and sketches to communicate their observations.

2. **SPATIAL INTEGRATION OF SERVICES**

   Students were then required to identify the location of service dedicated spaces which allow for the...
Figure 3. Spatial Integration by Imogen Hebart and Misbah Khaliq

Figure 4. Spatial Integration by Jeremy Pearce and Hugh Michelmore
horizontal and vertical movement of water and waste, electricity and communications, air and fire services through the building. Using the learning environment they located plant rooms, storage spaces, boards, and risers in building plans and sections. This investigation was supplemented with annotated screen shots from the 4D environment.

3. CONSTRUCTION SEQUENCING
In order to better appreciate the sequence of construction activities to achieve services integration, students were then required to use the 4D environment and select a "Node" on one level of the building, containing a minimum of 10 surveys undertaken. Students noted the date of each survey and followed the progress of the construction works, including installation of services at each subsequent date. Students communicated their observations by providing annotated screen shots for each survey date, including the labelling of services, to identify the progression of construction activity.

4. SUSTAINABLE DESIGN CONSIDERATIONS
Students were required to examine the manner in which the building design responds to sustainable design objectives: social, environmental and/or economic. This section of the submission was not about describing technologies which have been employed to save energy or water, but about how the architecture responds passively and actively to achieve increased sustainability. In this exercise, students were asked to identify patterns within the planning of occupied spaces which respond to the building’s location, context, orientation or use; how effectively the building footprint or form optimises surface area/volume ratios; significant variations in facade elements in response to orientation; and design elements which encourage or discourage the use of services.

Student feedback
Following submission of the assignment, students were invited to complete an anonymous paper-based survey to determine how successfully the 4D learning environment had been implemented and to identify any areas requiring improvement to assist in their learning. Of 99 students enrolled in the course, 57 (58%) participated in the survey. Despite initial reservations from course staff about introducing the 4D environment as a new and relatively untested technology, the survey results
(Figure 8) indicate that:
• 96% of respondents liked the appearance of the learning environment;
• 91% of respondents found the learning environment easy to use;
• 93% of respondents found the learning environment and associated activities assisted their understanding of architectural technology and its integration with design and construction; and
• 89% of respondents found the environment enhanced the architectural technology learning experience and their skill development.

Students were also invited to provide text responses to Questions 3 and 4, as well as suggest potential improvements. The majority of text responses were related to the usability of the learning environment and its ability to provide information in an accessible way. A number of these comments compared the use of the 4D environment to other forms of research methods that students normally employ, such as “it was easier using the online tool than visiting a construction site or finding images in books or other websites” [Respondent 29] and “the learning environment was far more interesting to engage with compared to traditional methods of research” [Respondent 49].

A number of respondents indicated the combination of the 4D environment with ready access to technical drawings assisted them in understanding technological integration in architecture. This mix of resources allowed students to follow their own pathway to learning outcomes through observation and analysis. For example, some students chose to identify individual services in plan and section, and then find them in the 4D environment. Others chose to start with the 4D environment to locate services at different nodes, then refer to the technical drawings to more fully understand what the specific elements were.

The ability to change the time of viewing at different nodes was considered beneficial, as it allowed students to follow the construction process step by step, and also better understand the importance of coordination and sequencing in the design and construction phases. This was further aided by the fact that the photographic information provided a real view of the construction environment, rather than one where the environment was communicated.
through digital modelling: “I found the ability to observe the building over its construction period useful by being able to see the various trades working on the site.” [Respondent 48].

Other comments related to students’ individual modes of learning. “Being able to use the tool at our own convenience was a benefit” [Respondent 41] is indicative of comments related to the fact that students learn at different paces, with the environment allowing them to re-visit, absorb and apply information to reinforce their learning. Another common comment relates to how students access and interpret information: “You can see all we learnt in a visual form. I think I am a visual learner. Having something visual helped me a lot” [Respondent 27].

Some students also indicated that they considered the environment useful in their learning outside of the prescribed assessment task: “Seeing a third party building essentially be created fortified my understanding of what we were taught. Also a useful reference later in the course to check processes and architectural principles which may not have been associated with this course” [Respondent 53].

A number of suggested improvements were made by students, with the majority related to technical changes to the 4D environment. Students identified that the number and position of camera points was problematic and sometimes caused difficulties with navigation: nodes often changed position as construction works progressed; in some survey periods photographs were not taken at specific nodes; and some key locations such as the core of the building were not photographed. Some students suggested more instruction in using the tool would be beneficial, although the fact that 91% of respondents found the learning environment easy to use indicates the majority did not find usability problematic.

Interestingly, some students indicated that providing more information within the environment would be useful, such as pop up descriptive text boxes for different elements in the building. While it is acknowledged that this would make accessibility of information easier for students, it would also mean that the cross-referencing between images and drawings would not be necessary to complete their analysis, and therefore potentially negate the aim
for students to develop skills in finding, interpreting and integrating information from different sources. Finally, one student suggested having "interview sections where you speak with the construction team about what they felt about the design process. For students this may be beneficial (particularly to understand exactly what the building process entails)" (Respondent 20).

Whilst the student feedback indicates the 4D environment indicates it is a useful educational tool for the integration of design and technical knowledge, the project team have also identified other limitations of the tool when compared to the physical site visit. Firstly, there is significant time and financial investment required in establishing a usable tool for any specific site. This investment includes a commitment by the client, design professionals and construction team; the time to undertake site surveys; equipment costs; and the digital manipulation of data, photographs and project information to establish a workable website. By comparison, site visits can be arranged on a one-off basis without an ongoing commitment, and also allow for more ready comparative analysis of multiple sites. Secondly, it is recognised that the virtual nature of the tool does not completely replace the physical experience. The position of nodes is established early in the project and their location may not correspond with the desired demonstration of different technologies and construction strategies. The fixing of nodes does not allow for observation of elements from different viewpoints, and the level of detail available is further limited by the viewing angle, quality of the image, and the inability within the tool to measure spaces or individual elements, thereby limiting the information available for analysis. These observations identify opportunities for further development of the tool, but also indicate that the site visit still offers value in education which is difficult to fully replicate.

The potential for future development and implementation

Whilst this paper discusses one mode of integrating the 4D environment in curriculum, the current OLT project team is also developing different pedagogical practices through the creation of immersive scenarios based on real and imagined issues encountered during the design and construction of
the AEB. These scenarios will aim to enhance critical thinking skills in a real-life context by placing the students in situations where they need to develop team-based strategies and actions in response. These scenarios will build upon interviews with key members of the AEB design and construction project team, which will be video recorded in semi-structured interviews addressing questions relating to the project and accessed via the 4D tool. These videos, together with additional building contract and project management resources, will also assist students in understanding the roles of each team member and their methodology of approach to multi-disciplinary projects, thereby further expanding the existing 3-dimensional images into a multi-user 4-dimensional learning environment.

It is also recognised there are significant opportunities to expand the use of the tool in future projects and across disciplines. This will provide the opportunity to improve its operability, such as being more strategic in the location of nodes to address the issues encountered by its early users, and to identify new technologies such as 3D headsets to enhance the learning experience. The project team also recognises the potential for the environment’s future adoption by industry for multiple uses such as record keeping and communication, to demonstrate compliance, and to assist in the resolution of disputes related to time and construction.

The team is also currently investigating possible projects of different scales and typologies, such as private dwellings and existing buildings, to expand the suite of information which can inform and extend future learning outcomes, as well as provide examples of initiatives that could accelerate learning in many contexts. As identified by Duffy and Rabeneck, such case studies have the potential to not only inform undergraduate, postgraduate and professional development education, but also promote inter-professional debates and assist practices and project teams address real design challenges. This extension of the use of the tool, or a developed variation of what is ‘virtually there’, means that the 4D learning environment potentially offers much more than just an augmentation to current modes of learning.

3. Michael Ostwald and Anthony Williams, Understanding Architectural Education in Australasia: Volume 2 Results and Recommendations (Sydney: Australian Learning and Teaching Council, 2008), 28
This paper details a series of collaborative, immersive Travelling Studios held in both Nanjing and Melbourne focused on designers working in an international context of rapid urbanisation, hyper density, cultural and industrial heritage preservation and urban renewal.

The design studios were both cross-disciplinary, involving masters of urban design, planning, architecture and landscape architecture students, and cross-cultural, involving students studying in our faculty from Ecuador, China, Venezuela, Chile, Iran, Japan, and Australia along with Chinese students from Nanjing University.

The methods adopted in the studios encouraged students to learn not just use, but push the boundaries of design and communication technology – exploring new and innovative ways of collaborating and thinking about cities through engagement with big data, performative modelling, emerging Chinese social media such as Baidu, QQ cloud and WeChat, and through exploration of cutting edge, low cost, immersive virtual reality technologies (Google Cardboard).

Equirectangular image projection rendering technology allowed the students to produce immersive virtual reality visualisations, previously only possible using high cost hardware, to test how their propositions would feel as a human inhabiting the space of their design. They also to took ‘photospheres’ (spherical photos) at site visits, visits to cultural buildings and cultural exchanges, capturing the student learning experience which became a major component of the final exhibition and Google Plus Community site: http://goo.gl/4nUvEr.

By totally engulfing students in the use of emergent technology, alternate design approaches, and radically different cultures in an immersive ‘studio steamer’ learning environment, students absorbed new knowledge and soaked up new skills preparing them for future practice in an increasingly urbanised and global work environment.

These studios make a substantial contribution to student learning, providing valuable insights and teaching methods for future studio teaching that influence, motivate and inspire students to learn in an international context.

INTRODUCTION/BACKGROUND
This paper details a series of collaborative, immersive Travelling Studios held in Nanjing China focused on designers working in an international context of rapid urbanisation, balancing hyper urban renewal and densification, with cultural and industrial heritage preservation and the importance of designing for human scaled experience avoiding designs that suffer from what Jan Gehl calls the “Brasilia syndrome” or “bird shit architecture” – cities designed to be looked down upon (Scott 2010).

Architecture, urban design and landscape architecture is cross-disciplinary with large teams of consultants and stake holders. These multifaceted roles are becoming more complex (Inam 2011), and more international with Australian designers involved in countless large scale urban developments, particularly in Asia (Ren 2011). There is a growing need for students to be equipped to engage in future cross-cultural practice.

Parboiled learning
Studio learning within the university has been criticised for being too insulated from outside influences – that studio teaching needs to become more flexible and provide ‘continuous learning’ by moving away from didactic, siloed approaches of the past (Souleles 2013).

Though student learning is greatly enhanced...
through the advent of Learning Management System (LMS) or Blackboard™, particularly in large scale subjects, the LMS does present limitations in engaging with content and networks outside of the system. LMS is also not as immersive as social media in that students log in for brief periods of time then log out, compared with social media such as Facebook, where they are continuously logged in. Though LMS has facilities for collaboration, they are not as developed or user friendly as cloud based storage platforms such as Dropbox™ and Google Drive™.

Student work is insular, posted for marking, and never seen again. The content is also finite – once the subject is complete, the subject becomes ‘closed’ and is no longer accessible to students.

STEAMING METHOD FOR HIGH TEMPERATURE IMMERSIVE LEARNING

The design studios described in this paper were held in Nanjing China aimed to explore a studio approach involving surrounding students in three layers of immersion.

The metaphor I am using to describe the studio approach relates to the local delicacy, the Nanjing tângbao (soup dumplings similar to xiǎolóngbāo) (Figure 1). This bāozi teaching approach analogy, not to be confused with the ‘dim-sum versus permeated Poon Choi urbanism’ described by Shelton, Karakewicz et al. (2013), is used due to the dumpling’s layered build-up, where the dumplings are filled with meat, surrounded by gelatious filling, wrapped with very thin skin, and then steamed. Groups of delicate dumplings are steamed together at high temperatures without burning, with flavours permeating between the elements with the gelatious filling melting to become a soup flavouring both meat and the pastry.

In this paper, the tângbao consist of the meat (students) immersed in the physical context of Nanjing (gelatious filling), wrapped in immersive virtual reality design (pastry), and steamed in a ‘social media steam cloud’.

PHYSICAL IMMERSION – SOUSED IN THE SOUTHERN CAPITAL

To explore the contemporary challenge for designers working in an increasingly international context of rapid urbanisation, I ran two Travelling Studios held in Nanjing China hosted at Nanjing University (2012 and 2014) as part of the University of Melbourne’s MSD Travelling Studio program. The studios involved five weeks of Melbourne based studio classes followed by two weeks of full physical immersion in China.

Nanjing, China is a growing city with a population of roughly 8 million. Nanjing (southern capital) is the capital of the Jiangsu Province and like many cities in China, is undergoing radical growth and change (Wang and Chen 2009).

A critical issue for the studio was Nanjing’s major challenge of undergoing radical growth and change whilst grappling with retention and engagement with its ancient and recent history. How can Nanjing address its need to accommodate a rapidly growing population without losing the human scaled experience of a vibrant existing urban environment and architectural fabric of the city?

The studio discussion centred around how the exaggerated emphasis on cars is now impacting on Chinese cities and the need for this to change in line with the notion of post peak-car urbanism (Newman and Kenworthy 2011; Newman 2012) urban liveability (Badland, Whitzman et al. 2014) and urban fabric preservation (Stoppani 2011).

To explore these issues in the contemporary Chinese city, I took an ‘analogic approach’ (Sancar 1996, p.137) using the comparison of urban form dynamics and music dynamics (White 2013). The weekly brief was to alter the urban dynamics of Xiagaun development precinct, a large urban renewal area of Nanjing, controlling ‘urban dynamics’ to dramatically reprioritise aspects of urbanism. The extent of the change of dynamics was exaggerated by pushing the intensity of a single element alongside a preservation strategy to an extreme level (Reiner, Guest et al. 2000, White 2013) to produce somewhat utopian design schemes liberated from some of the harsh realities of budgets, political and
This approach allowed for deep design research and exploration of specific local urban issues (such as hyper-density, walkability, energy use, urban heat island, air pollution and solar amenity) alongside cultural and industrial heritage preservation. The approach allowed students to produce highly speculative design propositions whilst still engaging with local conditions and challenges. The approach also encouraged students to identify qualities found in the existing traditional Chinese urbanism worth preserving and formulate strategies that allowed for mass urban renewal that did not entirely obliterate the existing urban fabric.

IMMERSIVE VIRTUAL REALITY DESIGNS WRAPPED IN VR

In all of my urban design studios I assert the importance of designing not just from a ‘floating above the city’ position. I specify that students must produce eye height perspective images that test how their propositions would feel as a human inhabiting the space of their design. In the most recent Nanjing Travelling Studio I took this requirement further, introducing technology that was released just months prior to the studio at the 2014 Google IO developer’s conference – Google Cardboard.

Google Cardboard is a low cost (actually made from cardboard) Virtual Reality (VR) headset that uses android mobile telephones with stereoscopic/gyroscopic software (see Figure 2 and Figure 7). This technology allowed the students to produce immersive VR visualisations previously only possible using high cost head mounted display hardware (Schnabel, Kvan et al. 2001, Schnabel and Kvan 2003) or the yet to be released Oculus Rift.

A set of fourteen “VR devices” were purchased for the studio. These consisted of Google Cardboard kits from TaoBao (item Cardboard), the Chinese equivalent of Ebay, purchased for ¥19.00 each (approximately $4 AUD) and Nexus 4 smartphones (co developed by Google and LG Electronics and running the Android Lollipop operating system) also purchased from TaoBao (item Nexus 4) for ¥600.00 (approximately $130 AUD).

I provided base files and made YouTube video tutorials for specific urban modelling and visualisation techniques and for clear explanations of new and complex emerging technologies. The tutorial showing processes such as equirectangular image projection rendering (photo sphere) http://youtu.be/Ak9gwRdo4Ro and explanations of how to edit the image’s metadata so as to appear to the Google Cardboard application as a photo sphere image and display in the immersive VR headsets.
The videos ensured students were equipped with the necessary software installations and skills for producing design outcomes in unfamiliar circumstances and to use nascent technologies for both formal presentation and informal feedback and discussion sessions.

The equirectangular image projection rendering technology allowed the students to produce immersive virtual reality visualisations to test how their propositions would feel whilst inhabiting the space of their design. This approach builds on the immersive modelling work of Johns and Lowe (2006) and Shhnabel and Kvan (2013). The final presentations in Nanjing were conducted using a mix of media including printed drawings, projected images and immersive 360° VR renders (Figure 5 and Figure 6).

This equirectangular image projection technology was also useful for site analysis. I introduced students...
to equirectangular projection photography using the 'Jellybean Camera App' utilising their mobile phone's in-built gyro sensor and the application's stitching algorithm to take 'photo sphere' (360° panoramic images). Students took 'photo spheres' during site visits capturing site conditions in a way that gives a strong sense of the place and atmosphere of the existing urban fabric (see Figure 4).

CAPTURING THE STEAM… RECORDING THE IMMERSIVE STUDENT EXPERIENCE

Though it is fairly typical of a travelling studio to involve a variety of cultural experiences, the capturing of these experiences was, in this studio, another aspect of teaching and learning innovation. The equirectangular projection technology was exploited in capturing the student learning experience. Photo spheres were taken capturing the entire group in every shot, supporting each student’s sense of being an integral part of an inclusive learning environment. Students took photo spheres during visits to cultural buildings and many cultural exchange events (lots of cross-cultural eating and drinking) (Figure 3 and Figure 7).

This learning capture formed a major component of the final exhibition where half of the studio VR devices were loaded with the panoramic capture.
of the student experience, the other half showing immersive representations of the student’s work in what appears to be a world-first for a design studio exhibition (see Figure 7).

STEAMING STUDENTS IN AN IMMERSING SOCIAL MEDIA CLOUD

In previous studios, I have experienced many limitations with the Learning Management System (Blackboard) for open collaboration outside of the university and engaging regular student interaction. These limitations are described by Schnabel and Ham (2014), who suggest educators need to question how architectural education in the 21st century is taught and make use of the rich synergies of social networks by tapping into the way learners communicate and acquire knowledge by way of a social media cloud.

In the preparation for this studio I investigated several more open and flexible social media options including Twitter, Facebook, Google Sites, and Google Plus Communities. Due to its integration with the student email system, My Maps (user friendly GIS), Google Drive (cloud based server ideal for student collaboration and staff) and Google Calendars, I concluded that Google Plus Communities delivered the best forum for student engagement in the design studio.

For communication in China, acting upon advice received from local students, I also embraced a Chinese social media application called ‘WeChat’ which is a relatively new piece of cross platform mobile software that allows Viber-style chat and messaging, Facebook/Instagram-style image sharing, location sharing, group discussions, video and voice messaging.

I specified that students must purchase low-cost 3G prepaid sim cards upon arrival (China Mobile) so as to have data access at all times. The combination of mobile data allowances with WeChat made for smooth communication with the University of Melbourne students and myself and my tutor, but also with Nanjing students and many Nanjing University staff who also used WeChat.

Beyond the wall

I worked closely with students to overcome immense challenges of climbing ‘great fire walls’ with VPNs so student could continue to work with a full suite of social media.

Chinese students also aided the University of Melbourne students to work around the complications of access to extremely commonly used web resources by introducing them to Baidu Maps, QQ cloud, Tencent Maps and Tencent Street View.

The use of highly agile social media, group discussion and participation was high, with over 100 comments, questions, drawings, photos, “stickers” and restaurant recommendations within a two week period on WeChat. The results of this investigation of new social media in cross cultural teaching has the potential to make a significant contribution to global education (see Figure 8).

The 24/7 nature of the social media sites meant that group connectivity was consistently maintained, day to day plan adjustments were updated on the ‘live schedule’, meeting place locations and transport methods could be continuously and instantaneously communicated alongside constant written feedback from teachers and the student group on ‘works in progress’ which students posted to the shared Google Plus Community website: http://goo.gl/4nUvEr.

CROSS DISCIPLINARY AND CROSS CULTURAL

The design studios were cross disciplinary, involving masters of urban design, planning, architecture and landscape architecture students who worked in small groups learning how to communicate and work with other disciplines. The studios were also cross cultural, involving students studying in our faculty from Ecuador, China, Venezuela, Chile, Iran, Japan, and Australia along with Chinese students from Nanjing University.
The social media was used to stimulate engagement and ‘level the playing field’ for shy students or those with weaker English language skills and then, when in China those without Mandarin speaking skills. Students augmented communication with the aid of Google Translate whilst in Melbourne and then WeChat Translate when in China.

Immersed in personal problems: effective and empathetic guidance and advice for students

Part of the nature of intensive travelling studios involves effectively living with the students for multiple weeks and many issues (occasionally delicate ones) arise. WeChat could be used for group discussions but was also used effective for individual discussions where students could comfortably discuss a variety of problems or concerns ensuring the safety and wellbeing of the students at all times as well as their particular projects (see Figure 8).

DIPPING SOY, VINEGAR AND CHILLI…

OUTREACH TO THE BROADER COMMUNITY

The flexible and open nature of the studio, particularly with the use of the shared Google Calendar ‘live schedule’ allowed the studio to be flexible when events needed to be rescheduled, or changed, but also to take advantage of opportunities as they arose.
Like in many design studios, the program included scheduled lectures by myself and guest academics from with the University of Melbourne, in this case, associate Professor Jianfei ZHU and Professor Donald Bates. In addition to these, the studio was open to chance external lectures given by guest lectures by Nanjing University Lecturers Dr. Lu Andong, Professor Zhao Chen, and Professor Ding Wowo.

The studios involved engagement with practice and government. In the Melbourne component, guests from the City of Melbourne and architectural practitioners gave lectures and sat on crit panels, and whilst in Nanjing, guests from Nanjing Government and the Chinese Design Institute.

Another example of the flexibility presented by social media and live schedule was when Victorian State government announced a ‘China Super Trade Mission’ which coincided with the studio also being in Nanjing. This was an opportunity that was seized upon by both the University of Melbourne and Nanjing University. Within just days prior to travel, I aided in the organisation of the 2012 Sustainable Urban Development Forum and due to the flexible schedule, was able to give a presentation on the collaborative studios at the forum whilst keeping students informed. The event was attended by delegates from the Chinese and Australian government and universities, along with the Mayor of Nanjing and the Premier of Victoria. This was an opportunity for students to attend a high profile practice and government event, exposing them to another layer of the complex multiplicity of issues facing urban designers and also an opportunity to make valuable contacts (Figure 10).

**DISCUSSION/CONCLUSION**

This study extends the social media work of Shnabel and Ham (2014) expanding the social network cloud to integrate international social media, translating technology and cloud collaboration. The study also expands on, and reinvigorates the virtual reality studio work of Kvan and Shnabel (2013), providing an updated virtual reality method that now utilises extremely affordable technology that begs for integrating into design studio teaching. The approaches described in this paper are not only of interest to design studio leaders, but also potentially to design practitioners seeking innovative design and collaboration approaches.

Though the Google Cardboard technology is presently limited to devices running current Android operating systems, other platforms will not doubt
128  INTERDISCIPLINARY AND COLLABORATIVE PROJECTS

follow shortly meaning students will be able to use their own smart devices with the extremely low cost Cardboard enclosures (or similar). It is therefore reasonable that design studios leaders prescribe virtual reality in studio design exercises and presentation requirements – strongly encouraging students to engage with the human perspective. Could this put an end to Gehl’s Brasilia bird-shit criticisms of architects and urban designers?

The immersive steaming approach to the design studios have been well received by students, gaining positive feedback both informally (Figure 8) and formally through subject evaluation surveys (scoring 4.8 and 5 for ‘subject well taught’ question in both studios) though the relatively low numbers in the studio group potentially skews this result.

The quality of the student’s work has been recognised with four students receiving Honorary Credential award by the National Board of Architectural Accreditation, China and the Institute of Architectural Education and Accreditation, Architectural Society of China (2014).

The quality of the student experience can be gauged by the group learning that has been captured on the Google Plus Community site: Nanjing Travelling Studio 2014. The site remains accessible for students even though the subject is complete. It is also worth noting that of the ten Nanjing students to have participated four have applied for the new University of Melbourne/Nanjing University Duel Degree.

The choice of Nanjing, China for the immersive travelling studio proved to be an ideal location for physical, virtual and social steaming of the students, not because of the extremely high humidity during the studio period, but due to dramatically different existing urban fabric currently undergoing major change, the remarkably complex and challenging language, connectivity and working conditions, and the radically different culture.

By totally engulfing students in the use of emerging technology, alternate design approaches, and different cultures in an immersive ‘studio steamer’ learning environment, students experienced transformations absorbing and solidifying new knowledge (denatured the protein), soaked up new skills preparing them for future practice in an increasingly urbanised and global work environment – like well-prepared 汤包 (tāngbāo) served with 鸭血粉丝汤 (Yā xiè fēnsì tāng).

These studios make a substantial contribution to design educators, providing valuable insights and teaching methods for future studio teaching that influence, motivate and inspire students to learn in an international context.
ACKNOWLEDGMENTS:
Special thanks to Nanjing University for hosting the studios, the Faculty of Architecture, Building and Planning University of Melbourne for their generous funding and professional staff support, Ke Song for his major contributions to the running of the 2014 studio, Taobao negotiations and lion dancing, those who gave guest lectures including Professor Ding Wowo, Professor Tom Kvan, Associate Professor Jianfei Zhu, Associate Professor Xiaoning Hua, Professor Donald Bates, Professor Zhao Chen, and Professor Andong Lu.

REFERENCES:
Reiner, R., C. Guest, M. McKean, H. Shearer, K. Murphy, J. Chadwick, T. Hendra, B. Kirby, P. Al Tap: A Rockumentary by Martin Di Bergi; Spinal Tap Productions; Embassy Pictures; Directed by Rob Reiner; Written by Christopher Guest, Michael McKean, Harry Shearer, Rob Reiner; Produced by Karen Murphy, MGM Home Entertainment.
Live and interactive projects

Realization projects which include a range of stakeholders. They may involve the production of buildings, places, events or public art. Common is the real world setting, the public display and interaction.
New Structures: An Innovation in the Teaching of Technology

ANDREW BARRIE
University of Auckland, New Zealand

JOHN CHAPMAN
University of Auckland, New Zealand

YUSEF PATEL
University of Auckland, New Zealand

Until 2012, the School of Architecture & Planning’s Timber Technology seminar course had focused on the construction of a small teacher-designed structure each semester. This achieved the key course goal of exposing students to ways of building in timber and giving workshop experience, but generated neither technologically challenging structures nor high levels of enthusiasm in students. In 2012 the course was redesigned such that the group of 20 students assisted with the construction of a design produced by a thesis student. The thesis project was a timber shelter design to improve safety and visibility at a primary school in a deprived area, and was aesthetically and technologically innovative design that stretched the capacity of the School’s CNC technology and workshops. In the following year, two shelters were built for the same School. The new course structure is now firmly established at the School, with junior and senior students working together each year to realize innovative timber designs.

The students learnt to innovate within limited budgets, understand material properties, and to communicate and collaborate with their peers. The new course structure resulted in a number of innovations: it created a new model for the construction of student projects which are of long-term benefit to the community; it created connections between year levels which aid the sharing and accumulation of knowledge, with ideas and experience being developed and passed down through the student cohort; it provided first-hand experience of full-scale project management. Perhaps most importantly, it pushed the level of design and technological engagement to a much higher level – the projects developed through the restructured course have received a number of international and national awards including Bentley Systems’ Scott Lofgren Student Design Awards and Design Institute of New Zealand’s Spatial Gold Pins.

The paper discusses the many issues raised by the new course structure – student experience, peer-to-peer learning, community engagement, and the development of technological innovation.

INTRODUCTION
This paper presents a new approach to teaching and research in the field of timber technology undertaken in the architecture program at the University of Auckland School of Architecture and Planning (SoAP) since 2012.

As at all schools of architecture, teaching staff at SoAP wrestle with how to best integrate the teaching of design with courses on construction technology. The approach taken in recent years is a common one – specific design courses within the degree program run parallel to construction and technology courses, with students being expected to resolve the “problems” they generate in their design courses as the assignment for their technology courses. Other design studios make extensive use of SoAP’s workshops to construct models and mock-ups in order to narrow the gap between abstract design issues and their concrete resolution. As part of its undergraduate program, SoAP also runs studios focused on full-scale construction – since 2005, SoAP has run a series of second year design courses in which groups of students design and build large temporary structures that serve as the physical infrastructure for special events.

THE TIMBER TECHNOLOGY SEMINAR
As an opportunity to provide more in-depth engagement with technology and construction issues, since 2009 Senior Lecturer John Chapman has been running a Timber Technology seminar course in the first year of the Master of Architecture (Professional) program. The aims of this course are...
two-fold: to provide an understanding of timber building methods, as well as practical experience of timber construction. The course combines small group, seminar-style learning, with hands-on experience of fabrication in the workshop. Following an introduction to various timber technologies, students are asked to prepare designs for a small timber structure, which they then present to the group. Aspects of one or more of these designs are then quickly developed and documented by Chapman for construction in the second part of the course. These teacher-designed structures – seating shelters, a bandstand, and so on – were then fabricated by students in SoAP’s extensive workshops and erected in the SoAP courtyard at the end of each semester. The funding for the material used in these projects was provided by sponsors in the construction industry.

These projects achieved the key course goals – providing students with exposure to the possibilities of timber structures, as well as “real world” experience of construction. The structure of the course, however, was not without its limitations. The level of design accomplishment represented by the completed structures varied, but the designs tended to the conventional. The need to quickly translate the sketchy ideas generated by students into a developed design for which materials could be ordered and construction could begin meant that there was very limited time to refine the design, and more complex structures or adventurous uses of technology were precluded. In particular, only limited use was made of the CNC milling machinery the School had available. This CNC equipment had been used up until that time primarily for relatively small-scale projects – furniture, model bases, and so on – but it made possible the construction of adventurous timber structures. These possibilities – particularly as could be explored through digital modeling and parametric techniques – were at that time seen by SoAP students as a one of the most exciting areas for design experimentation. The Timber Technology seminar course had the potential to connect the digital methodologies students employed in their studio design projects with the physical realities of the workshop, but this possibility was largely unexplored.

Once constructed in the courtyard, the structures were intended for ongoing student use, although most were relatively little used and many proved to have a short lifespan. There was also resistance from SoAP leadership to the structures being placed permanently in prominent positions around the School, as it was felt the less-than-cutting-edge designs did not reflect the School’s ambition to advance a design culture that was aesthetically sophisticated and technologically advanced.

The structure of the seminar course was valiant in seeking to incorporate the students’ design thinking into the construction exercise. However, the issues outlined above meant that the students saw the design exercise as the most stimulating aspect of the course, with the construction project understood as relatively prosaic and was therefore unable to generate a high level of engagement among the students. It also meant that few students fully engaged with one of the key principles presented through the course: the interconnectedness of design intentions, fabrication technologies, and the pragmatics of construction.

A DIFFERENT WAY OF BUILDING

In 2012, Andrew Barrie, Professor of Design at SoAP, was approached by Onehunga Primary School (OPS) for help with a design problem: OPS lacked a clearly defined pedestrian entrance, resulting in children and parents walking and waiting on a driveway at the front of the School at drop-off and pick-up time. OPS’ hope was that a pro bono project by architecture students could create a stronger street presence, and also ensure safety by separating pedestrian traffic from adjacent vehicles. Barrie, a practitioner-academic, had been conducting design research into timber structures made from repetitive elements, particularly reciprocal grillages. For Barrie, the OPS project presented the opportunity to bring together a number recent developments at SoAP—the advent of full-year Master of Architecture (Professional) thesis projects, the use of then recently arrived CNC equipment, an emphasis on Masters students contributing to staff research projects, and the opportunity to raise the design standards of the Timber Technology seminar.

Barrie approached Melanie Pau, a high-achieving student who took the OPS project on as the focus of her final-year MArch(Prof) thesis. Drawing on Barrie’s research and professional experience, Pau structured her thesis as an exploration of the way in which repetitive timber structural systems could provide a distinctive, open-source construction system for organizations concerned with organic food. Within this theme, the thesis was organized as a series of designs, of which the OPS entranceway would be constructed at full-scale as a ‘worked example’.
Melanie Pau, *Food for Thought*, Onehunga Primary School, 2012
The project would have all the complexities of a real project – indeed it was a real project. Pau needed to link abstract architectural intentions to town planning issues, the client brief, construction methodologies, durability questions, and budget constraints. Pau’s designed her entranceway to exploit a loophole in the New Zealand Building Code. The project was to be located on ‘designated land’ and therefore required an application for an Outline Plan of Works (equivalent to a Resource Consent) be submitted to Council. However, if the structure remained under 10m² in plan, it would be exempt from the need to apply for Building Consent. Taking on this size constraint allowed more freedom in the design of the entranceway and removed potential difficulties and delays associated with lengthy consent processes with the nine-month-long thesis program.

AN INTEGRATED STRUCTURE
OPS had just enough funding to provide materials for the structure, but relied on SoAP to provide the expertise and labor for the design and construction of the project. In the previous year (2011), Pau had been a student in the Timber Technology seminar course, and recognized the potential to integrate her thesis project with the seminar course in a way that benefitted both. The seminar was quickly restructured with Chapman providing engineering know-how for the thesis structure and Pau acting as a de-facto tutor for the seminar course. Having been introduced to the project, the twelve students visited OPS and produced their own designs for a second stage on the site. However, for the construction portion of the seminar, the students worked in the workshops under Pau’s direction on her thesis structure. Two students were selected as ‘foremen’ to help with the management of the project and assist with resolution of technical issues – managing the CNC milling process, testing the construction methodology, and coordinating the student labor.

Made from a system of prefabricated plywood elements, Pau’s design tested the limits of SoAP’s CNC machinery and workshops – it was at that time the largest permanent structure that had been built in the SoAP workshops. The project presented the students with an exemplar of concept-to-construction design thinking. Dozens of sheets of plywood were cut on the CNC machinery, laminated together by
the seminar students in the workshops to produce 50 elements. A rigorous series of 1:1 prototypes were built to refine buildability and ensure ease of assembly. While it took a month to prepare the structure’s plywood members, this rigorous testing of detailing and fabrication meant that it took only 12 hours for the group of students to assemble the structure.

The result was a pedagogical win-win: Melanie, working with her foremen, provided a significantly more aesthetically adventurous and technologically advanced project on which the seminar students could gain their construction experience, while the seminar students provided labor which greatly expanded the capacity of Pau’s thesis project. The project modeled a vertically integrated form of peer-to-peer learning, with students learning both from their peers and from more senior students.

Pau’s project also addressed one of the unsatisfactory aspects of the previous Timber Technology seminar course – the ongoing usefulness of the structure the students created. As Pau wrote, “The Entranceway was designed and constructed to benefit two communities – to educate and inspire the community of Onehunga Primary, and to develop the skills of the student volunteers who built it.”

OPS is a school with strictly limited resources. Pau’s project acted as a kind of multiplier: SoAP’s ability to provide free labor and workshop facilities greatly expanded the potential of OPS’ limited materials budget. As well as providing OPS with much needed facilities at minimal cost, the project provided Timber Technology students with an engaging and rewarding workshop experience. Further, the project presented SoAP with an opportunity to put forward an innovative design by which to represent itself.

ACCUMULATED EXPERTISE

Beyond benefitting OPS and the students constructing the structure, the project has had longer-term benefits. Pau’s project was very well received by the OPS, and they subsequently requested the construction of further structures. Pau’s Outline Plan of Works application had included spaces for two further 10m² structures, and in 2013 two students – Sam Wood and Yusef Patel – completed these structures as part of the their own MArch(Prof) theses, following the model established by Pau. In 2014 it was concluded that there was not scope for further structures at OPS. However, Henderson High School, who had heard about the OPS projects, stepped forward to request structures as part of a rejuvenation of its grounds. Two thesis structures – by Zhengbang Liu and Patricia Balbas – were completed at Henderson High in 2014, and a further two are under development in 2015. The integration of the
timber technology seminar with thesis projects is now firmly established at SoAP.

Patel had worked as foreman for Pau’s project the previous year. He brought to his thesis project the experience gained working with Pau, in particular an advanced understanding of the potential of the CNC machinery. In subsequent years, at least one of the seminar students has stepped up the following year up to produce a structure as a thesis project. This accumulation of experience and expertise has become a central aspect of the interlocked seminar-thesis projects. For example, most elements in Pau’s structure were laminated from several layers of milled plywood. The lamination process was slow, and slight misalignments between layers required laborious filling and sanding to correct. Understanding this problem, the following year Patel developed a technique using dowel holes milled in the plywood elements to provide perfect alignment during lamination, greatly speeding up the process and largely eliminating the need for finishing work. This simple technique has been used in all subsequent structures. In this way, research findings and practical knowledge are passed down through the student cohort, pushing the level of design ambition and use of technology to a more advanced level.

The projects developed through the integrated seminar-thesis structure have received a number of international and national awards. Melanie Pau’s project received the 2013 Bentley Systems’ Scott Lofgren Student Design Awards, an international award for innovative engineering, and was Highly Commended at the 2012 Cavalier Bremworth Unbuilt Architecture Awards. Similarly, the pair of shelters by Wood and Patel won the 2014 Bentley Systems’ Scott Lofgren Student Design Awards. Pau’s entranceway, as well as Wood and Patel’s shelters, were awarded Gold Pins in the Designers Institute of New Zealand’s Best Awards. Three of the projects – those by Pau, Wood/Patel, and Liu – have been finalists in the NZ Wood Timber Design Awards. The projects have also been published in national design magazines, websites, and newspapers.

The projects developed through the integrated seminar-thesis structure have received a number of international and national awards. Melanie Pau’s project received the 2013 Bentley Systems’ Scott Lofgren Student Design Awards, an international award for innovative engineering, and was Highly Commended at the 2012 Cavalier Bremworth Unbuilt Architecture Awards. Similarly, the pair of shelters by Wood and Patel won the 2014 Bentley Systems’ Scott Lofgren Student Design Awards. Pau’s entranceway, as well as Wood and Patel’s shelters, were awarded Gold Pins in the Designers Institute of New Zealand’s Best Awards. Three of the projects – those by Pau, Wood/Patel, and Liu – have been finalists in the NZ Wood Timber Design Awards. The projects have also been published in national design magazines, websites, and newspapers.

**THE FUTURE OF THE MODEL?**

Many schools of architecture run pavilion construction projects – the AA Summer Pavilions program and the Yale Assembly One pavilions are among the best known. These projects provide valuable construction experience, but due to their temporary nature and limited functional requirements, provide limited engagement with the full range of issues arising from budget constraints, town planning requirements, client needs, durability, and so on. Other school projects are more engaged, serving a dual agenda of providing social good as well as educational value, by taking on design-build projects which provide for needy individuals or community organizations. Notable examples include Auburn University’s Rural Studio in Alabama, and, closer to home, Unitec’s Studio 19. However, these projects place huge demands on the teaching staff to provide logistical and professional support.

The integrated thesis-with-timber-technology-seminar projects presented here provide a model for a useful middle way. They engage students with the full range of issues involved in making buildings – site, client, budget, detailing – but provide resources for the realization of a well-resolved design vision. The projects benefit all involved, providing not just educational outcomes for thesis students and seminar students, but useful facilities to community organizations.

Beyond integrating the teaching of design with courses on construction technology, the project has created a nexus of teaching, research, and architectural practice – referred to by some as the ‘Holy Grail’ of academic life. Seminar students gain valuable experience by supporting projects by thesis
students, whose work feeds into the research and professional agendas of the academic staff involved. These projects have, for example, served as structural research for full-scale commissions such as Andrew Barrie’s Oxford Terrace Baptist Church project. The explicit linking of research to construction meets a much desired but difficult-to-achieve goal for University – research projects that create direct community benefit.

Of course, the scale and impact of these projects shouldn’t be overstated. The seminar course is available to two dozen students from a year group of one hundred, and to two thesis students from a cohort of around eighty. The number of structures that can be undertaken in a year is limited by the capacity of the SoAP workshops and the supervisory capacity of the teaching staff. The projects may, however, prove significant for the staff and students involved, their smallness small providing a freedom to experiment that is difficult to achieve in any other environment.

The purpose of this paper is to initiate an analysis of precisely how the Learning-by-Making (LBM) studio may assist students with some of the more troublesome aspects of learning ‘design’. Students experience difficulties with the complexity of the design process and will often default to a reductive process in order to understand and more easily digest the information involved. A common reduction – amplified by the tendency to teach design and construction in separate units – is the separation of the design idea from the realities of construction. Other reductive tendencies occur in relation to project brief, budget, compliance and specific user needs. The academics involved in the LBM Program (community-based ‘live’ design/build projects) have intuitively understood that in this learning environment – based on core principles of collaboration and making – many students experience a transformation in their understanding of the process of design.

This paper will reflect on the LBM studio model using the analytical lens of a relevant educational theory called ‘Threshold Concepts’ (Meyer & Land, 2006), which relates how students can overcome barriers by understanding the following dimensions of learning: transformative, bounded, integrative, discursive and troublesome. The initial results of the analysis indicate that collaborative making can be ‘transformative’, in that it results in irreversible conceptual links between design idea, fabrication and practice. The conceptual space of the learning is ‘bounded’ by the brief, budget, technology and client requirements. LBM projects are ‘integrative’ in that they inevitably involve materials, structures, patterns of habitation and climate control. The learning is ‘discursive’ in that students are encouraged to articulate their opinions on design decisions, both within the student group and with community collaborators.

The primary data source for this investigation has been the authors’ observations on over 100 projects (over 20 years involving over 1000 students) and more specifically students’ reflective Design Reports from the previous three years.

Learning by Making (LBM) is an approach to design education that has evolved over the past 20 years in the School of Architecture & Design at the University of Tasmania. Inspired by experiential learning1 and student-initiated projects of the 1970s, the emergence of LBM reflected an enthusiasm for ‘collaborative making’. The objectives of LBM studios are to strengthen students’ conceptual links between idea and fabrication and for students to take collective responsibility for designing, prototyping and realising a ‘live’ design project. The 120 projects completed in LBM studios (involving approximately 1000 students) include stage sets, exhibition stands, bus stops, micro-dwellings, play structures and bush installations. LBM has become an invaluable asset to the School in terms of community engagement and is a highly visible manifestation of the School’s professional and educational values. While it has been possible to form a generalised opinion as to the educational benefits of the LBM model, it is the purpose of this paper to begin a more objective evaluation of its transformative potential.

Design is a troublesome concept to teach. It is varied, complex, difficult to capture in cognitive dimensions2 and is not readily learnt through reading or instruction. Design represents a devised solution to what is often an ill-defined problem. It draws from many domains of knowledge and requires a reconciliation of objective and subjective decision-making. In conventional design studios, often...
based around executing representational design drawings on hypothetical projects, students deal with complexity by reducing the design problem into more easily digestible parts, including the separation of idea from the realities of construction. Holding the domains of idea and construction simultaneously, in a dynamic balance, is a difficult concept for students to grasp. This is exacerbated by the tendency to teach design and construction in separate units. The conventional studio model relies on the teacher’s feedback, evaluation and discussion in order to highlight the immediacy of design implications for construction.

The LBM studio provides an environment for students to engage in the relationship between design idea and construction. The experience, often experimental in nature, provides impartial and tangible feedback to students as there is no space for ‘bluffing’ gravity. Students are exposed to reality, as opposed to a representation of reality, and they cannot indefinitely resist the integration of construction into a design response.

**METHODOLOGY**

In order to gain a deeper understanding of whether of an LBM studio is capable of fundamentally changing students’ understanding and practice of design this paper applies a theoretical framework to this experiential learning environment. Literature related to ‘live’ studios has seldom moved beyond a basic recognition of experiential learning, a description of the outcomes and a general impression of student satisfaction. This pattern, observed more broadly within architectural education, has caused a few to speculate whether those involved in the ‘doing’ are more adept and motivated by practice and tacit knowledge rather than its relationship to learning theories. Threshold concepts were chosen as an appropriate framework to learn from as it provides a way for educators to identify barriers in student understanding and subsequently develop methods to overcome them. The framework also provides a way to escape from the convention of documenting the teaching approach, which has been consistently explored in previous LBM articles. The characteristics of the LBM studio will be analysed in relation to the most common characteristics attributed to Threshold concepts: transformative, integrative, bounded, discursive and troublesome. A Threshold concept is understood to be a concept with which students may become stuck and experience difficulties until, “a new and previously inaccessible way of thinking about something” is achieved. A Threshold concept represents a “portal” that students need to travel through in order to transform their thinking and to be able to progress in further studies.

The primary source of data used for this analysis comes from the critically reflective assignments that individual LBM students submit at the completion of the studio. In the Design Report students are encouraged to reflect on all issues relevant to the development of the design and its subsequent fabrication and installation; communication and collaboration; use of making techniques; decision making processes and their implications; speculation on alternative paths, mistakes and lessons learnt. The Design Reports are valuable evidence as to whether students are making conceptual links between design idea, fabrication and practice. The Design Reports examined in this paper are from five LBM studios in 2013 and 2014, with an average cohort of 19 students. We have also drawn on the authors’ observations from previous LBM studios, as well as stakeholders’ feedback.

**TRANSFORMATIVE**

The transformative characteristic of a Threshold concept reflects the change that occurs when a student understands a new way of thinking and/or practicing the discipline subject matter. In the context of the LBM studio, once a student has experienced an idea being translated into reality, a fundamental change has occurred in the way he or she understands the act of designing. LBM studios highlight the links between the evolution of an initial design idea and the implication of its subsequent fabrication; the properties of materials and how they are connected, the specification of components, fabrication processes, tooling and the subsequent use of the space or object. The magic of an idea being converted into a full-size physical object cannot be underestimated.

The fact that every single detail of this small object had to be resolved reveals the delusion of the oversimplified design processes in other studio assignments. We understood that the other half of the project is to see how it can be pushed to 1:1 scale with real material. (Third year student B, 2013)

In contrast to ‘conventional’ design studios, which emphasise the individual student, LBM studios encourage teamwork and collective responsibility. The structure of an LBM studio typically involves rapid cycles of making, followed by collective
discussion and subsequent goal setting. Students are encouraged to lead discussions, participate in decision-making and the studio group is given the opportunity to take responsibility for the evolution and delivery of the project. “I believe that my skills in team leadership increased dramatically through having to sometimes take charge to get a task completed” (Third year domestic student C, 2013). Transformations in learning may be more powerful and enduring if they are achieved collaboratively or in a position of responsibility.

Working alongside LBM clients – including homeless youth, school students, work-experience trainees, teachers, actors and artists – design students are exposed to a diversity of world-views, providing enriching and sometimes confronting experiences. The Strawbale building projects (2001–2002) at the Mount Arthur Centre involved a group of architecture students working alongside rural Tasmanian youth, and the Ravenswood Skatepark (1999) was designed in collaboration with local skating youth in a neighbourhood shop. Samuel Mockbee, the Director of Rural Studio suggests: “What we should do is go into their world and understand it. They go out there with pre-conceived ideas, only to discover that they gonna learn something from these people”. The transformative impact of LBM often extends to clients and other participants. The Castle (2007–), a long-term collaboration with a neighbouring youth shelter provides crisis accommodation to youth at risk of homelessness through the deployment of mobile microdwellings. Long-term unemployed youth are trained to assemble The Castles, gaining construction certificates and improving their future employment prospects.

According to Land and Meyer the transformative characteristic of a Threshold concept is related to whether it is irreversible, enduring and difficult to ‘unlearn’. The core knowledge needs to remain intact and the student unlikely to return to previous modes of thinking. Students regularly refer to the significance of learning that comes as a consequence of making mistakes. Mistakes and the subsequent redefining of a problem or solution may be an intrinsic part of irreversible learning. One student explained, “An important attitude that I personally
still need to improve is instead of being afraid of errors, I should look for errors, embrace their existence and tackle them.” Another student titled their Design Report, “10 Lessons Learnt by Making Decisions and Mistakes as a Group”.

INTEGRATIVE
Threshold concepts involve integrating or synthesising knowledge that was previously viewed to be unrelated. While the integration of designing and making is fundamental to the LBM studio, the ‘live’ characteristic of the studio typically requires students to consider the integration of multiple co-dependent design considerations, including client preferences, materials, structures, budget, patterns of habitation and climate control. Even a simple bus shelter – several of which have been constructed by LBM studios – involves the integration and resolution of many such related and often conflicting issues. The design of micro-domestic environments – including The Castle project (2007-) and the Teardrop Caravan (2014) – require an acute consideration of patterns of habitation – servicing, insulation, bathing, openings, privacy and storage of belongings – as well as more fundamental notions of identity.

In the first few weeks of an LBM studio the individual students are required to synthesise their ideas into a single buildable outcome. Ownership by the whole studio is seen as critical in maintaining collaborative energy, responsibility and teamwork. Ideas are gradually coalesced, edited, integrated and distilled until a single physical model embodies the aspirations of the studio. Timing and balance are critical in this process. It requires the teacher to be confident that ideas can be integrated without some students feeling isolated, and must simultaneously avoid the dangers of ‘design by committee’ where discrete ideas are forced to live together. “When I look at the finished object I can see that my idea had been included, but in a way I hadn’t thought of.” (Second year domestic student E).

BOUNDED
The bounded characteristic assists teachers in setting appropriate parameters for a given project. LBM studios began as an elective option in the undergraduate degree, but LBM now has a presence in all three years of the undergraduate program, as

Figure 3 Translation of drawing into digital model into physical object and panel testing.

Figure 4. Combination of design media ... through to full-size fabrication.
well as both years of the Masters of Architecture. The ‘external boundaries’ of a project – primarily relating to brief and budget – and the ‘internal boundaries’ – relating to chosen technology and project timeframe – together serve a limiting purpose and create an appropriate conceptual space for the learning to occur. Generally speaking undergraduate projects are very tightly bounded, first year students build a garden shed using traditional timber frame construction. Masters projects, such as the Playbox (2014), begin with more open-ended client requirements and involve substantial research, brief-setting and unique outcomes. The duration and intensity of a project, either thirteen consecutive days or thirteen weekly classes, may be based on a desire for either maintaining intense energy or time for reflection.

The bounded characteristic assists students to familiarize themselves with the boundaries of the discipline, including compliance with planning and building regulations, structural adequacy, standards and safety. Students are encouraged to initiate and maintain communication with council representatives, check compliance requirements and engineers support students in the development and evaluation of their design propositions. A response to Workplace Health and Safety (WHS) has been to include risk management in student assessment. “After extending our knowledge on the specifications and regulations we had a more informed and realistic approach that we hope affected the design process for the better” (First year domestic student F).

DISCURSIVE Land & Meyer\(^1\) make reference to the role that enhancing or extending discipline language can play in mastering a Threshold concept. LBM studios tend to be characterised by passionate and eloquent expression of design preferences, perhaps because engagement is intensified when the design will be built. The development and maintenance of a positive dynamic relies on clear, honest and respectful communication, perhaps only possible with relatively small group numbers. The membership of groups is kept fluid, ensuring that students communicate their ideas to a range of peer groups, meaning that ideas permeate through the entire studio and that ideas cannot be defensively ‘owned’. Students’ reflections often focus on the dynamics within the studio.

... students were guided rather than directed, leaving the responsibility up to us, simulating a real-world studio environment. At times this was an exasperating experience, when stubborn personalities cling to irrational ideologies that restrict progress. However, as the semester progressed it became apparent to me that rather than the physical model, managing group politics was the most valuable learning outcome. (Third year domestic student G, 2014)

We were inevitably headed for a crash at some point. But when it came, it actually clarified things. It was such a relief to finally hear the real reasons behind some of these ideas and critique them honestly. Sure there were nearly some deaths, but the afterglow was certainly worth it. (Third year domestic student D, 2014)

Listening and observing are stressed as important skills for a designer. In community-based LBM studios students are encouraged to be conscious of the verbal, spatial or graphic vocabularies their community collaborators use.

The most notable difference when comparing
differences between Architecture and Primary School students was the choice of words when describing elements in design. The Trevallyn students were able to effectively and clearly articulate their design ideas and concepts to other primary school students and to us architecture students. …. (Third year domestic student C, 2013)

Physical models are promoted as the primary design medium from concept to construction. Models are capable of either a positive ambiguity or an explicit accuracy, and are particularly effective in a collaborative design environment where participants and observers can congregate around the object. “The models were a great way to interact with the children, and were very successful in deriving design ideas made by the children” (Third year domestic student H, 2013).

TRoublesome

Troublesome knowledge is characterised as being difficult to understand. Design, due to its inherent tacit and cultural characteristics, challenges many students and there are many for whom the experience of an LBM studio does not help overcome their ‘stuckness’. These students may fully participate in the studio and report a very positive experience but their fundamental understanding of design does not shift.

For many students, the approach of an LBM studio might conflict with their worldview. If a student’s identity within the studio group is fragile then collaboration can be troublesome; their roles and their relationships with other students may be problematic, uncomfortable or even traumatic. If the ways they relate and belong are put under scrutiny, either by themselves or by others, students will find other aspects of studio content – questions of practicality, creativity and interpretation of client requirements – much more challenging. If not handled carefully by the teacher contests over design direction within the studio group can be damaging, both to individuals and to the studio as a whole. The teacher must ensure that the LBM studio is an emotionally safe environment, that students don’t feel left out, affronted or exposed.

Students may have had a positive experience in an LBM studio but appear unable to apply the new knowledge in subsequent work. All first year students participate in building a small shed using traditional timber frame construction, but many find it difficult to translate that first hand knowledge to a subsequent unit where they document a timber frame building. It is possible that for some ‘self-reflexive’ learners the transformation may take time or may require consolidation. A student reflects in a Design Report, “At least I realise now that I enjoyed the process and learnt more than I realised at that point in time.” (Third year domestic student D).

Earlier research has shown that final year students found an LBM studio experience most valuable at an early stage of their learning as it helped to contextualise new knowledge and skills over the course. Samuel Mockbee believes that the delayed response phenomenon is relevant for many Rural Studio participants, that they only understand the significance of their experience many years later.

CONCLUSIONS

Despite the apparent successes of the LBM program the precise educational outcomes have been difficult to evaluate. Strong indicators of the perceived educational benefit are relatively easy to identify; the longevity of the program, the consistency of
its core principles, the diversity of participants (teachers, students and clients) and the way that the core characteristics have recently begun to permeate other units within the School.

Through students’ own reflections we can see that the primary transformative characteristics of the experience are as follows: the process of translating idea into reality; the ability to take risks and make mistakes; taking collective responsibility for decisions and their outcomes; the integration of varied types of thinking; the careful choice of communication media and language. We have found that one of the most effective attributes is that students are confronted by diverse world-views and that the place of learning is not restricted to the self-affirming environment of the School of Architecture & Design. This diversity of learning experiences identified by students in their Design Reports may well be significant in itself. Firstly, each LBM studio may be providing that student group with a very particular set of experiences based on the project boundaries, the client relationship, the dynamic of that student cohort, and perhaps the style of the teacher. Secondly, individual students in a given LBM studio appear to have been impacted by different aspects of the project, whether it might be the application of digital fabrication or the use of ‘six-hats’ in the decision-making process. The implication of this appears to be that the LBM program as a whole should maintain the diversity of its project type and mode of delivery.

On the basis of this initial analysis we believe that we have identified that the learning experience of an LBM studio is closely aligned with the characteristics of a Threshold concept; that this experiential learning environment is transformative, integrative, bounded and discursive and is capable of addressing some of the more troublesome aspects of design learning. We have also found that for some students this may still take more time and reinforcing experiences. If we are to take this line of enquiry further there are some key issues to address. The most critical is to improve the quality and quantity of the data, meaning that we can more effectively and more accurately gauge the transformative impact of the LBM studio on students. The Design Report assignment is a useful starting point but it could be more effectively targeted, requiring that students make more explicit reference to the ways that they have acquired and applied new knowledge. The structure of the Design Report could be tailored to address our current knowledge gaps, including for example, how learning in LBM studios might be more effectively applied to other units. Future research will map trends occurring within cohorts and will place a greater focus on practices to overcome recognised learning barriers and to support students in making their learning more visible.

5 Lawson, How designers think
12 Meyer and Land, “Threshold concepts”
14 University of Tasmania, Ethics Reference Number: H0014468
16 Meyer and Land, “Threshold concepts”
18 Meyer and Land, “Threshold concepts”
19 Meyer and Land, “Threshold concepts”
20 Meyer and Land, “Threshold concepts”
21 Meyer and Land, "Threshold concepts."
23 Perkins, "Constructivism and troublesome knowledge."
26 Big Beard Films. "Citizen Architect,"
his paper examines a form of ‘live project’ that casts the design studio topic in three distinct roles. In one guise it is a collaborative, ‘real world’, engagement with a range of stakeholders. In another it presses toward the production of buildings, while in a third, it acts as the vehicle for higher level academic design research. Within the studio these three imperatives are juxtaposed to define the contested territory from which the architectural project emerges as negotiated, speculative-yet-realisable outcome.

The aim of the discussion is to demonstrate this triple focus model of live project and the problem currently confronting it: a local instance of a complex, widespread problem between the architectural academy, the profession and the market.

Since 2007 a succession of community groups, businesses and developers have brought their projects to the design studio at the University of Auckland, School of Architecture and Planning. Typically they have come looking for speculation as to the potential of their projects, the kind of breadth of exploration that generally is not viable within commercial architectural organisations. Meanwhile, the research conducted by students through these projects concerns the development of their own critical, architectural media practices.

This paper looks at the larger academic, professional and market conditions being responded to before discussing the most recent project in the series – a speculation as to the development opportunities of heritage buildings on ‘earthquake prone’ sites in Auckland for one of the country’s most progressive developers. This latest endeavor provides anecdotal evidence of the architectural academy locally being drawn out of the shadow of the profession and into a tense triumvirate relationship with the profession and the market through the live project. It also provides a lens through which the future of this particular agenda might be contemplated.

**ARCHITECTURAL PEDAGOGY AND THE LIVE PROJECT**

The live project is set in relation to a long history of tension in the discipline internationally between the academy (which seeks a more critical engagement with the architectural discipline), the profession (which seeks a more pragmatic engagement with the differing material, economic and social forces that shape architecture) and the market (with its complexity of fluctuating demands). This problem is
well documented in Mitgang and Boyer’s 1996 report for the Carnegie Foundation for the Advancement of Teaching, titled Building communities: a new future for architecture, education and practice. While focused on conditions in the USA and dated in certain respects, the report remains an accurate reflection of demonstrably enduring issues within the architectural discipline.

It is worth noting at this point that having also been exposed to these issues in Australia, Canada, the UK and the Netherlands, nowhere have I found the tension between parties to be as pronounced as I have in New Zealand. Here, practitioners (too) closely associated with the academy are marginalized as ‘academics’ – in the current cultural climate being so engaged is viewed with puzzlement more than approval. We are notionally excluded from commercial endeavour by the profession and the market – we are not seen as being engaged with reality. It is also worth noting how distressing this situation is for those of us caught up in it because of concerns we share not just for ourselves but for the advancement of the discipline more generally.

THE LIVE PROJECT AT THE UNIVERSITY OF AUCKLAND

As part of a broader live project agenda running at the University of Auckland, School of Architecture and Planning, each year since 2007 we have run at least one live project of the type being described for clients ranging from community groups, to government agencies, to small businesses, to developers. The work we provide them builds impetus behind their projects and operates as a base for funding applications, community consultation and provocation for governing boards. The projects were: Muriwai Surf Life Saving Club (2007) (figure 1); Housing (4) New Zealand (2008); EcoTech (2009); Confucius Institute (2010); Kaipatiki Project (2011); College Rifles Rugby Club (2012); Akarana Golf Club (2013); Fletcher Developments (2014). In the second semester of 2014 we ran a project for a developer who will be referred to here as the ‘Client’.

SKETCHES OF A LOCAL PROFESSIONAL CONDITION

To provide a sketch of the local professional environment within which the School’s live project agenda has developed: over the course of the past twenty years the building industry in New Zealand has encountered significant change in terms of building regulation and costs. On top of an increasing range of competitors and the proliferation of specialist consultants, the impacts of issues such as the ‘leaky building crisis’, the Christchurch earthquakes, Auckland’s Unitary Plan and others have resulted in the architectural profession being shouldered with more work and more risk without comparable
increases in fees. One celebrated Auckland architect also recently commented that over the past generation the amount of documentation required to submit a house for building consent has increased by a factor of up to eight, but the quality of the architecture has not improved to match.

To provide another sketch, the traditional role of the architect is to speculate, to document and to act as their clients’ agent in the delivery of a built project. When so much more documentation is required within an overall fee that remains essentially unchanged, documentation absorbs the bulk, delivery retains some space, but speculation is squeezed right down. One might quickly surmise, then, that another reason our client bodies come to us is out of a desire for a speculative investigation of the potential their projects hold – the kind of broad design exploration that is not as viable within commercial operations as it is within an academic environment vested in asking ‘what if…?’ type questions.

**SKETCHES OF AN ACADEMIC CONDITION**
Against this background, other certain pedagogical complexities play out. Engaging in the **Space of Representation** included a discussion of the “resistance” design tutors sometimes encounter in students at the Auckland School. Resistance is a learning impediment. Reasons for it are manifold. They might include fatigue and fear but may also include a student’s sense of self-satisfaction at one extreme, to low levels of self-expectation in terms of their own abilities at the other. It is a quality of student performance that presents as a lack of willingness to take risks such as learning and applying a new software technique. Often, simultaneously, students will present crises of confidence in what they already know. Combined and unchecked this will amount to a kind of paralysis.

Inside our live project I seek to break down resistance, to extend students’ repertoires, their design abilities and their confidence. Each student is tasked with realising and exercising their architectural **habitus** through a step-by-step framework that provides local, operational specificity to ideas such as Donald Schön’s notion of “reflection-in-action”. It results in a self-reflexive process of examination, validation and extension of an individual’s own ways of drawing, diagramming and modelling.

Emphases on each student developing their own critical media practices (and their theoretical implications) operate in stark contrast with the prescribed and often prosaic requirements of client, site, brief, budget and timelines. We articulate this as a tension between the qualitative and the quantitative, not as a condition to be resolved but as a space of possibility.

**A PROJECT**
My colleague Alessandro Melis and I ran a design topic titled **Through the Space of Representation** in semester two of 2014. It brought 15 Design 6 students together with eight Advanced Design 2 students to investigate 10 different ‘earthquake-prone’ sites scattered throughout the inner suburbs of Auckland. Figures 2 to 6 are included to give a sense of the range of project outcomes we received (figure 2–6).

The design investigation was framed in the topic outline in the following fashion:

**Through the project vehicle: Conceptualisation** is the inception, development and projection of the ecology of relationships, which define the architectural project. To extend an idea from Robin Evans, conceptualisation occurs in the space of representation, that is, in the conceptual space between the building and its representation. The task of the architect is not the representation of (a pre-existing idea of) a building, but the conceptualisation-through representation of a building.

Students will be asked to invest concertedly in their own representational practices – their ways of drawing, diagramming and modelling. Through this each student will realise and engage in the space between the building and its representation, that is, beyond the representation itself toward the architecture which is represented.

**The project vehicle: Recent changes to Auckland Council’s earthquake-prone building policy** determine that a building is earthquake-prone when it is less than 34% of current building standards. This has significant implications for large swathes of Auckland’s heritage building fabric, much of which is located on the fringes of the inner city in the form of small-scale commercial buildings. The pool of potential lessees for such properties has reduced dramatically due to the actual and perceived risk encapsulated in the term ‘earthquake-prone’ and a general heightened sensitivity to the issue due to the Christchurch earthquakes. Government departments for instance are unlikely to take up leases in buildings that date from before 1976 (when current building standards were benchmarked). Insurance premiums for such
figure 2. Sam Peters, 515-519 Sandringham Road

figure 3. Jihye Lim, corner Great North Road and Williamson Avenue
figure 4. Lauren Speer, 51-63 New North Road

figure 5. Matt Gruiters, 366-386 Karangahape Road
figure 6. Eleanor Glenton, corner Ponsonby Road and Franklin Road
properties have escalated dramatically and banks are reluctant to lend on them.

As the owner of such a property, what do you do when you cannot lease the building? Do you sell in a market that has declined dramatically? Do you demolish and redevelop? Or do you strengthen and redevelop? Or even strengthen and leave as is? In other words, what are the opportunities the problem of an earthquake prone building presents? These are the questions facing our Client, one of Auckland’s most progressive developers, who holds a number of properties that have been classed as being earthquake-prone, many of which would also be classed as ‘heritage’. The Client has asked us to look at ten such properties and to speculate as to the architectural and urban design potential each case presents.

Each student drew a site from Alessandro’s construction hat and prepared a design proposal for that site. Students had to draw together and navigate the complexity of three different requirements: working within the constraints of Auckland Council’s District and Unitary plans; producing a project for the Client; and developing their own practice.7

Alessandro and I had the benefit of working with a number of excellent students on this live project, including Liam Stumbles. (figure 7) I had seen Liam’s previous studio project in an internal design assessment process. There, it felt like he had made big design moves based on his perceptions of what he thought was expected of him by his tutor. As a result he did not realise the full potential of the threads he had uncovered on the way.

The benefit of our project to him was that he was forced to clearly articulate both his (extensive) skill base and the different strands he was uncovering through exercising it. (figures 9–10) We deduced that in previous projects he would be highly productive around a particular idea using a particular tool in a particular way. The issue he had was that he was not connecting the productive loops to define a coherent thread around which the whole project might develop. It was as if he was looking for the ‘ah-ha!’ moment in everything he made but it was not happening for him. So he ended up making a series of smaller, disconnected projects inside the larger project. Ultimately this situation put him under pressure and he might tend to default to ‘the big move’ or grand design gesture.

Liam began down a similar path in our design studio but by getting him to identify the qualitative aspects he was uncovering and interested in, he was able to begin linking his modes of making together. (figure 8–10) At the outset he made a small resin model and presented photographs of it in response to the site data task. He became engrossed in the quality of the interstitial form and space between the upper and lower surfaces. (figure 8)

Each time Liam went into another loop of making in another medium he brought something else back to this thread – a quality of form and space around which he eventually built the project. (figures 11–14) He was able to make decisions about what and how he was making based on the criteria of the qualities he was after. Through that, the differing artefacts (the outcomes of different processes) were able to be seen as a coherent body of work. The elusive ‘ah-ha!’ moment became less important than the qualities he had identified and around which he was building a projectspecific repository of knowledge.
Figure 8. Liam Stumbles, resin model

Figure 9. Liam Stumbles, 727-731 & 767-771 Dominion Road, conceptual sketches

Figure 10: Liam Stumbles, 727-731 & 767-771 Dominion Road, environmental performance and programme models
figure 11: Liam Stumbles, 727-731 & 767-771 Dominion Road, structural frame models
Figure 13. Liam Stumbles, 727-731 & 767-771 Dominion Road, interior perspective

Figure 12. Liam Stumbles, 727-731 & 767-771 Dominion Road, cross section
BEYOND THE STUDIO
Beyond demonstrating project development, the reason for drawing Liam’s work forward in this discussion is that the Client became very excited about it, so excited that without our knowledge, he took Liam’s final presentation boards to his quantity surveyor. We were not included in any discussion around the pricing of the project and predictably, without the appropriate information, the quantity surveyor came back with an extremely conservative estimate. However, despite that, the Client instigated a meeting to discuss Liam’s project with Liam, Alessandro and me.

Given that the aim of our live project was to bring the academy and the profession into closer relation by engaging with market conditions, we were of course very enthusiastic about the possibility of further developing Liam’s proposal. For Alessandro and me it was an opportunity to carry out design research into the delivery of ‘non-standard’ formal outcomes in a modest economy. For Liam it was to unfold as the first design thesis in the eight years of our MArch(Prof) programme that would focus on developed design and technical resolution of a formally complex building.

However, in the two weeks between the email I sent to arrange the meeting and when we actually sat down together, our Client’s attitude had changed completely. During our meeting he conceded that on the back of the outlandish estimate he had received from his quantity surveyor, he had spoken to two of the architects he uses regularly. It became apparent that they had contributed to his change of heart.

HOW DID THIS HAPPEN?
Could it be that we were dismissed by our solely-commercially-focused peers simply because of our association with academia? But the Client was in possession of material that demonstrated our experience and capacity to complete these kinds of formally speculative projects – we had done so overseas.

Were we dismissed due to the Client’s lack of belief in our capability to deliver the kind of project he had been seeking through his brief to us in an Auckland context? But I have been located here for 14 of my 20 years in architectural practice.

Was it the ‘wild-ness’ of the speculation? But this was the very thing that we were asked to deliver by the Client, the thing that drew us into this triumvirate relationship in the first instance.

While all of these questions surfaced in some form or other during our conversation with the Client, the more Alessandro and I looked at it, the more it became clear that we had crossed some sort of line. Apparently, our role was only to speculate over this project and, in doing so, to give the Client and his architects a sense of current and future aesthetic flavours so as to give them some sort of competitive advantage in their respective markets.
Our role was not to produce such compelling projects that the market share of our solely-commercially-engaged colleagues would be threatened. Exposure to market forces indeed.

PROJECTING THE FUTURE OF THE DUAL FOCUS LIVE PROJECT

Despite the disappointment Alessandro, Liam and I felt as our attempts to take Liam’s project to the next stage foundered, we recognised that to have reached the point where we were able to fail in this way we had more than met the aims of our design topic. It seems, then, that the sights of the topic need to be adjusted to meet the potential uncovered.

In the next edition our investigation will extend the specific aims of the topic to include transitioning projects from the studio into a speculative space of design research between the academy, the market and the profession with the intention of seeing them built. These ambitions will be stated explicitly to students, staff and clients. A further review of the triple focus live project is thus anticipated. Current expectations are for the three contexts and their relations to be critically assessed and the potential for a sort of nexus of architectural teaching, research and practice is to be discussed. Such a nexus is a ‘holy grail’ of studio teaching, a goal our institutions set out for us in official documentation (in a similar manner to our professional accreditation bodies), and one it seems we are nearing.

---


3 Davis, Michael. "Engaging in the Space of Representation”. , 105–120.


7 Davis, Michael and Alessandro Melis. "Through the Space of Representation”, design studio topic outline, University of Auckland, School of Architecture and Planning, 2014.
D scanning of heritage sites is becoming more common as heritage professionals try to digitally record and archive places, buildings and sites before they are lost to phenomena such as environmental degradation, deterioration over time or catastrophic events. This paper describes the ongoing collaborative project between the School of Architecture at The University of Queensland, and CyArk, the global digital cultural heritage database. The project aims to scan, visualise, interpret and archive several Queensland cultural heritage sites, and make them available to the public on the CyArk website, as part of the prestigious CyArk 500 list.

The scanning and research process involves collaborations with government departments (Environment and Heritage Protection, Queensland Parks and Wildlife Service), heritage bodies (Queensland Heritage Council, Heritage Chairs and Officials of Australia and New Zealand), community organisations (Friends of Peel Island), land holding and site management groups (Quandamooka Yooloooburrawbee Aboriginal Corporation, Royal Queensland Historical Society, Brisbane City Council) and technical partners (CSIRO, DotProduct). The final important group of collaborators comprises students and researchers from the UQ School of Architecture whose investigation of technical possibilities, historical research, interrogation of architectural significance and collaboration with partners has opened new pathways into heritage interpretation through scanning.

Teaching and research opportunities born out of this project lie within complex fields of collaboration in which students develop technical and professional skills, genuinely unique research questions and continued published outcomes. This paper will discuss how such speculative projects where funding, outcomes and ways forward are initially unknown, offer rich opportunities for developing authentic collaborations in which interdependence, lateral strategies and nimble responses are fostered. The paper will argue that such an approach provides a fertile learning opportunity for students developing their professional skills.

INTRODUCTION

The digital recording and analysis of significant cultural heritage sites – Digital Cultural Heritage (DCH) – has been an ongoing project at the UQ School of Architecture since 2012, when we began scanning heritage sites using CSIRO’s newly invented but not then commercialised ‘Zebedee’ handheld 3D laser scanner.1 3D laser scanners measure and record the distance from the scanner to a material surface using a laser beam that spins tens of thousands of times per second. Each laser measured distance is defined by a point, and potentially tens of millions of points are recorded in a given scanned environment.

These points are arranged in a 3D formation called a point cloud, representing the surface of the environment through the arrangement of the points. Both mobile and static types of scanners produce data in this form. Point clouds are descriptors of existing 3D objects in space but are not the ‘solid’ digital computer aided models commonly used by architects and engineers as design tools, and require processing to interpret and visualise the data into forms suitable for different disciplines. See Figure 1.

When UQ Architecture became involved with CSIRO’s Zebedee, the invention team had used the scanner for recording caves, mine tunnels and forests, using building scanning only as a demonstration, rather than an end in itself. The testing of the scanner by others in the 3D laser-mapping field also concentrated on its application for industrial environments.2 The scanner’s potential for recording complex buildings that are difficult to measure by hand, particularly those from vernacular traditions or that had damage or additional intricacy was, at that time, untested.
has always been a challenge for architects and takes considerable time, meanwhile laser scanning of buildings has become an important part of heritage conservation techniques over the past two decades. UQ Architecture and CSIRO collaborated to use the Zebedee scanner to test its suitability for scanning buildings, and assess its suitability for recording complex heritage sites, which would assist CSIRO to further develop their data processing algorithms and test the scanner’s suitability for non-expert users.

The first scanning project involved research staff from UQ Architecture and CSIRO, and UQ Architecture students from both coursework and research higher degree programs. The site chosen was a heritage listed former leprosy colony — known as a lazaret — on Peel Island in Moreton Bay, off the coast of Brisbane, Queensland. The lazaret functioned in the early-mid 20th Century and featured some unique medico-architectural approaches that isolated and segregated patients on the basis of both race and gender during their, often forced, treatment. The remaining buildings comprising the lazaret are multiple small- and medium-sized timber buildings, typical of early 20th Century Queensland architecture in their timber-and-tin materials and construction. Most buildings on site are in an ongoing state of decline, ranging from dangerously dilapidated, to incrementally repaired, and students from UQ Architecture had already collaborated with Queensland Parks and Wildlife Service (QPWS), who are the current managers of the site including the heritage management, to hand measure and record some buildings on site over several summers. The results had been a small number of beautifully built buildings, and the ruinous state of many of the buildings had not been captured except through photography. Along with UQ Architecture PhD student and heritage architect Emily Juckes, I developed a proposal to collaborate with QPWS and CSIRO to use the Zebedee scanner to record the buildings. See Figure 2 and 3 for the participating scanning and research team.

The aim was to quickly and accurately record the shape, scale, size and features of the buildings in their setting, so that the ongoing management of their heritage values could be better facilitated. The budget of site managers QPWS does not extend to regular surveying or recording of the state of the buildings, despite their heritage status. The project comprised CSIRO using the lazaret as a test environment relatively near to their laboratories in the western suburbs of Brisbane, UQ Architecture staff and students developing skills in and investigating the benefits of 3D laser scanning, and QPWS acquiring accurate recordings of the site and speculating on how this might affect their cultural heritage management planning, all on a pro bono basis.

In 2013 the initial collaboration expanded to involve the global digital cultural heritage database CyArk when the then CyArk Manager of Partnership Development contacted the author after seeing a press report on early results of the cultural heritage mapping of Peel Island. Our broader aim, stated...
Figure 2. CSIRO’s Mike Bosse scanning huts on Peel Island in 2012. Photo by Emily Juckes.

Figure 3. Zebedee scanning team on Peel Island with CSIRO, UQ and QPWS researchers and students, in 2012. Photo by Emily Juckes.
in that article – to develop a database of cultural heritage sites using scanning technology – aligned with CyArk’s mission to use “new technologies to create a free, 3D online library of the world’s cultural heritage sites before they are lost to natural disasters, destroyed by human aggression or ravaged by the passage of time”9 though CyArk’s work was not known to us prior to this. After discussion both UQ Architecture and CSIRO agreed to work closely with CyArk to archive some selected Queensland at risk heritage sites on their website, and work towards building interest amongst the Queensland heritage community in assisting with the process.

PROJECT AIMS
The project described in this paper is the incorporation of the digital cultural heritage work into the curriculum of the School of Architecture at the University of Queensland, at first through a UQ Summer Scholar 2012–2013 research program, and then a small group offering in a the Master of Architecture (M Arch) in 2014, and in the M Arch 2015 as a research elective offering for final year M Arch students. The aim for the students in all cases was to provide a live research setting where the outcomes were unknown and where genuinely challenging questions were being asked of both research staff and students. Is 3D laser scanning an effective method to record and analyse heritage buildings? What software is best to support the use of the resultant data? How long does it take to model a building from the data and what are the best practice techniques for doing so? These genuinely novel questions had the potential to spark interest and assistance from students, and arm them with unique skills on graduation.

COLLABORATING TO SCAN AND VISUALISE CULTURAL HERITAGE SITES
CSIRO, UQ Architecture and QPWS worked together to scan the lazaret site in November 2012 and fully recorded all the main buildings in just four hours using several Zebedee units, the largest scanned site using Zebedee to that point. The collaboration and evolution of the Peel Island project from a traditional hand-measured heritage recording task into using DCH techniques at the cutting edge of the newest technology came about out of a genuine connection between the capabilities of the technology and its ability to solve the specific problems of the original Peel Island lazaret site. These included relative remoteness, in that the site can only be accessed by boat, and a permit is required to enter the heritage site; complexity, in that the site contains dozens of buildings, vegetation and the heritage values include an aesthetic of abandonment; and a further form of complexity in the intricately dilapidated buildings that defy both traditional hand-measuring techniques and static laser scanning, see Figure 4.

The collaboration also grew out of the coalescing...
of partners according to their capacity to assist with and contribute to specific aspects of the project. The partnership with CyArk assisted us to gain prominence in the press, and use that to leverage funding from a cash-poor sector to pay for the archiving process on CyArk, which at $AUD10,000 per site is no mean feat. The first CyArk archiving funding was provided by the Heritage Chairs and Officials of Australia and New Zealand (HCOANZ) committee, not for the Peel Island site, but for Fort Lytton, a second site that was scanned as part of a TV documentary being made in conjunction with CSIRO. Fort Lytton is more accessible and located on the mainland, and was used to launch the 2013 Queensland Heritage Week celebrations, showcasing the capacities of Zebedee in a specifically heritage context, eschewing for the time being the formerly dominant fields of industrial and mining applications. Importantly, the Fort Lytton site became Australia’s first CyArk entry (see Figure 5), uploaded just days prior to the Sydney Opera House, which was scanned and visualised by the Scottish Ten. Fort Lytton’s CyArk entry is currently being updated with additional material from the latest student work and its current web presence is a placeholder only.

In 2014, funding through a community grant was sought from Queensland Government to archive the Peel Island site and another at St Helena, a convict-built prison ruin, also in Moreton Bay, which was scanned in September 2013 but this application was unsuccessful. QPWS staff sought further partnerships with community group Friends of Peel Island Association (FoPIA) who added a considerable sum of money to a small amount of QPWS funding to pay for the future archiving of those two sites. With encouragement from CyArk, UQ Architecture worked with Queensland Government Department of Environment and Heritage Protection (EHP) and the Heritage Council of Queensland to submit an application for three new sites to be added to their prestigious CyArk500 list.

UQ Architecture liaised between the Queensland Government and CyArk during this process, and offered to work to scan and visualise sites should they be accepted onto the lists. The nominated sites of Brisbane’s Old Windmill Tower, Queensland’s oldest extant building and a unique convict-built site; the Commissariat Store, also convict-built and now housing a museum, and the Raine Island Beacon on the outer Torres Straits were accepted onto the
CyArk list in 2014, following extensive application
detail provided by Queensland government
heritage experts.

The listing of these sites provided an important
opportunity for the Queensland heritage community
to draw attention to places that were omitted from
UNESCO World Heritage inscription of Australia
convict sites, drawn up in 2010.13 An agreement
to gather all six Queensland sites under a theme of
Moreton Bay and Brisbane Heritage on CyArk will
give added prominence to the sites and help them to
be understood in their geographical setting.

COLLABORATING WITH STUDENTS FOR
TEACHING AND RESEARCH

In 2015 a cohort of 12 M Arch students, working
in teams, focused on four Brisbane heritage sites, to
scan and visualize the building: the Old Windmill
Tower, the Commissariat Store, Fort Lytton and St
Helena prison island. These students and UQ staff
made new Zeb1 (the commercial version of a CSIRO
Zebedee) scans of the first two sites, which had not
previously been scanned, and also used a new set
of smaller infrared scanners that take colour point
cloud images of interior settings, the DPI–7 by
DotProduct, see Figure 6. The aim of this student
work was to contribute material directly to the
CyArk archiving of these sites.

Students worked with and received both
formal and informal instruction from a range of
professional. QPWS staff assisted them to access
sites and collect cultural heritage interpretive
material; Queensland Government Environment and
Heritage Protection staff taught students about the
governance of heritage and writing about heritage
for a lay audience; Brisbane City Council staff and
Royal Queensland Historical Society volunteers, as
building custodians, negotiated fieldwork access and
explained their perspectives on the importance of
using heritage buildings.

Students also had typical lectures from UQ
academics on different types of heritage including
industrial heritage, from an architecture graduate
who wrote his M Arch thesis on his Peel Island
project, offered insights into software choice and
emerging best practice which gave students a head
start for their projects. Students also used informal
learning tools such as a CSIRO YouTube video14 on
how to visualise data from Zebedee point clouds and

Figure 6. Scanning Brisbane’s Commissariat Store with a DPI-7 scanner, 2015. Kelly Greenop with the Queensland
Minister for Environment and Heritage Protection, Steven Miles, and UQ Architecture student Raymond Chan.
Photo by Queensland Department of Environment and Heritage Protection.
other internet-based discussion forums and videos on the latest ways of using software and working around technical issues.

The student cohort also worked together to determine the particular heritage values, based on the heritage register citation for their particular site, and ensuring that each student had a unique field of enquiry that would compliment rather than overlap with the work done by colleagues. Students used existing entries within the CyArk and guidance from CyArk on text length and as a model for what each student would produce, but some also brought a critical eye to the task, reframing existing CyArk norms to be ‘more architectural’ to reflect their expertise and interests.

We also worked to ensure a high-level promotion of student’s work, such as inviting the state government Minister for Environment and Heritage Protection to attend some of the scanning. This key point of promotion and communicating the project remains a priority, as without adequate publicity, funding, and the involvement of potentially relevant new collaborators may not occur.

OUTCOMES AND DISCUSSION

UQ Architecture students and researchers developed their skills and knowledge of heritage management, governance, practice and collaboration simultaneously with their technical scanning, visualisation and analysis skills. The live research collaboration at the cutting edge of heritage visualisation meant that students knew that staff were also working into areas unknown to them. They knew that ‘we’ did not have all the ‘answers’ and that their contributions would add to a setting of mutual learning and skill development.

Students also developed skills they did not expect to develop. Presenting the outcome of work to funding providers such as FoPIA meant that students had to become proficient in describing the technical capabilities of the scanners, and articulate their processes and research in a clear way for a non-
expert audience. Similarly CSIRO staff presenting to the Heritage Chairs and Official of Australia and New Zealand learned to speak about buildings in heritage terms and about technical equipment in lay terms, in order to secure essential funding.

University students and research staff working pro bono can be controversial. Schools of Architecture receive offers for students to design buildings as part of their studies as ‘good experience’, which are often in fact a request for free services, without a learning agenda. This project is different in that there are genuine research and learning opportunities that can only come from this kind of collaboration. For example, the field-work experiences along side the custodians on a restricted heritage site accessible only by boat, is a unique, professional learning setting this project provided. The pro bono nature of the research benefited the project in a number of ways: corporate organisations such as GeoSLAM (commercial provider of the Zeb1 scanner) and DotProduct (commercial supplier of the DPI–7) gave generous discounts on the products because of our own participation as researchers and educators. Similarly funding from HCOANZ was supported through the pro bono nature of all collaborators.

Research outcomes resulting from the original nature of the research has lead to the publication of several papers, and various results were also presented at several conferences. Coursework students also produced research outcomes including an M Arch thesis and co-authoring of some of the research papers. Their 2015 M Arch cohort’s success in modelling built upon previous coursework research and was demonstrated by larger more complex CAD models, and visualisations including flythroughs, exploded axonometrics and other architecturally specific interpretations of point cloud data, see Figure 7.

Many students in the 2015 cohort came to the course because of an admitted fascination with the scanning technology on offer. Initially disinterested in heritage as a subject, some students confessed to becoming increasingly drawn in by the concerns of heritage conservation, and increasingly fascinated by the heritage applications of their technical skills, rather than the acquisition of skills in isolation.

Students were asked to consider how best to interpret the heritage sites they worked on, based on the heritage values listed in each of the buildings’ Queensland Heritage Register citations. Thus student’s use of scanning was not an end in itself, but a tool for explaining to a lay audience the importance of the site and explaining that through the visualised 3D scans.

CONCLUSION
The complexity of this learning setting, and the involvement of fieldwork, collaboration with a variety of organisations and producing novel results mirrors a professional environment. In this case the setting was a research project, but the problems of logistics, collaborative communication, fieldwork planning, delivery of outcomes to a ‘client’, risk management and so on, as well as the intellectual challenges of the tasks at hand were considerable. These factors help to establish an immersive environment for Photograph Icon students, which opens genuine opportunities for the development of a professional identity through which students are both acquiring knowledge, and developing ways-of-being in professional settings.

Publication of the six Queensland cultural sites should begin to occur from October 2015 on the CyArk website, with students’ and researchers’ collaborative work presented to a global cultural heritage audience. We are working to collaborate further with the Quandamooka traditional owners of Peel Island to ensure they are involved and fully consulted on the presentation and interpretation of this important heritage site.

ACKNOWLEDGEMENTS
Some of these collaborators are no longer with these organisations, but I thank them here and acknowledge them under the organisations with which they were working at the time of our collaboration. CSIRO collaborators: Dr Robert Zlot, Dr Mike Bosse, Dr Jonathan Roberts, Mr Lukas Kaul, Mr Thomas Lowe; CyArk collaborators: Mr Justin Barton, Ms Makenna Murray; QPWS collaborator: Mr Roland Dowling; EHP collaborators: Ms Nicole Mulholland; Adjunct Professor Fiona Gardiner; Ms Mary Howells; Mr Paddy Waterson, Ms Ali Van Der Graaf, Mr Duncan Ross-Watt; Brisbane City Council collaborator: Mr Dave Keogh; Royal Queensland Historical Society collaborators: Dr Ruth Kerr, Ms Christina Michie; UQ collaborators: Ms Emily Juckes, Mr Zbigniew ‘Ziggy’ Jarzab, Mr Luís Sidonio, Ms Melissa Lee, Mr Simon Zhang, Mr Daniel Thompson, Mr Ka Meng Steven Sou, Mr Tsz Wai Jacky Chan, Mr Wayne Tsun Yin Ching, Mr Wei-Hsuan Joe Feng, Mr Merrick Man, Mr Yu-Hung Johnny Ou, Ms Eric Kai Chun Yau, Mr Raymond Pak Kwan Chan, Mr Lachlan Cuffe, Mr Sean Evangelista, Mr Benjamin Godfrey, Dr Chris Landorf; and Friends of Peel Island Association.


6 Queensland’s Leprosy Act of 1892 allowed for people with the disease to be confined to isolation and detention without the patient’s agreement.


12 CyArk (2014, July), The 500. http://cyark.org/about/the500/


17 These include the CyArk 500 Launch in London 2013 and Robotics in Cultural Heritage Conference in Pisa 2012.

18 This thesis went on to win the School’s Best Thesis Prize 2014.

The Festival of Transitional Architecture (FESTA) is a free, public event, engaging with the city of Christchurch (annually from 2012–14 and biennially from 2016) by exploring urban regeneration through large scale collaborative live projects and urban interventions. FESTA was established following the devastating Christchurch earthquakes to respond to the unique conditions and possibilities of the post-disaster city. Through a series of events and performances attended by more than 50,000 people, FESTA temporarily reintroduces urban life and activity to the largely empty inner city. The programme is a series of live projects formed from collaborations of architecture students, commercial sponsors, construction industry partners, engineers, performers, local retailers, community groups, the Christchurch City Council and the Canterbury Earthquake Recovery Authority (CERA). FESTA is now a biennial event (next held in 2016) which we are taking as an opportunity to evaluate the event’s effectiveness, and to develop FESTA to respond better to the quickly evolving conditions of the rebuilding city.

This paper presents an overview of FESTA including descriptions of the projects of each of the three festivals, emphasising the ways in which the event has changed from year to year in response to its evolving context and collaborators. We will consider the way FESTA’s collaborative model of production responds to the changing conditions of the city. We examine the festival’s effectiveness in temporarily creating urban life and stimulating awareness for the city’s rebuild, and in encouraging consideration of the many alternative possibilities this could follow.

The Festival of Transitional Architecture, known as FESTA, was conceived and created as a collective response to an extraordinary disaster. By late 2011/early 2012 the city of Christchurch had already spent a year adjusting to the physical and emotional disruption caused by a series of large earthquakes. At the same time there was a creative outpouring of testing and applying innovative ways of responding to the destruction on the social and cultural fabric of the city. These responses happened at different scales and by a diverse range of actors: at one end were sizable temporary architecture projects by the state, private and third sectors and at the other a burgeoning new movement of temporary creative urban regeneration projects by artists, citizens, architects, activists, performers and community leaders. These ‘temporary’ projects, large and small, adopted the label ‘transitional’, as a signal that they were intended not only to meet an immediate need but were deliberate experiments in alternative ways to recover and regenerate.

At the same time as this creative flourishing, the city and its people were living through numerous daily aftershocks and coping with the uncertainty caused by the earthquakes. On every front people were dealing with change and unpredictability: schools, homes and workplaces were disrupted, the central city was cordoned off and the government had granted the Minister for Earthquake Recovery extraordinary wartime powers.

It was in this context that George Parker and Stuart Candy conceived the idea that Christchurch should hold a festival of temporary architecture. In May 2012, a working group convened to discuss. This group included: artist Julia Morison; Ryan Reynolds and Coralie Winn – two of the co-founders and leaders of Gap Filler; Camia Young and Ass. Prof. Uwe Rieger, both teaching architecture at the University of Auckland; architectural historian and...
In hindsight we think FESTA developed with four primary intentions. These were never explicitly stated, but implicitly informed key conversations and decisions, and provide a structure for purposes of assessing the events within this presentation. They are:

– to help recover from trauma
– to generate a temporary urban experience
– to advocate for alternative and experimental urban projects
– to create new communities around the issues of architecture and city-making

The initial idea for the Festival became viable when Uwe Rieger proposed LUXCITY and the potential involvement of hundreds of architecture students. Rieger’s previous experience in Auckland and Berlin directing live projects with students underpinned his vision for a large-scale 1:1 fabrication project that responded directly to the conditions of the city provided a solid foundation for a major project.

LUXCITY was a city made from light for one night designed and constructed by over 350 architecture and design students from across New Zealand. The sixteen installations all used light as a common medium to create spaces for corresponding pop-up urban activities: circus arts, cafes, live music performances, bars, a fashion show, a night market and an all-ages youth venue. These live projects weren’t merely an urban-scale sculptural exhibition, but the deliberate creation of a temporary urban environment, with all the diversity, elements of surprise, focus on public use of public space, commerce, culture and social exchange that cities provide and Christchurch had lost in a few seconds.

Many of the installations used demolition machinery as support structures which suspended the installations from as high as 40 metres. The use of demolition machinery was not merely a practical solution to the difficulty of creating ephemeral urban scale in a safe and efficient way, it was also the creation of a deliberate, poetic contrast. Cranes and telelifts used for the destruction of Christchurch architecture became integral to a surprising, regenerative form of creative construction. Rieger’s choice also acknowledged and reflected the immediate, daily experience of urbanity in Christchurch, where large numbers of cranes and high reach machinery were beginning to dominate the city’s skyline as more buildings were removed.

The machinery and skill to operate them were all donated by local construction companies working on demolition.

The twinned approach of demolition machinery for structure with lightweight materials and light-based construction allowed students to create structures that were both ephemeral and also contended with the vastness of the urban scale. In a city without an urban centre of activity, LUXCITY created an unexpected, beautiful ephemeral urban environment and intensity for a single night. Somewhere between 20–30,000 people attended LUXCITY. It was an emotional night, as for many people it was the first occasion they’d had to return to the central city. Most of the central city was still cordoned off and guarded by the army. LUXCITY was situated along and around the only newly-open, publicly accessible street that bisected this ‘red zone’. In the early dusk the half demolished buildings formed a dramatic backdrop. As darkness settled, the vacant, abandoned city became a black field that was the ideal foil to the inventive, dramatic light structures of LUXCITY.²

The project was organised as a collaboration between the School of Architecture and Planning at The University of Auckland, the Spatial Design Department at Auckland University of Technology, the Architecture Department at Unitec, the School of Architecture at Victoria University and the School of Architectural Studies at CPIT in conjunction with FESTA. This collaboration laid the groundwork for what would become Studio Christchurch.

LUXCITY created a temporary urban experience, stimulated collaboration and new friendship and created excitement and hope for the city’s recovery. By most accounts it was an extraordinary success. For much of the audience it was their first return to the central city since the earthquakes, and was an emotional and healing experience. These were very much the primary goals of the first FESTA, and notions of advocating for alternative approaches to the rebuild were at this stage less developed. It is difficult to imagine LUXCITY taking any other form or being any more successful than it was.

The wider FESTA programme developed around this major, large-scale project. Eighteen additional events were held over 10 days. This included a public programme that augmented existing transitional architecture projects with tours and insights from project instigators and designers (including Re:START, Temporary Stadium, EPIC), as well
as hands-on projects for the public to gain direct access to small, yet enduring aspects of city-making, for example, constructing a pizza oven on a vacant site. The programme was rounded out with lectures and talks, and artists projects, such as an original performance on a vacant site by experimental musicians that created spatial chambers using sound. FESTA 2013 was conceived as a temporary city-within-a-city, organised around a major event called ‘Canterbury Tales’ directed by Free Theatre Christchurch—a local experimental performing arts groups established in 1979. Free Theatre’s productions develop through multidisciplinary collaboration and occur in highly unconventional forms and settings. ‘Canterbury Tales’ was conceived in collaboration with a diversity of local performance groups and volunteers as a carnivalesque procession from the pedestrianised shopping street – Cashel Mall – along the Avon River to the city’s primary public space Cathedral Square. This spatial procession was made by a series of giant mechanical puppets from Chaucer’s Canterbury Tales and which also referenced key political figures. The puppets acted out a narrative that responded to the politics and spaces of the city, the founding narratives of the region and to the student designed installations and activities provided by other performers and hospitality partners. To manage crowd numbers the event was planned to repeat over two nights, but due to significant weather problems the first night was cancelled and the second night experienced major disruption. Despite this crowd numbers across the two nights were estimated at more than 10,000.

Canterbury Tales featured five student studios from Unitec and one each from CPIT, UTS and Lincoln University—a significantly reduced number from LUXCITY in 2012. These groups designed remotely but had an ongoing conversation with Free Theatre to develop designs that referenced the performance being developed in parallel. Although significant physical interaction between puppets and installations ultimately proved too challenging, significant conceptual development was achieved through the back and forth conversations. Similarly the student designers, who were working to extremely limited budgets, had to engage in significant conversation with FESTA and material suppliers as they resolved their designs. Through the local construction industry FESTA was able to obtain structural support for many of the projects. The students were generously supplied with tools by local artist Gaby Montejo. More than simply supplying resources, these relationships led to conversations and collaborative working relationships between company managers, site foremen, crane drivers, builders, city authorities and students.

Renowned Chilean architect Alejandro Aravena has claimed projects that operate on limited resources compensate through added meaning, and that projects with a surplus of resources will tend to produce arbitrariness.3 Canterbury Tales was especially powerful in this sense. Limited resources were overcome through creativity and collaboration. A rich narrative, material ingenuity and developing relationships with a wide network of companies and people gave the event a clear and streamlined sense of purpose.

However, the event did suffer from some unfortunate problems. The ‘dense urbanity’ of LUXCITY and, later, CityUps was stretched out to suit a parade route causing the event to have separate pockets of activity separated by large empty spaces, creating a much weaker shared social space — especially before and after the procession. The reduced number of student installations compounded this problem and were not sufficient in quantity to fill the ambitiously large spaces or create a high enough level of atmospheric intensity. Lastly the weather, as previously mentioned, delivered unbearable coldness and gale force winds, cancelling the first night’s parade, threatening cancellation of the second night also and making it unpleasant for the audience to linger at hospitality partners stalls prior to or after the performance.

FESTA’s wider program of projects in 2013 was larger and more considered, with more than 30 diverse events and projects. We will touch on just a few of these. There was a Nomadic Sauna, inside a tent, by Fabricio Fernandes that acted as a wonderful darkened conversation pit, and a perfect sanctuary from the weekends storm. Sweaty participants emerged temporarily protected by the saunas heat and posed for photographs in their underwear in the bitterly cold streets. This project asked some wonderful questions: Why couldn’t it stay (I’ve wondered this on many cold nights since)? Why haven’t I run through Christchurch streets in my underwear before? Can we make public bath-houses or sauna a part of New Zealand’s urban culture?

The Makeshift Picture House was a mobile
trailer-mounted cinema by Tessa Peach and Heather Hayward that spent time at several historic cinema sites around the city during FESTA 2013. Christchurch lost 21 cinemas in the earthquake, and whilst this project commemorated them it also suggested an alternative method of viewing cinema, one that is inexpensive, intimate and able to be deployed in a range of contexts. We always ‘go’ to the cinema, and one wonders if a cinema that instead ‘comes to us’ holds potential for more engaged forms of story-telling.

Intersection Point was a mural that breathed life into a building on the brink of final change and revivified its place in the city. Designed and painted by architecture graduate Amiria Kiddle and engineer Helen Trappitt, the mural consisted of diamond patterns applied to a building that was destined for demolition. The shape signified strength and the symbols could be found the world over, including in our traditional art forms. The design was inspired by the taniko pattern of two diamonds paired one on top of the other, signifying a crossing of paths of people or events. In Intersection Point Kiddle and Trappitt experimented with the building as a canvas for expressing identity in the urban environment. The building has since been demolished, and with it, the mural.

Agropolis is a scalable inner city urban agriculture project that was conceived for and launched at FESTA 2013. Agropolis was developed collaboratively, with FESTA Director Jessica Halliday and social entrepreneur Bailey Peryman of Garden City 2.0 drawing together a group of like-minded individuals to realise the initial iteration of Agropolis. It is both practical and symbolic. It involves composting organic waste from inner city hospitality businesses as well as the preparation and arrangement of portable growing beds, and sowing and planting, harvesting, cooking and distributing the produce. However, possibly more importantly, Agropolis raises the profile of discussion about the city’s food resilience, land use and food production and distribution in relation to the planning of the city. It is an on-going project with a .5 EFT co-ordinator and is now governed by a small steering committee under the umbrella of the Soil & Health Association.

Under an overarching statement for FESTA 2014, ‘The Future Will Be Live’ the 2014 major night event, City Ups, was a return to a similar model as 2012’s LUXCITY. Six teams each from Unitec and University of Auckland were joined by a team from CPIT and 30 students from Elam School of Fine Art working in small groups of roughly 5. In total over 270 students across these institutions created 13 large scale architectural projects and a raft of smaller human-scale interventions. A year on the city was now starting to show signs of construction rather than just demolition or vacancy. If LUXCITY was about reclaiming the city and Canterbury Tales about politics and culture, then CityUps was an invitation to experience the joys and delights of city life – temporary and speculative as it was it was also a reminder of the physical scale and energy that comes from city life and the possible futures that await us if we dare to experiment. With the theme ‘The Future is Live’ the invitation was that our future can only arrive if started in the here and now.

Spearheaded by Uwe Reiger the concept was based around large scale frames constructed from scaffolding. These operated as both a structure from which to suspend the installations but also as a framing device for the changing fabric of the city. The site chosen, at a major inner city intersection, was still very much in this liminal space, a demolition of an adjacent building was occurring at the same time as install and various small scale two to five story new and older buildings are interleaved.

FESTA, as an experiential event, seeks to create an urban density and intensity of experience missing in Christchurch at the moment. The scale of the scaffolding structures at 10m high by 16m wide was more than sufficient to fulfill this requirement. Attracting approx 10,000 people on the night, ‘CityUps’ was a more tightly run event. The projects were more tightly conceived, more rigorous in meeting engineering requirements from the outset, and the students themselves clearly demonstrated the incorporation of previous students experiences. Most had talked with previous years participants, learned from mistakes and excitedly commented on how these previous participants said it was the ‘best thing they had done’. In demonstration of how closely students, tutors, the engineers Lewis & Bradford and FESTA worked was that all 13 architectural projects were erected on the day and on time.

Again FESTA’s wider program of projects in 2014 was larger than the year before. This time there were 44 events put on by the wider group of collaborators. A few of the projects can be touched on here:
Dematerialization from Melbourne based architectural trio Patrick Hegarty, Madeline Sewall & Jayden Kenny combined precise projection of modern dance with a striking soundtrack and transformed everyday experience of architecture through shifting concepts of time, space and reality.

Local artist Liv Worsnop working as ‘Plant Gang’ documented her wanderings in the residential red zone in unexpected ways, introducing a new audience to this lush but at the time out of bounds area. Largely devoid of evidence of human habitation this area had become a haven for foragers and explorers. Her journeys were then projected onto the rear of a still standing pre earthquake building at night. This work layered over and dropped into the irregular architectural structure giving an eerie but compelling otherworldly view, reclaiming this area as a lush garden of eden.

Milk Fight by artist Gaby Montejo challenged notions of sustainability and waste in food. A water fight with milk (albeit highly watered down) took a fun activity and crossed it with the literal waste of 100 of litres of milk into the ground. Taken to with great glee by participants and encouraged on by a large crowd of observers there was a strong post apocalyptic feel with a number of people referencing their conflict over participating in something that they said was immensely enjoyable but also wasted food that could otherwise have been used to feed people. This participatory performance/sport was a comment on the city’s economic dependency on the production of milk, and alluded to the social consequences of future resource scarcity.

Gapfiller’s Coralie Winn claims ‘FESTA is a celebration, it brings together many of the things that are happening across the year and creates density and enables new projects, but primarily it is a celebration’. And whilst this is true, following an initial impulse to bring people together in the central city, the Christchurch context has shifted to one where authorities and conventional property developers have, on the whole, ignored the city’s alternative, transitional projects and returned the city to a private form of city development in which it is difficult to see alternative values of community participation, environmental awareness, affordability, democratic transparency (and so on) having a significant ongoing presence in the city.

These uncertainties have led to FESTA being reconceived as a biennial event in 2015, beginning 2016, with this year being taken as an opportunity to re-strategise. Fundamentally a new umbrella organisation, Te Putahi: The Christchurch Centre for Architecture and City-making is being established to better address these critical concerns about the future direction of the city, and FESTA will continue to operate as a major project organised and run by Te Putahi.

Working on FESTA has been a pleasure. In the last three years we’ve worked with an amazing number of passionate and skilled collaborators committed to producing something entertaining, challenging, diverse and ambitious and we feel privileged to have been a part of such a quantity of quality projects. And as the city’s rebuild moves into a more developed and construction-oriented phase we hope the changes we’re making to the festival structure can ensure it continues to be an ongoing part of not just the rebuild from disaster but our collective process of thinking, designing and making Christchurch.

---

2 See B Bennett, Eugenio Boili, Irene Boles (Eds), Christchurch the Transitional City Pt IV (Christchurch: Freerange Press, 2012), 50–1.
LUXCITY – directed by Uwe Rieger for Studio Christchurch, produced by FESTA for the Festival of Transitional Architecture 2012. Photo: Bridgit Anderson

Crowds packed the empty streets for LUXCITY at FESTA 2012. Photo: Bridgit Anderson
Altitude, a project by Unitec students at LUXCITY, FESTA 2012. Photo: Bridgit Anderson
174 LIVE AND INTERACTIVE PROJECTS

LUXCITY had an urban scale. FESTA 2012. Photo: Mark Gore

Fabricio Fernandes’ Nomadic Sauna, presented at FESTA 2013. Photo: Ed Lust
Makeshift, Picture House, FESTA 2013 Photo: Ed Lust

Free Theatre’s Canterbury Tales, FESTA 2013. Photo: Jonny Knopp
Free Theatre's Canterbury Tales, FESTA 2013. Photo: Jonny Knopp

Studio Christchurch's City-Ups, FESTA 2014. Photo: Erica Austin
ABSTRACT

Gaby Montejo’s collective performance artwork ‘Milkfight’, FESTA 2014. Photo: Emma Byrne

Studio Christchurch’s City-Ups, FESTA 2014. Photo: Jonny Knopp
Patrick Hegarty, Madeline Sewall & Jayden Kenny, Dematerialization, FESTA 2014. Photo: Chloe Waretini
Hothousing Collaborative Research

HELEN NORRIE
University of Tasmania, Australia

TRACEY WOODS
University of Tasmania, Australia

Collaborative design research between the School of Architecture & Design at the University of Tasmania and architectural practice Cave Urban, was central to the construction of a bamboo pavilion for a major international arts festival. The structure housed two events of contrasting scale: an intensive ‘think tank’ for a small team of 24 people working intensively across a tight 72 hour time frame; followed by a large-scale public winter feast as part of a festival celebrating the dark through large-scale public art, food, music, film, light and noise.

The project drew on an existing portfolio of research into traditional and contemporary bamboo structures and construction, which had been developed by the architects’ previous collaboration with key international artists and designers. It was run as part of the Advanced Design Research selective in the Master of Architecture programme, and involved cross-disciplinary engagement with the Tasmania College of the Arts (TCotA), practicing artists, event designers, and bamboo-engineering specialists.

The programme was scheduled as a series of three intensive workshops. A research and design phase involved experimentation with full scale prototypes and scale models to explore the material and formal qualities of bamboo, which informed the schematic design that was used for engineering and council approval. The detail design was resolved on site through the construction process, which involved a team of 25 people were involved in the three week period. Design research was extended into the dismantle phase, which involved structural testing to expand knowledge of bamboo construction techniques. This studio provided the opportunity for students to work with expert collaborators, to expand practical and theoretical knowledge through the development of a design for a civic event space. This provided a strong contrast to the usual drawing-led method of design that underpins traditional architectural studios in universities.
of the project, with the design needing to be
developed, signed off by the stakeholders and passed
through the building approval process and then
constructed in a period of 14 weeks.

**HOTHOUSE AS LEARNING-BY-MAKING**

The Hothouse project is part of the Learning-by-
Making (LBM) stream that has been central to the
University of Tasmania’s architecture curriculum
over the past 20 years. LBM projects integrate
building technology and design through a process of
experience-based learning. Projects involve various
of teaching and supervision models, ranging from
groups of students work independently to design
and construct projects, with staff acting as facilitators
who provide guidance and practical demonstration
doing construction processes, through to the ‘master/
apprentice’ model, in which the students shadow
the ‘master’ designer-maker, acting as their assist
or ‘apprentice.’ The Hothouse project provided a
unique opportunity to follow the master/apprentice
model, as the collaboration with the architects and
a team of builders on site provided the high level
of supervision needed for this model. The project
created a unique form of Work Integrated Learning
(WIL), which provided ‘authentic learning’ through
the direct engagement of the students with an
architecture practice, and as part of the festival
events team. Working with builders, a specialist
bamboo construction team, and artists created a
platform for interdisciplinary collaborative design
research that extends contemporary practices of
bamboo construction.

The project was conducted in four intensive
workshops across the semester: project briefing,
design, construction and dismantle. Throughout
the process the students were mentored to master
a broad range of skills from research to design and
construction, and throughout the project they began
to take an increasing role in leadership. Students
were assessed both individually and as a group,
based on contribution and their critical reflection
that evaluated the processes of design, construction
and process of team work and decision making.

The project involved a high level of
experimentation, actively engaging the whole team
in design research into bamboo structures. The varied
physical properties of the bamboo meant that the
design and construction was typified by exploration
and testing, creating a process of trial and error.
This process of reflection-in-action formed a critical
practice that provided a dynamic and reflexive form
of praxis. The architects exploited this process to
allow them to expand the limits of knowledge and
to create projects that are as much experimental
installations as they are buildings.

Our philosophy as a firm is to use research
in order to investigate a different approach to
architecture that tests in situ what we can and
can’t do with a material. At times that means two
steps forward and one step back, but we find
this process allows for the best result in a design
that is utilising non standardised materials.
For us design is all about flexibility and being
open to the notion of new possibilities, if an
opportunity presents itself. For those used to a
more conventional way of doing things, this can
be at times challenging and frustrating.

**WORKSHOP 1: PROJECT BRIEFING**

At the start of the project, it was necessary for the
students to quickly develop an understanding of
the structural properties and formal possibilities of
bamboo. An introduction was provided in an initial
lecture by Cave Urban, which was followed by a site
visit to document the wide colonnade of deciduous
trees that would define the spatial parameters of the
project. Mapping the location of each tree and the
profile of its canopy provided an understanding of
the building’s scale and allowed for an engagement
with the qualitative aspects of the site. Information
was collated by the students, and sent to the
architects for revision, with the teams connecting via
Skype and teleconferences to discuss the preparation
of the base site drawings. This process mirrored the
traditional supervision that would occur in practice,
with the iterative feedback highlighting to the
students the need for precision and detail, beyond
that of a typical speculative design studio project.

In parallel, research into bamboo structures,
both historical and contemporary, was initiated
by students reviewing Cave Urban’s portfolio
of a bamboo projects from many cultures across
the world, and collating additional examples of
other precedents that might inform the qualities
of the project. Students were also encouraged to
experiment with making bamboo structures, and to
gather information on a range of other materials that
could be used in the construction process.

**WORKSHOP 2: DESIGN, DOCUMENTATION
AND PRESENTATION**

Both the design and the preparation of presentation
drawings and models was completed in an intensive
four day workshop. This stage of the project served
as a basic training session in bamboo construction,
with Cave Urban providing practical demonstrations.
of ideas, which were experimented with by the whole team. The design process involved the testing of spatial and structural ideas through 1:20 scale models, and the construction of a 1:3 scale mock-up of a prototypical structural idea presented by the architects. This allowed the students to develop a hands-on understanding of bamboo construction; a process that represented a significant shift in the students’ understanding of design, particularly an appreciation the overlapping of structural and sculptural qualities. It established an appreciation for the process of trial and error that became central to the on-site construction.

This workshop cemented the interpersonal relationships within the team. The students began to understand the dynamics and expertise within Cave Urban’s team, as they became part of the process of negotiating the content and format of the drawings and electronic presentation. This process was lead by the architects, with the students producing drawings, renders and montages and participating in the decision-making about graphic content and format, in a manner that replicated an office scenario, particularly during design competitions.

The project contrasted with the university’s Learning-by-Making projects traditions, which
generally use more conventional materials and construction processes. Research was central to the design and construction process, utilising various modes of design research that can be understood in terms of Christopher Frayling’s tripartite model of research into/for/through design.\textsuperscript{\text(1\text)} Research into design involved a critical investigation of pavilions for performance and public events, both historical and contemporary, while research for design examined bamboo precedents, particularly analysis of structural and construction systems. The development of prototypes across a range of scales allowed for formal testing of the structural and aesthetic ideas, providing an understanding of structural performance and establishing a process of research through design.

**WORKSHOP 3: CONSTRUCTION**

Understanding the physical properties of the bamboo was central to the design and construction. Four different species of bamboo were used, and it was necessary to be able to visually identify the different types and understand the different structural characteristics, particularly flexibility and strength. Two container-loads of 2000 bamboo poles needed to be sorted in order to be able to keep track of the amount of different types that were available, as this needed to be factored into the design and construction decision-making. Each stage of the assembly involved a process of testing to see what worked, and adapting both the overall strategy and the execution of each component to suit. This meant that although the project involved a series of essentially repetitive tasks, each step also required an evaluation of techniques and composition. This provided a very clear illustration of the relationship between design and detail, highlighting the nexus between structure and aesthetics.

Unlike conventional building projects, where the design is documented and then implemented through construction, in this project the design continued to develop throughout the 23-day design/build phase. The project was not documented in the traditional sense, with a full set of general arrangement and detail drawings. Instead, the design principles for an overarching spatial and structural strategy were developed through sketch drawings, montages and models. The various stages of site set out, column erection, beam construction, roof cladding, and layering of internal secondary structure involved a high degree of experimentation.

The initial intention to construct a hybrid of a bamboo forest and a Gothic cathedral was achieved through the addition of the secondary layer of bamboo to create a series of fan vaults, which was both aesthetic and structural. The lighting design was a key element, transforming the scale of the building from day to night. Amber yellow light at the base of each column graded to fire red at the top, reflecting the ‘fire’ motif of the mid winter festival. The columns provided a surface to receive the light, doubling the height of the building and increasing its scale and sense of theatrical spectacle during the long winter nights.

Although the finished building looked very similar in character to the montages and models, there was a
fundamental shift in the structural system used. It was originally intended that the triangular bays would be constructed from a series of arches, as explored in the 1:3 scale mock-up. However, the bamboo was not as flexible as anticipated, and after an exhaustive process of experimentation, a structural system of columns and curved beams was adopted. The construction of the first set of beams in the central bay was very complex; aligning the structure to ensure that beams were evenly spaced in relation to the centre also involved a process of trial and error. Also, as bamboo was added to the structure the additional load caused the columns to spread out, and the bindings needed to be adjusted and reinforced. This required a coordinated approach, with one team focusing on the construction of the beams and another focusing on the effect that this structure was having on the columns. This created an ongoing process of testing and critical reflection, continually building knowledge about the performance of the structural system.

MASTER APPRENTICE MODEL

During construction, the Cave Urban team expanded from the initial three members to between 5–8 people, and they were joined by a site construction crew of four. The 10 architecture students were
joined by a group of art school students, which varied between 2 – 6 volunteers per day. This meant that the ratio of skilled and experienced masters (architects and construction crew) and apprentices (architecture and art students) was roughly one to one. All the tasks required teamwork, and each team was formed around the guidance and leadership of one of masters. As the students gained construction expertise and an understanding of the structural system they were able to become collaborators in the decision making. Each of the students also became an instructor or master as new volunteers – apprentices – joined the team throughout the process. This created a high level of peer-to-peer collaboration, which required communication within each team, and with the project leaders.

Separate teams worked on particular tasks, and everyone rotated between tasks to gain a holistic knowledge of all the construction processes. By end of the second week the whole team had become familiar with all of the different construction methods, and they were able to move between tasks as required. The construction process was characterized by a sense of measured calm, even in the final stages when there was a need to work more quickly to complete within the timeframe.
The constant communication between the team was central to the refinement of techniques for jointing and assembly. The distinction between master and apprentice dissolved, as everyone gained knowledge, skills and confidence.

Construction as a process of design research

Understanding the relationship between each component and the overall structure was central to the process, and this facilitated a constant testing and evaluation at micro and macro scales, and ongoing discussions between the team. For example, there was an understanding of the importance of the strength of the bindings to the overall integrity of the structure, reinforcing the need to share of knowledge and techniques, and to continually test the effect of details on the overall structure. A similar evaluation of detail in relation to overall form was played out in other aspects of the project.

Workshop 4: Dismantle

Design research continued through the dismantle phase, which included structural testing of components. Stress testing of the central bay, which was overseen by a rigger and an engineer, allowed the team to measure deflection, and observe the performance of individual components, providing new knowledge into bamboo systems. The majority of the materials were recycled, including the bamboo poles and splits, ropes, cable ties, Duralock channels for the roofing system, and the plastic roofing itself. By this stage the team had developed very clear processes of collaboration; the teams that had been formed in the construction process continued to work together, constantly gauging what others were doing and joining in to assist where possible. Everyone took leadership over a particular task, including the sorting and recycling of materials. The structure was dismantled in three and a half days, including clearing the site of all debris and packing the materials in a container for reuse.

CONCLUSION

The brief to create a structure that could serve both an intimate think-tank discussion and a largescale festival event, that was warm and dry in the middle of winter and made from bamboo, was wildly optimistic. The shared learning that was central to the initial design workshop allowed the whole team to develop an inherent understanding of the founding strategy of the project, which was developed through invention and experimentation. This resulted in new research into bamboo structures, building the whole team’s knowledge and expertise, and adding to Cave Urban’s research portfolio.

The architects’ experience in working with a large team of volunteers was invaluable, and they shepherded the students’ transition from apprentice to master collaborator. For the students, the speed of decision-making contrasted with the design process of traditional student design studios and this presented a significant learning experience. The students commented on how this process highlighted the need for confident and quick decision making, and the importance of communication within the team and the need to work strategically in order to meet the time frames of the project. This created a steep learning curve, but by the end of the second week the students had began to understand the dynamic both between architects and with the construction crew, and were able to negotiate their position within the team.

The building process was supervised by a site manager, whose experience on fast, temporary constructions for festivals was essential to the dynamic project with a team of 20–30 people. Adjusting the construction process to comply with Workplace Health and Safety (WHS) requirements was a constant challenge. The mismatch between the rectilinear scaffold and scissor lifts, and the curvilinear structure needed to be continually negotiated, with the site manager keeping a close eye on the team, who in turn were instructed to continually observe the practices of others. This provided the students with significant insights into the relationship between construction techniques and building form, as ways around these challenges were negotiated.

Working directly with Cave Urban and the construction crew provided a unique form of Work Integrated Learning, where the roles and responsibility of the various parties were demonstrated, and the students were privy to the complex, and sometime fraught, negotiations between design and construction. The ratio of masters to apprentices presented a unique learning opportunity, which allow students to become central agents in collaborative design research.

A sense of camaraderie was built between the students, particularly as they debriefed with each other and the end of each day. By the end of the project they were able to clearly articulate the different relationships and hierarchies on site, and understand the different lines of leadership in a seemingly unstructured process. The students recognised the need to embrace the experimental
nature of the project, and this allowed them to understand the value of trial and error as a design process, which contrasts strongly with the process of design through drawing. Throughout the project the students’ confidence with this new process develop, allowing them to become key members of the collaborative design research into bamboo structures.

1 Wallis, Louise. Learning-by-Making: Design-build studios at the School of Architecture at the University of Tasmania (Masters thesis, University of Tasmania, 2005).
4 Personal discussion with Cave Urban.
This paper presents a series of interrelated architectural design studios and technology electives at the University of Technology Sydney that ran from 2009–2011. They involved a long-running, live project partnership with the civic authority Ku-ring-gai Council and integrated student collaboration with local fabricators to construct numerous prototypes utilising state-of-the-art computer numerically controlled fabrication processes and innovative materials. Multiple cohorts of students from the Masters and Bachelors degrees participated, each building on the ideas of the previous team in a cycle of collective learning that culminated in the 2014 construction of a prototypical park structure at Greengate Park in Killara, Sydney. This has been a success story for both the University of Technology Sydney and Ku-ring-gai Council: with the author awarded a competitive UTS Learning & Teaching Citation in 2011 for her development of innovative strategies for experiential learning through prototyping; and the Greengate Park structure winning the 2014 Parks and Leisure Australia Award for Open Space Development (NSW). Both awards recognise the partnership as an exemplar of best practice; however, deeper pedagogical questions remain as to the nature of learning taking place within the live project and prototyping paradigm. This paper examines the role of the live project and prototyping as a specific form of inquiry-based learning that may optimise learning experiences applicable to architectural design and facilitate creative outcomes through collaboration and collective learning. It analyses the structure and outcomes of the case study courses to identify some of the factors that influenced the students’ learning experiences and their development of the research skills necessary for practice-based research in architecture.

The linking of teaching and research has always been an essential ingredient of a university education to develop the higher-order graduate competencies needed to support active inquiry in a
A problem for architectural educators lies in defining the nature of research as it relates to a creative discipline. Many argue that research in architecture has been undervalued by the constraints of a scientific paradigm and call for a broader understanding of research that recognises methods and processes as research because they “help us look at the world in a fundamentally new way.” Thus creative outcomes produced in the university architectural design studio often have claims to being research, producing knowledge not obtained by a reliance on facts, hypotheses and reproducible results, but through speculative and inventive inquiry.

The live project is one of a number of inquiry-based contexts shown to elicit optimum learning outcomes by engaging students in the production of their own knowledge. It establishes a collaborative engagement between an educational institution and a real client in response to a real brief, time frame and budget in real-time, resulting in a defined product. Prototyping is often integrated as a specific form of inquiry-based learning and a particular type of design/build method—an analogy to the sophisticated prototyping activities employed by innovative architectural practitioners. It is the process of creating a specific type of model, built from representative materials in three dimensions, often at full-scale, to explore design alternatives, test theories and confirm performance of materials, structure and assembly processes prior to starting production.

Like other inquiry-based learning activities, including problem-based learning, practice-based learning, experiential learning and active learning, prototyping is student-centred and takes place through reflection on what has happened and why. The students construct their own experience in the context of a particular social and cultural environment and the role of the teacher is to facilitate. The live project provides a collaborative context that can enhance student prototyping activities by exposing students to the “variety of people implicated in architectural processes” and real issues of context, community engagement, socially responsible design conditions and uncontrollable complexities which might not otherwise be appreciated when prototyping is employed in isolation.

It also invites students to work between theory and practice: between the speculative and the proven in material and construction; between the innovative and the conventional in architectural form; and between the extraordinary and the mundane in spatial experience. The lines between the pedagogical and the practical are often blurred as student prototyping investigations embrace “design speculation, sociological strategies, and construction technique.”

Publications profiling impressive student-built prototypes produced within the university design studio are often divorced from any consideration of a broader theoretical context that might allow an assessment of pedagogical value in terms of the collaboration and collective learning that links teaching and research. Some outcomes have been extensively written about as products of research-based processes, such as the ‘Rural Studio’ at Auburn University and the prototypical pavilions constructed annually by students at the London Architectural Association. The success of both programs is that they build upon a well-established knowledge base and are part of an extended research program and pedagogical plan. Other literature emphasises the investigation of contemporary architectural problems, exploring “the gaps between digital design and making and between scales and modes of production;” experiments “to push material limits for greater performance and … investigate aesthetic values and psychological effects;” and collaborative studio projects “to learn...
### Table 1: Summary of the UTS architectural design studio and technology elective courses that provide the case studies for this paper.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Semester</th>
<th>Year</th>
<th>Type</th>
<th>Student Level</th>
<th>Lecture Format</th>
<th>Group Size</th>
<th>Student Outcomes</th>
<th>External Collaborator</th>
<th>Product / Student Outcomes</th>
<th>Site</th>
<th>Timescale</th>
<th>Budget</th>
<th>Facilities</th>
<th>Assessment Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>11506</td>
<td>Fabrication Technologies</td>
<td>Spring Semester</td>
<td>JUN–NOV 2009</td>
<td>Core Design Studio</td>
<td>M.Arch</td>
<td>30</td>
<td>students + local fabricators</td>
<td>Prototype &amp; small scale models of design proposals.</td>
<td>client (KC) + local fabricator</td>
<td>1:1 prototype folded Alucobond® &amp; 1:2 prototype of vacuum-formed panels</td>
<td>Speculative – Turramurra Memorial Park</td>
<td>13 weeks semester</td>
<td>UTS T&amp;L Grant</td>
<td>Computer lab / architecture studio</td>
<td>3 tasks: 1. Research into 5-axis CNC milling and fabrication of test prototype (I) 2. Design for picnic shelter (I) 3. Development of selected design to fabrication-ready (G)</td>
</tr>
<tr>
<td>11362</td>
<td>Fabtech Special Project</td>
<td>Summer School</td>
<td>JAN–FEB 2010</td>
<td>Elective</td>
<td>M.Arch</td>
<td>10</td>
<td>students + local fabricators + structural engineer</td>
<td>New techniques for casting mass-customised precast concrete elements &amp; prototypes at 1:1, 1:2</td>
<td>client (KC) + local fabricator</td>
<td>1:1 prototype folded Alucobond® &amp; 1:2 prototype of vacuum-formed panels</td>
<td>Speculative – Turramurra Memorial Park</td>
<td>2 weeks intensive</td>
<td>UTS T&amp;L Grant</td>
<td>Computer lab / off-site manufacturing / architecture studio</td>
<td>2 tasks: 1. Roof canopy development exercises in Rhino &amp; Grasshopper (P) 2. Resolution of roof canopy fabrication / construction of prototype at 1:1 or 1:2 (G)</td>
</tr>
<tr>
<td>11505</td>
<td>Material Technologies</td>
<td>Autumn Semester</td>
<td>FEB–JUN 2011</td>
<td>Elective</td>
<td>M.Arch</td>
<td>18</td>
<td>students + PhD candidate</td>
<td>Resolved design in precast concrete &amp; models, prototypes, working drawings for tender/construction</td>
<td>Fictional – Great North Walk</td>
<td>13 weeks semester</td>
<td>Self-funded</td>
<td>Computer lab / dedicated workshop for concrete casting</td>
<td>3 tasks: 1. Experimentation with innovative concrete casting techniques (P) 2. Design for walkers’ hut (I) 3. Fabrication of mass-customisable forms and concrete prototypes (I)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11362/11307</td>
<td>Concrete Special Project</td>
<td>Winter School</td>
<td>JUN–JUL 2011</td>
<td>Elective</td>
<td>M.Arch &amp; B.Des Arch</td>
<td>5 P/G + 7 U/G</td>
<td>students + architect tutors + structural engineer</td>
<td>5 P/G + 7 U/G</td>
<td>student presentation to KC</td>
<td>Real – Greengate Park, Killara</td>
<td>Real – Greengate Park, Killara</td>
<td>4 weeks intensive</td>
<td>Client-funded</td>
<td>Computer lab / dedicated workshop or concrete casting</td>
<td>3 tasks: 1. Preliminary documentation package, models &amp; prototypes (P) 2. Tender / construction documentation package (G) 3. Personal reflection on learning (I)</td>
</tr>
</tbody>
</table>

*Note: the UTS assessment policy limits group work to 40% of a student’s final mark. Therefore strategies often had to be implemented to assess individuals on the work they contributed to, and produced within, a group process.*

---

Table 1: Summary of the UTS architectural design studio and technology elective courses that provide the case studies for this paper.
about performance and its concrete relation to spatial situations. American case studies often employ prototyping to link the digital and material worlds, while European examples use reverse engineering to break a digital form into component parts that can be physically reconstructed. The practical and applied are foregrounded throughout the literature, with strong evidence of student involvement and relevance to the profession. However, the question remains, is deep learning occurring through participation in these activities? What is good practice and how can it be conceived? And does the collaboration and collective learning facilitated by student prototyping processes link teaching and research?

In 2009 the author initiated a live project partnership between UTS and KC, which was seeking alternatives to the standard off-the-shelf shade structures for its parks. It was initially conceived as a single-semester commitment but the design challenges saw it extended over multiple semesters from 2009–2011 and across a series of interrelated design studio and technology elective courses: 11506 Fabrication Technologies Design Studio, 11362 Fabtech Special Project Elective, 11505 Material Technologies Design Studio and 11362/11307 Concrete Special Project Elective (Table 1). All were conceived around a desire to foster links between teaching and research and were carefully structured to follow the methods and findings of inquiry-based learning.

The prototyping approach necessitated group work because of the large scale, considerable cost and time constraints, but the group work was also modelled on the collaborative teamwork that occurs in architectural practice. Students and tutors worked together, with students initiating ideas that drew on their individual knowledge, experience and research, and tutors bringing additional knowledge to their development. After a number of cycles of experimentation and reflection a plan of action was agreed upon and a prototype of the virtual design was built to test it against the reality of factors such as gravity, material properties and performance of connections, none of which could be fully understood in the virtual environment. The final step was to reflect on the prototype’s performance and whether there were other or better solutions.

An important element was the gathering of qualitative staff and student feedback. At the conclusion of each course, students participated in focus groups conducted by an independent focus group convenor, with questions designed to explore their understandings of the purpose of the course: their awareness of participating in a research-like activity; their perceptions of working within a community of practice; their understanding of the nature of the interface between the digital and the material; the value they placed upon having a real client / live project; and whether they thought the structure of the studio came close to simulating what goes on in practice. Students also maintained blogs documenting their personal design and research processes, engagement in the collaborative process, and reflections on the outcomes and what they thought they had learnt. The resulting data was
interpreted against findings in the literature.

As Table 1 demonstrates, each course developed its own particular character. In 11506 Fabrication Technologies, students collaborated with a local fabricator to explore the architectural applications of his five-axis CNC milling machine. In 11362 Fabtech Special Project, a spin-off from 11506, students developed the design of the roof canopy as a single layer system. They constructed a fullscale prototype from folded Alucobond®, cut and scored using CNC tools at Make Good Pty Ltd (Figure 2) and a half-scale prototype of vacuum-formed plastic roof panels shaped from CNC milled moulds fabricated by Warringah Plastics (Figure 3). In 11505 Material Technologies, students were introduced to precast concrete and developed an innovative mass-customised casting system of moulds folded from CNC-cut and scored polyethylene terephthalate sheet. In the spin-off elective, 11362/11307 Concrete Special Project, this casting technique was refined and applied to the final design (Figure 9) for a park structure at Green Gate Park in Killara, Sydney that was built by a commercial construction company in early 2014.

In structuring the prototyping activities careful consideration was given to methods of providing students with enough knowledge and “scaffolding” to support each stage of their self-directed investigation.18 This included lectures, structured research activities, teaching of software, visits to industry, guided workshops and input from architectural practitioners and other members of the construction industry. The students learnt to apply the generative and modelling tools available in Rhinoceros® software with the Grasshopper® plug-in to predict physical outcomes and structural performance and interface directly with CNC machinery. In 11506 Fabrication Technologies, they were introduced to the subtractive three dimensional numeric fabrication process of CNC milling in a structured exercise to design and mill the surface of a plywood panel (Figure 4). In 11505 Material Technologies, they were introduced to precast concrete and casting methods through factory and site visits and an intensive workshop where they followed a highly prescriptive concrete casting process (Figure 5).

After these initial “scaffolded” activities, students moved from the teacher-led stage of acquiring existing disciplinary knowledge to an increasingly student-led and discovery-active stage in which they pursued their own lines of inquiry to produce creative outcomes. Their processes were similar to those adopted by architectural practitioners.
engaged in practice-based research, but limited by time constraints and their lack of architectural experience.19

The live project for KC lent itself to establishing communities of practice because the project scope exceeded the abilities of any individual student, requiring the collaborative sharing of responsibilities and good communication.20 Students were brought together with tutors from academia, architectural practitioners with expertise in computer aided design (CAD) and computer aided manufacturing (CAM), industry fabricators, and a structural engineer. An important aspect was linking the research interests and expertise of academic staff with the student investigation to enable co-learning and the “building of knowledge within a social context.”21 The students valued the richness of the collaborative environment and discovered the benefits of drawing upon the wealth of construction knowledge within the community of practice.22 Likewise the two fabricators, Make Good Pty Ltd and Warringah Plastics, advanced their own organisational understandings of CNC fabrication processes, not commonly used in local construction practice.

The contingent character of the KC live project strengthened collective learning by placing a focus on discovery-oriented processes of inquiry.23 A “positive learning cycle” was made more significant by the “authentic context” which led the students to more willingly absorb the lessons learnt from the experience and to draw upon this to inform critical judgement about appropriate next steps.24 The client, KC, was unwavering in its requirement for a robust roof to the park structure that would be strong enough to withstand the nocturnal activities of teenage vandals. This directly contradicted the students’ preferred concept for a light canopy, poetically abstracted from the canopy of a tree (Figure 6). It also appeared incompatible with the fabrication processes and innovative materials that the students were seeking to employ. As a result they were forced to embrace the “contingent character of contemporary architectural practice,”25 and to devise a process to navigate – rather than ignore – the real-world constraints. Nevertheless, some students in the first studio, 11506 Fabrication Technologies, felt inhibited by the client constraints and did not recognise as research their iterative process exploring new applications of CNC technology to architecture. One commented that, “All these practical considerations ended up just killing what could have been.”26

The second studio, 11505 Material Technologies, was more successful in assisting students to recognise they were engaging in collective learning through their iterative processes of material experimentation. As they evaluated their precast concrete prototypes against digital models, performance criteria and aesthetic frameworks, they understood that the precast concrete prototypes were not an end in themselves, but a small step in a long-term research process shaping architecture’s future possibilities (Figure 7). One student observed that: “we were going back and forth. So you did your physical experiment, then you went in to do digital. … They’re interactive with each other for me.”27

In the prototype finally built at Greengate Park, CNC technology was employed indirectly to produce moulds for mass-customised precast concrete panels that evoked the original tree canopy concept through structure and surface rather than through material, light and shade as originally intended (Figure 10). Students recognised the primary significance of their
process of devising the innovative casting method as forging the links between teaching, research and learning. The four UTS courses involved prototyping activities as a form of research to enhance collective learning. However, students appreciated this more strongly in some situations than in others, with the 11505 Material Technologies studio being the most successful in terms of student identification with a research process. The differences can be attributed to variations in course structure, community of practice and the degree to which practice-based research was openly discussed with the students. Others have found that a strong research-teaching nexus exists in situations where students are aware of their role as apprentice researchers. This was borne out in 11505, where the students started as “apprentices” learning casting techniques, before progressing to a status more akin to that of a research assistant, working alongside their tutor, a PhD student (Figure 8). In contrast, in the 11506 Fabrication Technologies studio, although students could see their iterative process as moving between theory and practice, they did not recognise it as a form of practice-based research. This is partly because the tutors did not speak of these processes as being a research investigation that could contribute to knowledge.

It is evident that students need to be given clear information about what constitutes research in a particular discipline and how they might be engaging in it. This is particularly important in a creative discipline like architecture where the nature of research is contested. Even the most speculative design inquiry can contribute to knowledge and be thought of as research if it is documented in a public form that allows for evaluation within a theoretical or practice framework.

The system of studio teaching tends towards design practice as research by engaging students in a research and learning process, the outcomes of which are made public through assessment by external juries, public exhibitions and installations, and publications ranging from catalogues to more scholarly articles such as this one.

In conclusion, prototyping is a form of inquiry-based learning that is frequently integrated with live projects that incorporate a design/build component. As such it is well placed to contribute to the research-teaching nexus but must be carefully structured if it is to be as effective as possible in engaging all students in a deep and collective learning experience. Reflection on the UTS case studies supported by a review of the literature, points to a number of...
key considerations that may enable or limit the stimulation of creativity, the development of higher-order thinking and the optimisation of collaboration and collective learning.

The UTS case studies integrated a live project involving cutting edge CAD / CAM technologies and innovative materials as a catalyst to progress the theories and practice of architecture in an era of digital mass-customisation. They supported prototyping activities as a research activity for a client who was “curious and open-minded.”

The testing of ideas in this context provided ideal conditions for research to occur, allowing “everyone to learn together, with social and spatial implications tightly intertwined.”

Because prototyping is modelled on sophisticated processes drawn from the practice of experienced architects, “scaffolding” must be provided to support students with the relevant knowledge and skills at each stage of the process. Of particular importance is the establishment of a collaborative community of practice that ideally includes academic researchers in
their own field of expertise, representatives of the architectural profession and construction industry, and an engaged client. The cross-fertilisation of ideas made possible in this environment stimulates both creativity and the production of new knowledge. The timescale limitations imposed by the semesterised nature of university teaching must be kept in mind, for otherwise goals will not be reached, sufficient resolution of designs will not be attained to justify the effort of constructing a prototype, and students will not be rewarded with the physical outcome they were expecting.

One of the benefits for students of engaging in prototyping in the context of a live project is that they experience the difficulties and complexities associated with the physical act of construction first hand. However the greater benefit takes place when prototyping is conceived as a research activity. When prototyping emphasises iterative processes and reflection upon each stage, students learn a method of producing creative outcomes through a research-based process. It is imperative that students be made aware that prototyping is fundamentally a research-based activity and that it is just one of many research activities common to the discipline of architecture.

Figure 10: Detail of the under-surface of the concrete roof canopy as built. (Photograph: Adrian Boddy)

196 LIVE AND INTERACTIVE PROJECTS

19 Focus Group convened by UTS Institute for Interactive Media & Learning (IML), 2010.
20 Harriss & Widder, Architecture Live Projects, 5.
22 Student Comment, Focus Group convened by UTS IML, 2011.
23 Spronken-Smith & Walker, “Can Inquiry-Based Learning Strengthen the Links,” 736.
26 Student comment, IML Focus Group, 2010.
27 Student comment, IML Focus Group, 2011.
28 Spronken-Smith & Walker, “Can Inquiry-Based Learning Strengthen the Links,” 734.
30 Wortham, “The Way We Think About the Way We Think,” 49.
Subjective Place-Making Across Physical and On-Line Environments: Strengthening Personal Identity while Generating Community

SCOTT SKIPWORTH
OnLine campuses Think Education, Brisbane, Gold Coast, Melbourne, Perth, Sydney, Australia

In moments when we 21st century humans are prosthetically and/or remotely intimate with technology to perceive and act in local and remote physical and virtual environments, do we appropriate the technology into our embodiment? If so, this presents a crisis to a restricted understanding of an embodied experience as figural.

Philosopher Henri Bergson’s concept of meaning occurring through “durations” of a “multiplicity” of “images” offers a way to understand how multiple engagements develop one’s embodied identity. Bergson’s “images” are slices through “reality”, experienced bodily. This paper proposes a 21st century bodily update: the technological built environment (not available in Bergson’s 20th century world) is merged with one’s biological body, so one’s “image” occurrences are now place-making (generating meaning and identity). The potential is for a person to be a place (rather than being in a place). This paper advocates that neglecting this updated multiplicity of embodiment when considering and designing interior, architectural and urban environments is to miss providing for the 21st century client’s “real” needs.

This paper presents Think Education’s Design student projects that propose solutions for meeting 21st century “real” needs, including a Virtual Reality project to augment and connect our Ultimo, Sydney campus with our other campuses and online community. Think Education’s Virtual Reality Team consists of Digital Media and Interior Design faculty, students and alumni, with academic and industry leaders. We are using Revit and Unity software, stereoscopic 360 degree cameras, Oculus Rift technology, and smartphone VR glasses. Our goal is to strengthen online and on-campus students’ individual places/identities as they generate and activate a meaningful, communal campus place together. Key to generating meaning is for students to recognise that an individual’s past is in one’s present place-making and the campus building’s historic 20th century past is in its present 21st century place, contributing historic reference and present purpose to the Ultimo neighbourhood.

This paper proposes a repositioning of human embodiment for the 21st Century: no longer a distinct figure in relation to the built environment, but an expanding and contracting satellite system of the local and global built environment itself. Place is now across physical and virtual environments in the person’s embodiment. The 20th Century philosophies of Henri Bergson and Gilles Deleuze are given a 21st Century update so they are useful for collaborative Think Education design subjects and Think Education/Torrens University initiatives to advance digitally augmented environment projects.

20th Century architecture held the body captive, even as it strove to set the modern spirit free. Although 20th Century humans could rise to the lofty heights of skyscrapers, they could not appropriate this built environment into their embodiment. From the street level lobby to the sky level observation deck, their experience of self was limited to a biologically determined figural perspective; not advanced since the Renaissance championed a humanist awareness of figural embodiment centuries before.

I use the example of a 20th Century film that Think Education’s Billy Blue College of Design students investigate in the Bachelor of Interior Design’s Digital Worlds subject to portray how the human bodily experience needs repositioning: In Leo McCarey’s 1957 film, An Affair to Remember, the tragic plot twist located atop the Empire State Building and in a hospital bed exemplifies the frustration felt when the human desire to act remotely through a
personalised multiplicity of place is not provided the appropriate technology. The characters are trapped as bodies within places not of their own making. Following a love affair aboard a transatlantic ocean liner, the characters Nickie and Terry agree to meet at the Empire State Building observation deck to start a life together. Terry is hit by a car as she eagerly crosses the street to the lobby entrance, looking up at the Empire State Building’s spire. She is rushed to the hospital while Nickie anxiously waits at the observation deck for her to arrive. With each crowd exiting the lift, he looks in vain for his love, but she is trapped in the hospital bed unable to walk and disoriented from the accident. In a delusional, desperate plea to return in time to the place of the ship where she and Nickie were together in their affair, Terry screams out from the hospital bed “Nickie, help me turn the boat around!” He cannot hear her since he is not in the same place. This line from the classic 20th Century film can serve as an expression of an innate desire for an embodiment that extends beyond the figural, now intensified with 21st Century technology. Terry’s impassioned request is a call to action for 21st Century architects and designers to meet clients’ disseminated bodily needs by fostering opportunities in physical and online environments for clients to generate a subjective place, their own boat.

The tragic plot twist of *An Affair to Remember* is highly improbable to a 21st Century viewer. The 21st Century bodies of Nickie and Terry are not isolated, due to the characters’ appropriation of at least their mobile phones, if not many other devices, into their daily embodied lives. The challenge for an author and director to convince a current audience that two characters are not able to connect for their romantic rendezvous is complicated by the multiplicity of experience that technology provides. Perhaps the opportunity for poignant 20th Century disembodiment in romantic narrative is threatened; saved only through options to disengage.

**MATTER AND MEDIA**

Think Education recognises the need for designers of the built environment to consider the technologically updated human bodily condition of the 21st Century. The Think Education Virtual Reality Team consists of Think and Torrens University Digital Media and Interior Design faculty, students and alumni, with international industry partners Haworth furniture systems and Neutopia on-line learning platform and international academic partners Ringling College of Art and Design in Sarasota, Florida and St. Petersburg State Polytechnical University in St. Petersburg, Russia. The Think VR Team was formed to generate VR discourse and to promote projects that prototype augmented bodies and environments, including a VR project for Think’s Ultimo, Sydney campus.

The Think VR Team initiative is informed by the philosophy of early 20th Century philosopher Henri Bergson and his influence on late 20th Century philosopher Gilles Deleuze, with emphasis on Bergson’s interest in reality/meaning actualised through lived durations of bodily perceptions, affections and actions within the physical world and Deleuze’s attempts to prove that cinema provides Bergson’s lived durations. Bergson terms his bodily perceptions “imaging”. Images affect the human subject and provide options in which to act, with one’s free will. Memory informs these decisions. Chosen virtual images from memory can be actualised in the present. This process actualises the individual’s meaningful personality. Deleuze brings Bergson’s imaging concepts to cinema, thus providing a foundation for understanding how Virtual Reality’s 3D computer environments and augmented physical environments can be meaningfully experienced through our 21st Century technologically updated embodiment.

I argue that Deleuze would categorise the scene of the tragic plot twist in *An Affair to Remember* as a “Time Image”. Time imaging for Bergson and for Deleuze involves the past as actualised in the present experience. Nickie waits at the Empire State Building observation deck’s lift doors in hopes Terry will arrive. As the doors open again and again, he is disappointed each time. I interpret director Leo McCarey’s filming of the scene to show Nickie chooses from his memory a past image (of disappointment at the lift doors opening) to actualise in the present (of disappointment at the lift doors opening). The camera framing of Nickie held close to the lift doors emphasises an interiority focused on the repeated opening of the doors in the time imaging. The filmed duration of the “Time Image” allows the viewer to be drawn into the scene to empathise with the character. The viewer relates to what Nickie is thinking and feeling during his waiting time, recalling the viewer’s memory of her/his own waitings in the material world.

Bergson advocated an intuitive thinking into material objects (rather than an intellectual analysis of them) with a bodily empathy for the whole of the material world in which we participate. Our subjective will creates reality; inventing the
constantly changing physical world as we act in it, as part of it. Deleuze establishes a case for Bergson’s mobile, empathetic participation to happen in film through the director’s work to bring us into the scene. Students in Billy Blue’s Digital Worlds subject think themselves into cinematic environments by recognising film and video game scenes as imaging types, according to Deleuze’s interpretations of Bergson’s material environment experiences. Students argue that scenes are Deleuze image types of “Perception” (view of the overall setting), “Action” (movement of characters or objects), “Mental” (camera panning an informative environment), “Affection” (close up image to strongly affect viewer), “Time” (past in the present duration), or “Crystalline” (a scene/part expressing the message/whole) with an investigation into ways the camera creates new spatial experience, not just a recording of a physical or 3D computer modelled environment. Students argue that the role of the camera, the position and scale of film characters/game players, the set design or choice of location, the audio atmosphere and the scene sequence in relation to other scenes/montage create the Deleuze image types.

This film or game investigation prepares students to then design and direct a 3D website prototype, such that Deleuze image types are presented to the user. Students design the virtual 3D environment with attention to form, materiality, lighting and camera angles and framing to provide nearer and farther imaging experience options in which the user may choose to move and act as an avatar or camera view. The user self generates the imaging experiences in the digital spatial environment, meeting Bergson’s bodily needs as Deleuze proposed. Personalisation of the environment is available to the user, even as other users are personalising their experiences in the same 3D website, fostering subjective place making and community development.

TIME IS ON OUR SIDE

Bergson encourages us to celebrate being the creators of the world in which we want to live and to experience joy in its generation. In Billy Blue’s Design Systems and Planning subject, students explore a Bergson inspired bodily merger with materiality during a generative process to invent form and performance. Time is key in this subject’s approach to design and intended use of results. The Billy Blue students take a step-by-step generative design approach, letting a modular system evolve in time though analogue physical materiality exploration and computer modelling. The students first explore materiality through physical model making and choreographing bodily movement in relation to the built environment. Their movements suggest possibilities for performing functionalities of modular systems. Next, students computer model the results of the analogue materiality exploration. The computer is then used as a design partner in the process. Algorithmic functions of the 3D computer software replicate and modify modular arrays with unpredictable results. This step by step design exploration leads to proposals for a performing modular system that could be used to construct festival pop-ups. The modular system would respond to an attendee’s biological body, an attendee’s digital devices, number of attendees, and environmental conditions. The students’ inventive forms would be recognisable throughout a city as branding for the festival sites. The goal is for festival attendees’ personal places to incorporate these geographical festival sites, experiencing a heightened awareness of life’s reality during a purposeful, communal moment.

The 20th Century gave us Einstein’s theory of relativity and his contemporaries, including Bergson, rethought what time means for space and the real. As we now connect through a digital built environment, we body share the technology, including GPS satellites (for which time is at differing paces, calculated in monitoring time for our earthly devices). Thus our individual and shared body parts are in relativity different times. I think Bergson would have considered this 21st Century condition a win in the understanding of reality, or quest for meaning. A body across multiple locations in multiple times has the potential to generate an awareness of the real completeness of self; perhaps easier to grasp then when one was caught up in one 20th Century moment at a time.

Bergson’s philosophy remains useful because
it promotes invention in an ever changing world. So human bodies can become something other than they were before. A 21st Century bodily update advances from a Bergson appreciation of our biological body as part of the overall material world to digitally embodying material objects themselves for durations of time. We humans now respond to material imaging from multiple vantage points as a satellite system body. Are we now some of the material images presented back to ourselves? Deleuze philosophy is useful because it opens the possibility for cinematic/video experience in our current digital connection to have real embodied meaning. We can perceive from material objects, such as cameras, as well as our biological senses. We can move and act remotely through robotics. We can expand our capacities through computer processing units. Our empathy for material objects is increased as we appropriate them into ourselves. Understanding how this happens is best served by an intuitive summary of experience. We suggest what architecture should become by reporting what our bodies are becoming.

INTUITIVE INHABITATION
21st Century theorist Dr. Christopher Hight argues that the biological human body figure as an organiser of architecture is a “worn out residual”, already exaggerated by 20th Century architectural historians as an “a priori” condition, rather than the merely indulgent topic, manipulated in architectural discourse, that it often is. Permission is thus granted to 21st Century students everywhere to value the disseminated embodiment they currently experience in their appropriation of technology. Interior Design and Architecture students are liberated in their studio work to create personalised prototypes for augmented embodiment merged throughout the built environment, not bound to rigid notions of biological figure. Hight’s critique inspires a strategy and practice to provide new diagrams to organise an architecture for a multiplicity of embodiment.  

Think VR Team’s first deliverable is to augment one campus interior space to foster subjective place making by providing each user the agency to direct a cinematic experience of the physical interior. The user will be able to look around the interior through
VR viewers to interact with avatars and access digital info-visualisation. This is a realistic first goal. Interior Design lecturer Cecile Roux, with students and alumni, is 3D modelling the Think Ultimo campus and the Think Rocks campus using Revit software. Digital Media lecturer David Agius, with students and alumni, is bringing the Revit 3D computer model into Unity software to activate an interior space with info-visualisation and avatars. Head of Online – Digital Product Chris Ventura is trialling Oculus Rift viewing of the Unity models and 3D human scanning using 123D Catch to make avatars in the likeness of lecturers. Digital Media students are filming the physical campus interior space using stereoscopic 360 degree cameras.

This Ultimo campus interior augmentation project will be installed as an exhibition in the actual campus interior space with suspended smartphone VR viewers and Oculus Rift headgear stations for attendees to view the activated 3D computer model of the same interior. Faculty member avatars will give presentations. Our goal is for remote on-line exhibition attendees to access the augmented 3D interior through Neutopia, an online education platform, developed by Think academic and industry leader Jamie Engel. This is architecture as conduit, not container.

From what is learned in generating this exhibition, the Think VR Team hopes to further augment our Think campuses to provide students agency for personalised place activation and encouraged empathy for fellow students. To “blue sky” the Bergson and Deleuze inspired imaging opportunities of our Think VR Team’s campus augmentation vision, imagine a day in the near future life of a Think Interior Design student we will call “Tom”. Tom usually comes to the Think Ultimo campus building virtually, but today he comes as his biological body and prosthetic (closely held and worn) devices for a wellness incubator project meeting. Tom is sitting in the courtyard outside Think’s Ultimo building. As an example of embodying the built environment, we imagine Tom checking his wrist device to see through the building’s interior CCTV to confirm that his Think Psychology student team member is not waiting at their incubator pod yet. Interested
in Ultimo history, he holds his phone up to the Think campus building to see info-visualisation, including photographs of what the building looked like in the 20th Century. He attaches a VR viewer to his smartphone to watch a 3D model of the Think Ultimo campus building come to life with our Dean, Dr. Helmut Lueckenhäuser, presenting the history of the Federation style building from its start as the Wilcox Mofflin Ltd. storehouse designed by architect Ernest A. Scott, built in 1911. Tom then chooses to learn about the 21st Century interior design of the Think Ultimo campus. The building appears to open up its façade showing the interior spaces within, as Michael O’Brien, Head of Learning Experience Design, presents the campus’ interior scheme. Tom’s friend, a fellow student working inside, pops up in front of the building as a hologram to let Tom know that the Think Psychology student is now at the incubator pod and to make plans to attend a gym class and have lunch later that day.

**BECOMING**

While there will be need to foster opportunities for people to disembody from a digitally connected built environment for privacy and mystery, allowing life to happen in isolated remote locations (such as the poetic mishaps in romantic narrative), the strength of the human desire to connect predicts that satisfaction with the built environment will increasingly be determined by how well one’s technology can activate it. Across age groups from the “Millennials” to the “Silversurfers”, we 21st Century humans are becoming proficient at appropriating the built environment to express ourselves, to access information, and to connect with others.
across physical locations. Proprietary issues and financial inequalities to pay for services costs aside, 21st Century technology gives us opportunity to actualise ourselves as our own places in the process of connecting.

Place is now with the person, happening in time, in one’s life events on-line and during landings (physically or through remote access) at geographical sites. Public place happens in the duration of events when people’s places come together for shared purpose. Therefore, the built environment needs to be ready with responsive, adaptive technological capacities for us to appropriate it into our own digitally augmented subjective places. Our subjective place making is creative empowerment in the merged human body/built environment. The human body and spirit are in a less dualistic position than ever before.

“Spirit borrows from matter the perceptions on which it feeds and restores them to matter in the form of movements which it has stamped by its own freedom.” Henri Bergson\(^\text{11}\)

---

Outcome focussed planning and design and planning projects which are based on user and community participation. Projects are situated, based on reflection, empowerment, participation, vision or activism. They may involve investigations to support new social planning structures and offer alternatives to traditional practice.
ABSTRACT

Situated and Community projects

In many impoverished countries such as Papua New Guinea, rural migrants moving to urban centres are increasingly turning to landfills and garbage dumps as their habitat and source of livelihood. These populations scavenge sites under toxic conditions, looking for discarded items to eat, wear, use, sell or trade. Cultural compositions are in a constant state of dynamic flux, continually redefined as new migrant groups arrive representing different age groups, languages, religions, and needs – leading to tensions within the slum communities. Political engagement with these issues has become stagnant, as the slums are regarded as complex burdens on the state.

Waste at landfill sites such as Baruni Dump in Port Moresby is gathered and removed by the scavengers in one place while it is brought in anew by the city at another. The result is a ‘habitat’ that is fluid in form and content, changing rapidly and repeatedly over time (Figures 2 and 3) — sometimes forming mounds, other times depressions; sometimes highly toxic, other times of value (Figure 4). Both space and time for these rural immigrants are in a continual state of flux. Temporary shelter, waste, sanitation, access to water, income / livelihood generation and even the population’s changing ethnic composition all must respond to this fluid context. Architecture itself must respond to accommodate fluid site conditions.

The principal aim of this investigation is to consider how speculative architectural design – based on reflection, empowerment, vision and activism – can support new social planning structures and offer alternatives to traditional practice. Using Alain Robbe-Grillet’s 1976 novel *Topology of a Phantom City* as a provocateur, this investigation proposes a dynamic architectural design for the inhabitants of Baruni Dump in Papua, New Guinea. It recognises that yesterday’s future has indeed become today’s present. And for us to survive, it is now the role of architecture to provide for today’s tomorrow.

INTRODUCTION

Urban landfills such as Baruni Dump in Papua New Guinea (Figure 1) are becoming inhabited by rural immigrants who have no place else to live and scavenge for meagre supplies. Waste is gathered and removed in one place while it is brought in anew at another. The result is a ‘habitat’ that is fluid in form and content, changing rapidly and repeatedly over time (Figures 2 and 3) — sometimes forming mounds, other times depressions; sometimes toxic, other times of value (Figure 4). Both space and time for these rural immigrants are in a continual state of flux. Temporary shelter, waste, sanitation, access to water, income / livelihood generation and even the population’s changing ethnic composition all must respond to this fluid context. Architecture itself must respond to accommodate fluid site conditions.

The *nouveau roman* (or ‘new novel’) of the 1950s – 1970s was a type of French novel that challenged static time and place. This research investigation considers how the *nouveau roman* – specifically French author Alain Robbe-Grillet’s 1976 new novel *Topology of a Phantom City* — might act as a provocateur for generating architecture capable of dealing with fluid contextual dynamics. The principal aim of this investigation is to consider how speculative architectural design – based on reflection, empowerment, vision and activism – can support new social planning structures and offer alternatives to traditional practice.

ALAIN ROBBE-GRILLET

French novelist Alain Robbe-Grillet’s understanding of topological space suggests distinct parallels with the environment of Baruni Dump in Papua New Guinea, where contextual boundaries and conditions are not clearly defined, but merge and distort as context related factors change. As one of the founders of the New Novel movement, Robbe-Grillet not only championed the form but was also one of its most prolific writers and theorists. In his opinion, pre-New Novel literature had lost its capability to deliver an influential reader experience due to prominent authors of the time not recognising shifts within the surrounding social and cultural contexts.

Robbe-Grillet adapted conceptual bases of the mathematical definition of topology in order
Figure 1. Baruni Landfill, Port Moresby, Papua New Guinea.

Figure 2: Site Condition – Baruni Landfill

Figure 3. Fluctuation of Landfill Footprint at Baruni Dump 2002 – 2014
to garner a new literary reform. His translations transformed the mathematical definitions of the word – the measurement of folds, stretches, and transformations of irregular surfaces — utilising them to describe those spaces that had been ignored or left imprecisely measured by earlier writers, spaces that define our fluid environments. According to Professor Christophe Girot, Chair of Landscape Architecture at the Swiss Federal Institute of Technology in Zurich:

"Topological 'space' differs from Cartesian space in that it overlaps temporal events within form. Space then, is no longer a vacuum within which subjects and objects are contained; space is instead transformed into an interconnected, dense web of particularities and singularities better understood as substance or filled space."

Robbe-Grillet adapted three of the traditional definitions of the word topology. The first definition he uses is "the branch of knowledge that deals with the topography of a particular region and especially how this reflects its history." The second is the traditional mathematical definition of "the branch of mathematics that deals with those properties of figures and surfaces that are independent of size and shape and are unchanged by any deformation that is continuous and with those abstract spaces that are invariant under homeomorphic transformations."

The third, his interpretation of the mathematical definition, involves the way in which constituent parts are interrelated or arranged.

This permitted Robbe-Grillet to create adjacencies and connections between objects and events within the text to allow the whole to become greater than the sum of its parts. Robbe-Grillet uses the first definition to reflect on and draw parallels with reality. This definition deals with specific site factors including language, organisational structures and changing physical environments. In relation to the landfill condition, this approach has the potential to respond to pre-existing organisational structures to form synergetic systems within the shifting site. Robbe-Grillet uses the second definition to deal with the design of those factors that remain invariant under fluctuations of context. These factors can represent the invariant necessities for habitation such as sanitation, access to water, and access to a means of livelihood. Robbe-Grillet uses the third definition as a conjunction for the former two components. Within an inhabited landfill site the organisational systems of the first definition could therefore be populated with the invariant aspects of the second definition.

Robbe-Grillet’s novel *Topology of a Phantom City*
is organised in five parts called "spaces," where each space blends and merges into one another across time periods and points of view. The use of "rehearsals" of content within the text — where Robbe-Grillet "practices" scenes yet to come — builds a sense of non-chronological time and repetition. Robbe-Grillet portrays topological dislocations of space and time by utilising detail and the layering descriptions of properties of space to enable the reader to subliminally make connections between other parts of the larger work. This subtle manipulation allows Robbe-Grillet to create a literary space that no longer unfolds in linear chronological fashion.

This investigation proposes that within the context of the Baruni Landfill, this concept could be employed spatially by collaging attributes of site and intervention, thus permitting the viewer of the speculative end outcome to draw new understandings about the site and the problems it represents, as a stepping-stone to a project grounded in reality. As Robbe-Grillet explains, acknowledging the dislocation of time and space through the use of repetition, collage and the deforming of classical structure can manifest these conceptual ideas across a variety of contexts to make sense of a complex modern world.

As an architectural mechanism, the employment of these literary tools can be translated into spatially, using repetition and collaging of elements to create a better understanding of a complex and disorientating informal environment. Likewise, the deformation of traditional architectural typologies can be employed to permit the reading of differences and similarities between semi-static architectural sites and fluid ones.

Bruce Morrissette considers Robbe-Grillet’s ‘topology’ as one of the ‘primary intellectual operations capable of revealing the modalities of surfaces, volumes, boundaries, contiguities, holes, and above all of the notions of inside and outside’.

Topology may refer to the spaces within a text as well as to the implied spatial relationship between the intrinsic text and the extrinsic reader — relationships that could have ontological and perceptual implications and distinct applications within the realm of politically or socially motivated architecture. Lebbeus Woods argues that such attributes can afford specific opportunities in the realm of architectural design:

The architect who designs building non-types — the freespaces of unknown purpose and meaning — inverts the pyramid and creates new ones. Each inhabitant is an apex, placed on end, a point of personal origin. Each pyramid extends into a void of time, seeking its base, its terminus, that would render the volume a whole, total and coherent. But the base recedes before the advancing volume of experience, resisting completion. In the indeterminate darkness of the void, many pyramids interpenetrate and dissolve, one into others. They form a flux, a matrix of indeterminacy, an inconsistent pattern, a city of unknown origin and destiny, a politics not of being, but of becoming Ontogenetics.

Throughout Robbe-Grillet’s novel Topology of a Phantom City, the architecture of topological deformation, over and above any attempts at formal
and spatial dynamism, goes beyond the defined form and reveals the qualitative space of spatial relationships. Robbe-Grillet’s objective reality expunges pre-constructed meaning from the work while concurrently presenting a world onto which the reader is able to project his or her own “perceived meaning, thus becoming more immediate, more personal, and more real”. The ambiguity and disjunction between time and space found within Topology of a Phantom City provide moments in which readers can insert their own creative input and bridge the intentional gaps provided by a fragmented narrative sequence. Within most of Robbe-Grillet’s works, the sense of character found within the traditional novel appears to have been expelled; but in fact the reader is presented with the role of protagonist; in application to architecture, this ‘reader’ becomes the social conscience of the viewer of a speculative architectural response.

ARCHITECTURE AS A PATHWAY TO SOCIAL ACTIVISM

Rob Wilson, in his essay “Fighting the Banalities of the Built: Pop Capriccios, Visionary Videos and Beyond” in the book Fantasy Architecture: 1500 – 2036, states that over the last few years a “new boldness, bravura even, not seen since the 1960s”, has resurged in architectural design. Ideas championed by the likes of Fritz Lang, Franz Kafka and George Orwell have inspired new proposals for un-built, and often unbuildable, designs being created not just by architects but by many others working in different visual media – film designers, creative advertising, music video producers, fine artists and computer game programmers – reflecting both the general cultural climate and a new-found appetite for politically motivated architecture.

Increasingly architects are using design to increase awareness about social issues through the use of the utopian/dystopian duality. Studios such as Factory Fifteen hone in on diverse, complex political and social issues and express architectural issues created not just by architects but by many others working in different visual media – film designers, creative advertising, music video producers, fine artists and computer game programmers – reflecting both the general cultural climate and a new-found appetite for politically motivated architecture. Beyond Architecture bring together a wide variety of predominantly politically motivated architecturally influenced works, enabling even small works to attain a greater degree of influence. Consortiums such as Under Tomorrow’s Sky are an additional phenomenon of the current global environment. Organised by speculative architect Liam Young, this think tank of scientists, technologists, futurists, illustrators, science fiction authors and special effects artists asks questions of the current global condition and its direction for the future through the conceptual development of a future city, its challenges and opportunities. The goal of their work is a futuristic visual construction – a body of work obsessed with the possibilities and consequences of emergent technologies, conceived explicitly to spark discourse.

While evocative and provocative through their portrayal of an array of parallels and projections of current realities, these speculative works focus on the creation of a ‘vision’ rather than dealing with the intricacies of conventional planning of architectural space. Social discourse is reflected in the works of these artists and architects through vivid representations and reinterpretations of the world’s current city-scapes to drive alternative modes of thought. Designers such as Olalekan Jeyifous and Justin Plunkett present ideas of a degenerate futurism, yet one might find similar actual typologies and scenes in places such as the favelas of Brazil and North Africa and in overpopulated cities such as Lagos, Mexico City, and Mumbai. These familiar yet dissociated visions permit provocations that otherwise may not be possible to explore through traditional architectural methodologies.

TOPOLOGY OF A PHANTOM CITY

The design methodology for this research investigation uses Alain Robbe-Grillet’s novel Topology of a Phantom City as a provocateur for preliminary design studies responding to site as fluid in terms of space and time. This notion is conceived as a speculative interpretation of the landfill environment as perceived and drawn by a young inhabitant of the landfill. It utilises the topological literary transformations of Robbe-Grillet to generate a speculative “environment” by responding to the dynamic and fluid contexts of Baruni Dump. This process follows Robbe-Grillet’s methodology by beginning simplistically, collaging, distorting and changing points of view in order to break down the linearity and static nature of a typical design response.
Figure 6. Iterative Non-Chronological Design Process

Figure 7. Creation of Conceptual "Environment"
Figure 8: Design Solution – Waste Processing, Sanitation and Public Gathering as a speculative outcome.

Figure 9. Connection of ethnically diverse communities through a nodal network.
In discussing Topology of a Phantom City, Robbe-Grillet writes:

It doesn’t begin by giving the reader a general picture, it seems to spring from a minute and unimportant detail, which is more like a geometrical point than anything else — a starting point — from which it invents lines, planes, and a whole architecture, and our impression that these are being invented in the course of its description is reinforced by the fact that it suddenly contradicts itself, repeats itself, thinks better of it, branches off in a different direction, etc. But the lines go on accumulating, and it becomes overloaded; they contradict each other, and change places until the very construction of the image renders it more and more uncertain. This quote is used as a narrative to guide exploration in the initial phase of the research. The drawn environment (Figure 7) is composed of a series of movable architectural service nodes in response to settlement patterns of Baruni Landfill. This phase translates the literary tools used by Robbe-Grillet into drawing/spatial transformations in order to generate a conceptual environment for Baruni Landfill (Figure 8).

The final design outcome proposes architecture
in flux as a response to lives in a fluid state. Vertical service nodes capable of moving across the fluid field define the architecture (Figure 8). These nodes form mobile community centres for each immigrant group. It takes the idea of fulfilling the demands of life within this tumultuous setting and embodies them within a single expandable construction.

They provide them with water, energy, waste treatment and shelter. The nodes feed on the dump, dredging its materials and sorting them within the node for recycling. After waste materials are collected and sorted, the recycled materials are used to continue building the nodes. Every node is therefore constantly changing – a different height and a different configuration (Figure 9). The site beneath each node is also never the same; and the population within is in a state of flux as immigrants leave and new ones arrive. But the inhabitants can now survive safely, lifted above the toxic environment, and the recycled waste below providing for their needs.

The final design is expressed through a codex, Topology of a Phantom City, conceived as an architectural narrative paralleling Alain Robbe-Grillet’s literary narrative in Topology of a Phantom City. Our reading of the design is advanced through a speculative interpretation of the landfill environment – as perceived and drawn by a young inhabitant residing in the landfill:

CONCLUSION
Speculative architecture has the ability and potential to encourage discourse about dynamic social and political issues by combining the emotive aspects of the fantastic with the problem-solving, spatial attributes of architecture. Speculative approaches within architectural design can play a direct role in addressing critical social and environmental issues through the creation of speculative architectural visions tailored to provoke discourse. Speculative architectural design – based on reflection, empowerment, vision and activism – can support new social planning structures and offer alternatives to traditional practice.

Speculative architectural design, placed into the public domain as visionary work, can help ensure that vital social and political issues are talked about and the wider international community hears the inhabitants’ voices. This paper highlights ways in which new understandings of topology can be used to address the dynamic future contexts of fluid populations and fluid sites. It recognises that yesterday’s future has indeed become today’s present. And for us to survive, it is now the role of architecture to provide for today’s tomorrow.

We must keep our eyes open and recognise the directions our world and our urban environments may be headed. We must be proactive.

“Before I fall asleep, the city, again...”13
Figure 13. I enter the node through one of the many hidden entrances integrated seamlessly with the surrounding context. The phantom city is a labyrinth, designed by its inhabitants. . . . every twist and turn exhibiting life.

Figure 14. I deliver waste to the refinement drop off point. I see others searching through the heap for usable scraps, while the base of the pile is ground, decontaminated, sorted and reused as energy, building materials and fertiliser.

Figure 15. I pass sanitation facilities, overlooking the city, as a secure place. . . . a place of reflection.
Figure 16. From here I view the city and its intricacies. . . . How can a place so full of life once have felt so full of despair?

Figure 17. . . . A mirror of my reality


BARNABY BENNETT
UTS University, Sydney, Australia
TIMOTHY MOORE
University of Melbourne, Australia

In the four and a half years since the large earthquake that struck Christchurch on the 22 Feb 2011, a huge array of interventions, planning decisions, and design proposals have been made, affecting the lives of thousands of people and costing many billions of dollars. These actions are almost always neatly separated into temporal categories of the short-term and the long-term; temporary and the permanent. In this categorization there is a strange paradox in which the more immediate short-term actions are characterized as ephemeral and the paper ideas of the long-term more concrete and real.

This paper will look at the apparent tension between master plans that envision cities as finished objects and temporary projects that are formed in response to immediate issues and concerns. The relationship between these different forms of city-making is complicated because they can be complementary or in conflict – and sometimes both at the same time. Temporary projects can act as stepping-stones to a ‘finished’ city, they can subvert and undermine the long-term plans, or they can support some aspects while undermining others.

Concepts from Actor Network Theory will illustrate how heterogeneous forms of city-making – the temporary and permanent – can be productively described as the result of different types of collaboration. It is argued that the conception and planning of a new city and the design and construction of temporary amenities produce different experiences of time, and different forms of temporality.

The creation of a master plan in Christchurch – 18 months after the earthquakes – will be compared and contrasted with the making of a large temporary project called the Pallet Pavilion. Notions of public engagement strategies, finishing, and risk management will be articulated and illustrate how different the modes of temporary and permanent design operate in relation to the construction of the contemporary city.

“Temporary measures are vital to create momentum, but not at the cost of removing the imperative to create permanent solutions as quickly as possible.”

“A city is the sum of numerous changing temporary forms of use, which combine to shape the slow, steady evolution of the city as a whole.”

A year-and-a-half after the “big” February 2011 earthquake, the New Zealand national government with its organisation the Christchurch Earthquake Recovery Agency (CERA) launched the Christchurch Central Recovery Plan, which included a spatial blueprint for rebuilding the city. The blueprint highlighted eighteen major anchor projects – including a stadium, convention centre, memorial, public parks, and an innovation precinct to be completed between 2015 and 2021. In the interim period – between the earthquake and completion of these long-term projects – hundreds of small temporary, or transitional, projects have been initiated throughout the city to address the immediate concerns of shelter and sanitation, along with more social concerns of places to eat, play, pray and make. These small projects add to the temporal condition of waiting (for the master plan to be realised). This interim, or waiting, period between the earthquake and the realisation of the blueprint provides a moment to reconfigure thinking around temporality in city development.

TEMPORALITY OF WAITING
The immediate period after the earthquakes in Christchurch was catastrophic to the functioning of routine in the city: schools shut down, landmarks disappeared, relatives moved away, essential services were intermittent, congregational places closed.
To respond to the extraordinary disruption, three months after the February quake, legislation was passed in the national parliament that established the legal structure for the recovery, including a requirement for the local city council to develop a draft city plan. The council engaged Gehl Architects, and worked with the community who responded with over 100,000 ideas for a reimagined central city in a campaign called Share an Idea. This draft recovery plan was submitted to Minister Gerry Brownlee in charge of the recovery authority who considered it for five months before accepting the general principles of the plan, but rejecting the mechanisms and spatial framework. Brownlee then invited a consortium of experts to provide a ‘blueprint’ within one hundred days. This blueprint was launched on the 31 July, 2012 and became law the day after. “It progressed from a framework that encapsulated a wide range of community ideals to a minister-led masterplan.”

This was a plan that rejected process, public discussion and community collaboration in favour of a finalised form determined by experts on a tight deadline. The introduction of a well-formed representation of the city to the population created a temporal condition of ‘waiting’ for the master plan to be realised.

The notion of permanence inherent in the blueprint – the qualities of stability, durability, endurance, and of things remaining unchanged – is critical to many of the things that define cities as we know them. Permanent form provides homes for long term institutions, cultural identity, predictability of function, and a stable backdrop for various types of social behaviours. The loss of the stable and predictable experience of the city after the earthquakes and the idea of waiting – without amenity – several years for a finished version of the city, however was not feasible, possible or bearable to many Cantabrians. “Three to five years is a short time in the life of a city, but quite a long time in the life of a child.” Waiting is a passive experience of time that suggests action is taking place elsewhere. To wait for something means one is not part of that collaboration of the thing that one is waiting for.

Waiting can also be detrimental to the mental health of citizens. Charles Montgomery summarises in *The Happy City* that participation in geographic and spatial decision-making has real and tangible effects on the health and well-being of citizens. The lost opportunity for improvements in mental health by not being included in these processes is a logical inverse of this. A few months after the large February quake the Science Advisor to the Prime Minister of New Zealand stated that the exclusion of the public from the planning of the city is likely to extend the sense of loss of control that was created by the quakes and negatively impact on its citizens.

The period of waiting has created a rupture of time...
for the city of Christchurch. Gap Filler cofounder Dr Ryan Reynolds writes about this temporality in the context of the post-earthquake city:

“For more than three years now, Christchurch has been a city completely in transition, almost without a present tense. It is a post city, the remains of the complicated, contradictory, post-colonial place it once was, with a centre that is 70 per cent destroyed and sparsely populated. It is also, now, a precity, with three years’ worth of plans, consultation, ideas and designs that exist mainly as a massive set of aspirations yet to be enacted.”

TEMPORALITY OF MAKING

For people living in the post-disaster setting the experience of waiting has been contrasted with the extensive and pervasive amount of things that do need attention; insurance policies, broken plumbing, difficult roads, and damaged cultural amenity. Adding to these everyday pressures was the need to rebuild and reimagine the city, and citizens were motivated to step up and take part in this process. The events following the earthquakes provided a window for people rethink how the city is constructed – from how they travel and recycle waste, to how institutions govern, and how buildings are created. These thoughts or questions often turned into scenarios where citizens created temporary projects to respond to unmet demands or imaginations. Many people could not wait; they began to collaborate.

The complicated dichotomy between the long-term planning by CERA and the temporary projects led by citizens and citizen-led organisations can be explored through the notion of collaboration in the interim period of waiting. Collaboration is “the action of working with someone to produce something” together. The literal definition of collaboration is expanded by actor-network theory to include collaboration beyond working with humans to include things such as materials, drawings, institutions, and publics. In this expanded definition collaboration is not just a matter of working with people but becomes a method to understand how different types of collaboration among subjects and objects produce different effects. Thus the conception and planning of a new city, and the design and construction of temporary amenities, are the result of different types of collaboration that in turn produce different experiences, and different notions of time.

One prominent example of intense collaboration
was the Pallet Pavilion, a temporary performance and meeting space initiated by Gap Filler, which occupied a vacant site in the central CBD from October 2012 until May 2014. The Pallet Pavilion was a series of stacked recycled blue pallet-crate walls that enclose a performance space. Gap Filler cited two main reasons for developing this project: first, the immediate and practical concern that there was a shortage of venues in the city; and second, as a demonstrative desire to show that innovative and cheap temporary architecture is possible in responding to post-earthquake demands.

Unlike the planned projects of the blueprint that are yet-to-come, temporary projects like the Pallet Pavilion are "the opposite of the master plan: it starts out from the context and the current condition, not from a distant goal." It does not wait and deals with what is immediately present – the need for a performance space with the means and materials directly available. The temporary project was produced by a collection of volunteer experts and borrowed materials led by NGO Gap Filler. In all, it combined the site of an old hotel on an important diagonal axis in the city, a team of volunteer professionals (architects, designers, builders, contractors), a large group of in-kind and financial sponsorship, around 2000 hours of volunteer labour, roughly 2000 blue shipping pallets, 15 large concrete T-shaped floor slaps, the local council, the fire department, a lighting designer, second-hand plants that were being discarded and inbuilt irrigation system to water them, four portaloo, and much more. The space became a symbol of an alternative approach to the rebuild: it had hundreds of unique events, gathered tens of thousands of people over 18 months, and after its funding finished for the year –
it was originally planned for one summer – a crowd-funding campaign raised over $NZ 80,000 to keep it going for another summer.

Collaboration is a complex process that requires engagement with both humans and nonhuman things. Actor network theory argues that a full account of a situation requires recognition of the, often disruptive, role that non-human things play in the making of projects. Physical and material things can enable, thwart, prohibit, suggest, or discourage certain human behaviours and actions. (It could be said that good design attempts to work with these qualities to achieve certain goals and poor design becomes victim to them.) In novel situations with new collaborations, unconventional environments, or different materials, the consequences can be unpredictable. The challenge in this circumstance is to keep collaborate processes open so the project can adapt to surprises.

In the Pallet Pavilion a particularly unexpected turn introduced a whole new series of collaborators. The fire department only let the project happen on the condition that it have 24-hour site supervision. The need for 24-hour site supervision led to the building being open to the public 24-hours day. This in turn created the space and time for different user groups to access the free amenities of the building. It became the only site in the central city where free water, power, free wifi, and some shelter from the weather that could be accessed by anybody, and subsequently became a place that many different groups used including homeless people with the need for a safe public space to gather.

THE DIFFERENCES FOR DESIGN
At first glance the permanent projects planned by CERA appear to be the antithesis of the temporary projects. They work across different scales, economies, time-frames and levels of expertise. The large-scale projects are costly, long-term and slow to build – developed in a complex assemblage across different time-zones and consultancy teams. Temporary projects are small-scale, quick, cheap, and often rely upon local volunteer labour. While they seem like stable propositions, the planned “permanent” project may not always eventuate. (Only three of the eighteen anchor projects have been completed.) The temporary often lasts much longer than anticipated. While temporary and permanent urban projects are defined by their different time scales, this shift in thinking around permanence indicates a number of ways in which materials, labour, and other things can be considered, and this in turn changes the way designers relate to them. This difference can be viewed under the lens of three categories: strategies for public engagement, finished, and risk management.

Firstly, the various scales of the projects reveal different strategies for public engagement. The relatively short time-frame and small scale of temporary projects can see the distance of makers and users contract. In the temporary projects “the designer remains embedded with their public and that responsibility becomes a shared one, and one that gives space for the designer to usefully contribute their expertise while engaging users in taking on and continuing to develop results.”14 This is evident at the Pallet Pavilion where the use of volunteer labour and construction materials sees many people from the wider community incorporated in the decision-making process of the project.

Secondly, a permanent project is considered finished when it is opened while a temporary project is finished when its use comes to an end. If something is unfinished, it can still be changed; in some circumstances, this change is invited. Finished buildings often treat change and alteration as a threat requiring great expense and more lost time. These forms are crystallised long before the public becomes engaged in their use. The potential of the unfinished project is evident with the Pallet Pavilion was conceived to last for one summer the issue of the materials at the end of that summer led to new collaborations. The pavilion was only finished once it was carefully deconstructed and its parts returned to the supply chains from where they came: The pallets to the shipping company, furniture deconstructed to vegetable boxes and the concrete foundations donated to farmers to use as bridges. While the public was waiting for the finished project, they were also actively participating in the life of the unfinished project.

Thirdly, each type of collaboration creates different risk management approaches. Permanent projects manage large financial and technological risks. Collaboration among experts are preferred to collaboration with citizens. The temptation for designers on large projects is to favour strategies that design out the risks involved of working with unpredictable actors. Temporary projects do not have the same pressures and offer different opportunities. For example the lack of a roof led in the pallet pavilion to the need to engage – with the weather; like all collaborations sometimes this was difficult and led to rain and cancellations. On others it
created circumstances not possible in conventional venues such as a performance under a moon-rise or colourful lighting reflecting of the rain as it bounced of drum skins on the final night. The presence of the rain, the sun, the wind and the moon at times made the management of the venue difficult, but it also reminded the users of the space of various movements of weather and cycles of time that cities often act to remove because they are seen as threats to efficiency and safe management of assets.

The degrees of public engagement, finishing, and risk management reveal different levels of bringing networks of people (or publics) into projects. By becoming agents in an ongoing design processes, citizens – with other collaborators – develop greater agency to negotiate with the forces that influence their built environment. The demands of temporary projects requires deeper collaboration between citizens, the private sector, and government with designers, which requires a different set of strategies and skills. Architects are trained to organise and give form to spaces – both permanent and temporary – and within this binary can often favour the creation of physical infrastructure and neglect to meaningfully consider the importance of the ongoing performative changes – such as change in use, law changes affecting building code, changing environmental demands – that happen through a building’s history. This is a set of skills that is still developing and requires further investigation and evaluation.

CONCLUSION
This essay proposes that the difference between temporary and permanent architecture can be understood in the way that different collaborations gather together to co-produce the built environment. One of the affects of temporary architecture is that it highlights and questions practices that produce other, more permanent, forms. While the processes that produce largescale plans and more permanent forms tend to be ones of closing down broad collaborations with the public once a form is constructed, the temporary continues to open up opportunities for engagement and change. The life of a temporary project shifts the role of the public from a passive agent that is consulted during design and uses a building after construction to a more meaningful role as an ongoing and active participant – collaborator – in the creation of events and procedures in the ongoing life of buildings and cities. Perhaps the opportunity of these temporary post-quake projects is a movement towards a type of design, a form of public space, and a different way of making buildings in which the public is more carefully and cleverly represented and kept visible. The consideration of new design strategies offered by engaging with the temporary and immediate city might enable the design and construction of more sophisticated long term plans and projects.

IMAGES
1. Images from Christchurch Central Recovery Plan 2012. Owned by the New Zealand Crown and used with Creative Commons Attribution 3.0 New Zealand Licence.

4 Barnaby Bennett, Eugenio Boidi and Irene Rolles. Christchurch: The Transitional City Pt IV (Christchurch: Freerange Press 2013)
14 (Julier, G. (2013). From Design Culture to Design Activism, 3(2), p250
Since the 1970s more than half of the Tokelau population has relocated to New Zealand due to limited natural resources and overcrowding of the 10 km² land area. This raises issues related to the cultural identity and wellbeing of Tokelau people in New Zealand. Local Tokelau community groups in the Wellington region seek to maintain their cultural traditions through the development of community centres. However, these facilities are expensive to purchase, build and to maintain, and have the potential to overburden the Tokelau community, which has a very high portion of low-income people. This paper discusses a series of initiatives the School of Architecture at Victoria University of Wellington has initiated in relationship with Te Umiumiga a Tokelau Hutt Valley community to assist the development of a sustainable cultural community centre complex. It elaborates upon the processes of empowerment and on-going developments that have resulted in significant benefits for the community, students and staff alike. Ways that the university can work as a mediator between institutions such as museums, local city councils, funding organisations and disadvantaged/underprivileged communities are explored. A key finding of the collaboration showed that mediation goes both ways and that there is both a process of giving and receiving in such a relationship that facilitates a blurring of boundaries between ‘expert’ and ‘lay’ knowledge. Through various avenues, students have been empowered to engage directly with the community, enabling the redesign of the Youth Centre, construction of furniture, exploration of alternative energy sources, community garden initiatives, and looking at landscape as a resilient resource. Empowering outcomes for the community have extended well beyond arts and craft demonstrations to encompass anti-violence campaigning, new parent campaigns, the celebration of children’s books in the Tokelau language, youth talent competitions, and elder games. By participating in the learning community, students and faculty developed critical and creative skill and worked together for more complex understandings of the world.

INTRODUCTION
Tokelau, one of the world’s smallest and most remote countries is made up of three tiny atolls in the Pacific Ocean (Figure 1). Climate change has resulted in ongoing depopulation and today more than 75% of Tokelau people have relocated to New Zealand. Seeking to maintain their traditions in the face of strong social and economic pressure to assimilate in the culture of their host country (New Zealand), the community has deployed a number of strategies. This paper discusses a series of collaborations between the Tokelau community and the School of Architecture using participatory design methods.

The research was initially developed at the instigation of the Tokelau community, primarily from the Nokunonu atoll, which had relocated to the Hutt Valley in the Wellington region. The local Tokelau leaders sought to revitalise their community through promoting the idea that developing a built centre would support the on-going wellbeing of their cultural heritage.

Initial conversations between the community and the School of Architecture identified a desire for not just a community hall, but also a community centre that ‘captured the essence of a Tokelau village’. This was a challenge that solicited the interest of a group of architecture lecturers with research agendas in...
Developing Collaborative Relationships

participatory design, sustainable architecture, social wellbeing, collective memory and the use of real life projects to educate their students.

Lacking detailed knowledge of Tokelau’s history and culture, as well as the absence of any students who may have been able to help facilitate the cultural relationship* between the University and the Community, required employing a method of participatory design. This allowed the community to design with and through students. This strategy was also believed to be well suited to the Tokelau community’s desire for engaging in community building processes. From the University’s perspective the relationship provided the means to train its students as professionals of the built environment by working with real clients, while preparing students to be socially responsible world citizens.

To undertake such a process where the Tokelau people became comfortable enough to participate, to debate and to design and not just accept what the papalagi expert provided required a great deal of trust and cooperation.

The School of Architecture research team involved in the project to date has been made up of five academic staff, five postgraduate students, and more than one hundred undergraduate students across the disciplines of architecture, sustainable engineering, project management, interior architecture and landscape architecture. As academic staff designed and implemented various learning experiences for different cohorts of students in relation to the Tokelau Community Centre, they met to clarify pedagogical commonalities and differences. Approaches to the project were grounded in critical pedagogy (Morrow, 2007), Harriss and Widder, (2014), social learning theories (Schon 1983), Bruffee, (1999), and constructive developmental theories (Baxter Magolda, 1999, Kegan, 1994).

INDUCED PARTICIPATORY DESIGN AND LIVE PROJECTS

Participation in decisions that determine the quality and direction of built environments requires the involvement of the community, giving primacy to their rights to participate in the shaping of the world in which they live (Sanoff, 1990). However, designing in genuine partnership with those who will use the facilities requires that all parties get to know one another and build mutual respect. There is an ethical stand underlying participatory design that recognises an accountability of design to the world it creates and the lives of those who inhabit it. Morrow

* Seeking to find an architecture student of Tokelau descent in the School of Architecture proved difficult and is consistent with an under representation of Tokelau (and Pacific Island) students in the University overall. Introducing university students to the Tokelau youth allowed a beneficial exchange of cultural information.
(2007) discusses the importance of forming partnerships with local communities as a way to expand architectural education opportunities and also benefit communities through civic involvement by students. Live projects are those that engage real citizens in real-time contexts, and encourage students to become active citizens of a community dedicated to cultural and ecological health.

A SERIES OF ENGAGEMENTS
As previously mentioned, various approaches were undertaken by different staff and students in engaging with the community. From these exercises, a new model of vertical and interdisciplinary integration of students and research activities with real clients in a university context is proposed (Figure 2).

1. Connecting with the University: Summer Scholarship Programme
In the summer of 2013, the Tokelau Community Association co-funds a Summer Scholarship project with the University to provide a student scholarship devoted to undertake research in the area of suitable participatory design methods, as well as a full review of all of the resources that existed in the community to develop their ‘village’. The physical inventory consisted of an assessment of the buildings on the site, as well as their components to determine opportunities for re-use (Wernham, 2014). The human inventory identified the individual community members, committees they were involved with, the things they were good at, and the things that they enjoyed doing. The main objective was to gather information, to introduce the participants from both the Community and the University, and to understand roles, resources, and limitations. It also served to establish a set of realistic expectations for all involved.

2. Creating public awareness through exhibition
In collaboration with the Tokelau community, McIntosh and Campays curated an exhibition entitled ‘Tokelau: Then Now, Now Then’ which was held at Pataka Art + Museum, in Porirua, New Zealand during the Arts Festival, between 21 February and 13 April 2014 (Figure 3). The exhibition title embodied the meaning behind the exhibition’s intentions and its content which included historical photography and geographical information, traditional Tokelau artefacts, stories and interactive games in both Tokelau and English, as well as current images of community members and local scenes. The focus on climate change and Tokelau, predicted to be one of the first of the Pacific Islands to be inundated by sea level rise (Connell, 2015), was not only about the future of the atolls, but also of the Tokelau diaspora, who continue to be displaced due to climate change (Connell, 2015).
With New Zealand being the principal residence for Tokelau people, the exhibition raised the question of cultural and societal insertion within a foreign land and culture, and challenged desires and visions for the future.

The perception and experience of the exhibition, the engagement with traditions in the new context of New Zealand, community empowerment, and constructive reflection regarding the exhibition are discussed comprehensively in McIntosh, Campays and Chicca, 2015.

3. Empowering the Community

The exhibition proved to empower the entire Tokelau community from the Wellington region. The local Mayor and a Member of Parliament, who could both claim either direct Tokelau heritage or connection, opened the event. When the museum space proved to be too small for further activities associated with the exhibition, a 'Tokelau Day' was held in the general foyer and the central open spine of the museum. During the day, the community showcased traditional dancing, music, singing, traditional food, children’s games, and sold native handicrafts. A version of a popular talent competition entitled *Tokelau's got Talent* (Figure 4) was organised by the youth bringing performing groups together in a celebration of local culture. This also served to bring younger people into the museum, a place which they might not normally frequent.

Finally, under the auspices of the ‘Strong Pacific Families’ initiative formed by the New Zealand Ministry of Social Development, the ‘Te Kaiga Maopoopo’ committee was formed to address family violence. The committee used the Tokelau Day to launch a book putting forward a strategy for protection against family violence using Tokelau culture. The book launch brought many important representatives of government and powerful politicians together with significant members of the community (Figure 5). This in turn created an awareness of the Hutt Valley community centre/village project, which proved useful and advantageous for future events and plans.

4. Engaging with the youth: Youth Centre vision and furniture making

Youth disenchanted had already led to the community designating one of the warehouse buildings as a ‘Youth Centre’. Funding was obtained to decorate the industrial building to make it more attractive; however, the space remained uncomfortable, lacking windows, heating, adequate lighting, furnishings, and importantly a sense of human scale.

To start to address this situation, the youth leaders...
invited a team from the School of Architecture to their annual Tokelau Retreat for the Hutt Valley Youth Community (Figure 6). One of the Masters students introduced a collaborative participatory design exercise to capture ideas, desires, and aspirations of the youth.

This activity achieved two key objectives. First, the youth formed a collective vision of a desirable future for the Community Centre. Second, they committed to a series of on-going direct engagement projects. The first project selected for implementation was the construction of moveable furnishings made achievable and affordable by sourcing suitable building materials such as wood pallets.

The youth fabricated furniture out of cardboard to determine the size, layout, and number of items that would best suit their vision. Masters students in turn, designed furniture options for the youth that could provide social space. These designs were then constructed in a series of community workshops. A wide range of youth were engaged in building the Youth Centre furniture. Many adults and elders gathered to watch the activities. In preparation for the fabrication workshop, the youth collected a large number of pallets and borrowed tools and equipment. Empowered by their initial success, they continued on working independently from the Masters students and took on leadership roles themselves. The workshops led to a sense of pride as the youth showcased their accomplishments and invited elders to feel and experience their work (Figures 7–11).

The success of this strategy, first generating an overall vision then breaking it into achievable smaller targets, followed by the process of mock-up and fabrication was to be employed for the future engagement of the community.

RE-IMAGINING AND REDESIGNING THE YOUTH CENTRE AS SUSTAINABLE ARCHITECTURE

To build upon this work of engaging with the youth, a cohort of sixty-six third-year sustainable architecture students (made up of architecture, interior architecture, landscape architecture and building science students) worked in multi-disciplinary groups to explore and innovatively redesign the Youth Centre and surrounding landscape while investigating sustainable systems such as water catchment, food growing, energy generation and waste mitigation. A multi-disciplinary approach to design is important because it potentially leads to greater sustainability outcomes but also has social benefits due to a more participatory and socially inclusive design methodology (Storey & Pedersen Zari, 2006; Wahl & Baxter, 2008).
Much architectural education emphasises individual and competitive learning (Cortese, 2003)\(^1\). It is important therefore that students have a chance to work with other disciplines on complex problems in group situations (Pedersen Zari, 2009)\(^2\). Building on prior student work enabled consistency, a continuity of relationship and a passing on of knowledge and insights that can be difficult to achieve with student involvement in long-term projects.

The advantage of using the Tokelau Youth Centre as a live project for the sustainable architecture students was two-fold. First, the engagement with the Tokelau community facilitated learning about the impact of climate change in the Pacific region and comprehension that climate change is already affecting millions of people. One direct impact of climate change in New Zealand is the increased migration of people, particularly from Pacific Islands due to direct and indirect impacts of climate change. In order for students to meaningfully engage with an issue as large and global as climate change, action must begin locally and at a personal level. Putting knowledge gained in academia into action through live projects can be a positive and motivational way to learn more about environmental issues and is a critical feature of developing leadership skills (Cortese, 2003)\(^3\). As of 2012 Tokelau is also the world’s first 100% solar-powered nation. This provided a further avenue for learning and a means to tie the Youth Centre redesign back to a Tokelau atolls context. An opportunity for students to practise initialising, or positive activism which puts tangible change into place, rather than protest activism which is typically based on fighting against something was also provided (Morrow, 2007)\(^4\).

Along with a developed community centre plan and seventeen redesigns of the Youth Centre, students collectively produced a large and comprehensive body of work. This included a fully developed solar power generation scheme for the Community Centre, full scale prototypes for movable community garden planter boxes, food production concepts and planting guides, several innovative rain water and storm water runoff retention and filtering systems, renewable energy schemes for the community, aquaculture systems, passive solar interventions to make the buildings more habitable and functional, greenhouse schemes, bike share programme proposals, a series of new furniture and fence designs made from reclaimed materials, composting and waste minimisation systems, dynamic façade systems, natural playground and
recreational field concepts, social gathering and dialogue spaces reflecting Tokelau cultural concepts, and finally living walls and green roof designs. The projects enabled students to engage with Tokelau elders and youth and facilitated exchanges of knowledge and experience about Pacific culture but also about the University. The community engaged with the students to develop design ideas, but also to see ideas being developed into physical outcomes. Representatives of the community helped to review the work and an exhibition of the work was held at the School of Architecture before the work was taken back to the community for sharing and discussion.

THE VALUE OF COMMUNITY-LED DESIGN
Prevailing discourse emphasises the university’s place as a paramount player in a global system increasingly driven by knowledge, information, and ideas (Clegg et al, 2013). Knowledge is becoming the main driver of economic growth, and education is increasingly becoming the foundation for individual prosperity and social mobility (Biesta, 2006). By focusing on the social, cultural, and cognitive bridges offered in specific courses of study, the Tokelau Community Centre project highlighted the strengths of a multicultural learning community approach. A bridge must be anchored on both sides, with as much respect for where it begins as for where it ends (Kegan, 1994). Student activities have the ability to act as a mediator between diverse worlds in the process of learning and exploring. On one side of the bridge lies the students’ familiar home territory, including their family, work place, peers, and institutions (Beach, Lundell, & Jung, 2002). On the other side is the territory of cultural communities, which are shaped by rules, traditions, discourse and values that may be very different from students’ own understanding. To help students construct bonds between their own personal and cultural knowledge and that of another community, they had to be willing to learn from the communities’ experiences and ways of knowing and behaving. Two aspects of community were considered. First, students from different courses, years and disciplines, formed a learning community in which members helped each other learn to research. By building upon prior student work and through supporting each other by listening, problem solving, and working together, students honed academic skills and explored ideas in ways that valued individual knowledge. Second, students were invited to use these academic skills to explore what it means to practice community: by working together as a group with a shared mission in order to better understand the nature of Tokelau. These two agendas supported and sustained each other.

CONCLUSION
The recognition of the need for early and meaningful engagement and collaboration with communities requires new research, methods and tools for understanding and supporting best practice. Local, national, and international frameworks have been developed to support this and sustain innovative educational approaches embedded in critical and creative thinking such as those defended by UNESCO through the World Declaration on Higher Education for the Twenty-first century, which states:

“In a world undergoing rapid changes, there is a perceived need for a new vision and paradigm
of higher education, which should be student-oriented, calling in most countries for in-depth reforms and an open access policy so as to cater for evermore diversified categories of people, and of its contents, methods, practices and means of delivery, based on new types of links and partnerships with the community and with the broadest sectors of society” (UNESCO, 1998)\textsuperscript{13}. The diverse activities discussed in this paper gave students multiple opportunities to articulate their own understandings of culture in the framework of developing sustainability and resilience. Themes of identity, community, and agency arose from the work and instead of being isolated by difference, students were proposing that communities embrace interdependence. By constructing their own ways to integrate personal and cultural knowledge with the course content, students acted as creators of knowledge and partners with instructors rather than as passive consumers. There was often a heightened sense of vulnerability and uncertainty that was both exhilarating and problematic. This tension between cohesiveness and divisiveness is a problem common to many learning communities. For most students the community provided an anchor and a kind of accountability they might not have experienced if they were in a course without community connection.

Conceptualising student learning as a dynamic process of interactions between communities, histories, and contexts, replaces the view that equates agency with individual self-sufficiency. Instead, agency is viewed as a matter of participation, collaboration, and a shared sense of mission. There are many benefits to this approach, from improving civic participation and ensuring more democratic outcomes, to creating a strong sense of community and strengthening people’s attachment to their place and to each other, producing more sustainable solutions.

7 Sanoff, Henry (Ed.), Participatory design: theory and techniques, Raleigh, NC 1990.
11 ibid
15 ibid
18 ibid
21 ibid
This paper addresses problems concerning public space in the contemporary city, focusing on issues of privatisation, internalisation, disconnection and new forms of integration. Looking at the emerging nodes of public engagement in our cities, post-consumerist shopping enclosures, and the contribution of digital media, it discusses conception, representation and production of urban space in the expanding mixed reality. Through theoretical speculation supported by evidence, it highlights new recombinant factors emerging in the conception, perception and experience of urban public space. These factors counteract the increasing fragmentation and disjunction of urban places and the progressive commodification of the commons. The study uses social network data documenting public experiences, perceptions and conceptions of public space in relation to mental constructs, social lives and shared spatial interpretations. These sources offer invaluable empirical evidence to the complex discourse on public space condition in the digital age, complementing the wide critical and theoretical elaborations of the aspects concerning control, displacement, spectacle and illusion. The use of Instagram allows access to spatially rooted communication, including presence (space and time attributes) and/or reference (place tagging). This kind of communication intimately connects the public realm to the public sphere, potentially contributing to “remember” the political dimension of the social “multitude.” The paper presents the preliminary findings of an investigation on a selected sample of Auckland town centres, involving researchers in a hermeneutic process that embeds them within the widest range of stakeholders of local and transient communities. It experimentally uses new analytical tools to evaluate iconographic-based data on social life in key spaces of consumption, ultimately confirming the hypothesis that there are multiple correlations between those everyday practices and collective elaboration of spatial production.

1. PUBLIC SPACE RECOMBINATIONS: INTERNALISATION, DISCONNECTION AND THE ROLE OF DIGITAL MEDIA IN POST-CONSUMERIST SHOPPING ENCLOSURES

The contribution of spaces of consumption to the development of cities is increasingly recognised and studied as fundamental in the creation and transformation of social places. The spatial condition of public space is often criticised for being subject to commodification and privatisation processes that create physically or socially defined enclosures with accessibility and inclusion problems. Claims are made for the dramatic and irreversible disappearance of traditional public space as permanent reference, centre and arena of social and cultural life and its replacement by parochial community realms: fundamental concerns have been raised on the capacity of the physical infrastructure to support citizens’ rights for the development of open and democratic society. These elaborations have their main references in the critiques of the loss of the “agonistic” dimension, as articulated by Hannah Arendt’s evemenental and pluralistic formulation, the “refeudalisation” of society brought about by a passive consumption of culture, as developed in Jurgen Habermas’s participative and emancipative theorisation, and the “tautological commodification”, as elaborated by Henri Lefebvre’s framework of multidimensional spatialisation.

In the fragmented space of the contemporary city, shopping malls are at the forefront of this transition, progressively becoming major nodes...
Figure 1: Aaron Hills and Manfredo Manfredini, Comparative analysis of the urban morphology of two metropolitan urban centres with the identification of the related shopping mall: Westfield Albany (top) and Downtown Shopping Centre (bottom).

Figure 2. Aaron Hills and Manfredo Manfredini, Comparative analysis of the urban morphology of six metropolitan urban centres.
of public engagement in our cities. In their space, where digital media are pervasive, affirmation of mixed realities plays an important contribution to recombine the disjointed space of everyday life, compounding the traditional effort of shopping and entertainment corporations to achieve it through spectacular means, both configurational (structural) and communicative (decorative).

The continuous expansion of means and popularity of digital communication technology is having an increasing impact on people’s relation to places and is particularly affecting the conception, perception and experience of public spaces. Through the proliferation of information networks and interconnection of platforms, communication flows combine and hybridise messages across the entire spectrum of their origins and contexts, disregarding their formal or informal, grassroots or institutional, recreational or work-related, and mundane or scientific characters. New technologies intensify the malls’ blurring of boundaries between public and private, articulating the dissociation of traditional relations between the public sphere and public realm. This phenomenon is exacerbated by the effects of its accompanying normative ambivalence concerning the public status of the malls. Concerning the latter, the complex legislative frameworks supporting the public/private ambiguity of these spaces has been a highly controversial issue that led to protests and legal disputes, in a few cases resulting in statutory recognition of their publicness.

Importantly for spatial considerations, this ambivalence is reflected on performative aspects that increase the territorial ambiguity that Sharon Zukin defined as social “liminality.” Malls have their territories permeated by multiple layers of relations that continuously combine both face-to-face and remote, and synchronous and asynchronous dimensions, steadily re-articulating the personal and collective identity within highly controlled conditions of public life.

2. SPATIAL RECOMBINATION: CONTRADICTIONS AND OPPORTUNITIES

Malls lie at the intersection of contrasting conditions, being highly controlled physical environments and substantially open digital realms of the public sphere. Conflicts and alliances between the powers that control information and behaviours (including the various forms of what Foucault calls “disciplinary regimes”) and the new “digital public realm” have the potential to recombine and remember the political sphere, providing access for independent and critical positions of the social “multitude” to dialogue that are otherwise marginalised in most public domains. The unique condition of these shopping, recreational and festival atmospheres lies in their capacity to integrate new dimensions, “normalising” the experience of the extraordinary and, potentially, reverse the decline of the plural “public.” This can re-engage pluralistic forms of expression and exchange, and even include contributions from beholders that are completely subdued by the illusory spectacle of the disjointed and semi-autonomous elements of the contemporary city. Potentially subversive manifestations and expressions of critical actors engaged in the identification and exploitation of areas of freedom and autonomy can indeed emerge from the contradictions and multiple entanglements of the control systems implemented in the very same spaces.

In the current situation, only a few public places beyond the post-consumerist shopping environments have been able to forge a powerful alliance between the physical and digital spheres that counteracts the progressive marginalisation of interaction. Yet, the openness granted by communication technology offers great opportunities to activate the latent public dimension of our streets, squares and parks fully exploiting the enormous power of amalgamated reality in everyday life. Some exceptional political circumstances demonstrate how it can support the formation of agonistic spaces for the development of genuine moments in a pluralistic public sphere. Their “potential but not yet effective” use has indeed substantiated recent insurgent opposition movements, such as the 2013 Gezi Park protest in and around Istanbul’s Taxim Square, the 2014 Umbrella Revolution on the streets in Admiralty in Hong Kong, and “Black lives matter” in the Mall of America in December 2014.

3. DESIGN ISSUES: IDENTITY AND COGNITIVE, TERRITORIALISING-EIDETIC NARRATIVES

The serious challenge posed to architectural and urban design theory and practice by the oxymoronic condition of de-re-territorialisation of public places in the post-consumerist shopping malls poses central questions concerning fundamental notions of identity, character and sense of place. They require a profound reconsideration that evaluates the deep transformation of social, physical and cognitive spatialities, considering recent changes in the technological framework that introduced new access and experiential layers to the elements that shape identity and sense of place. Particularly
important is the study of the changes in the manifestation of the perceived space, what Lefebvre defined as “espace perçu,” in its connection to everyday practices, since it includes the relation between both configurational (structural urban de-territorialisations with segmentation and disjunction) and communicative (decorative) spatial characteristics of places and their social, cultural and environmental context. Authenticity is a key notion because its usability in today’s conditions is highly problematic. As Zukin has observed, we are indeed facing serious threats to the capacity to distinguish genuine references that lead collective processes of identification, distinction, naming, recognition, connection and ownership. Public realms are the most exposed sites of alteration of the traditional incremental processes of collective interpretation, elaboration and development of experiences of places that constitute identity and a sense of belonging, substantiating personal and collective biographies and narratives. The production of narratives is precisely what this part of our research explores, analysing emergent aspects in digital communication, including visual representations. Our focus on places of consumption, particularly shopping and entertainment environments, draws upon previous works that have identified and described these places as particularly noticeable in emphasising key events (phenomena and actions) and references (signs and symbols) of contemporary urban life.

4. SPATIAL REPRESENTATIONS AND SOCIAL MEDIA IN SHOPPING ENVIRONMENTS

We pose an experimental proposition for the examination of the new process of collective construction of the urban image that – unlike mainstream studies based on critical interpretation of literature and interviews (as the seminal work by Kevin Lynch) – scrutinises utterances posted into the publicly accessible digital social communication sphere, using image-based representations as the main source. The study of the collective construction
of the “espace perçu” through the social games of its visual representation aims to register and analyse comparatively the becoming of spatial reference for identification and self-narratives.

A methodology was developed to retrieve and analyse items of spatial representation, adapting methods used for the study of textual material, such as Twitter messages. Our purpose is to examine everyday responses to the experience of public space. The first experiment was to follow Tweeting flâneurs through the most popular consumption environments: places with the highest physical accessibility and connectivity, where individual public experience moves across these most radically disjointed cultural, social, and environmental contexts.

In 2013, Instagram photo sharing site had as most photographed location not a traditional tourist attraction but one of the world’s largest mall, Siam Paragon in Bangkok, ranking ahead of Times Square and Disneyland. With sharing images becoming an everyday activity, so much of this photography done at a mall should not be surprising. Yet, the expansion of interaction granted by the new technological framework introduces another problematic issue: the widening of the user basis is still very selective and only partially offsets fundamental problems of participation inequality, demographic bias and spatial bias that are typical of most of the content of the so-called GeoWeb. Concerning public spaces, these problems of access to digital social media are extremely relevant because the exclusionary effects are further enhanced by serious issues of physical accessibility and social filtering, characteristic of some of those places, particularly the privatised ones. As Kathryn H. Anthony observed, the mall is a fundamental place for social life for young people, a “third place” between home and school. It now has an extension in the digital sphere of social media that, with its ubiquitous and achronic properties, networks and magnifies the reach of their actions. Instagram’s social network platform, released in 2010 as medium for photo sharing, is one of the most popular means among younger generations for granting this connection and is particularly used in the mall to express experiences and desires. The incremental nature of the production of space is progressively articulated by the representational component produced and diffused by digital networks and devices. Through this accelerated interaction, “concerns, memories, stories, conversations, encounters, and artefacts,” steadily “tune social relations.” Social networks for image sharing, like Instagram, enable people to convey personal reflective processes, expanding their “audience base beyond the user’s close social ties.” The study these data offers new invaluable empirical evidence to the complex discourse on the condition of public space in the digital age, complementing the many critical and theoretical elaborations on control and commodification, fragmentation and displacement, and spectacle and illusion. The access to spatially rooted communication is particularly relevant to the study of public space since it provides detailed information on presence (space and time attributes) and/or reference (place tagging). Due to their non-commercial character and their propensity to transpose individuals’ everyday practices into images, the unaffected quality of data provided by social media such as Instagram allows the exploration of emerging forms of interaction.

The incremental nature of the user basis is still very selective and only partially offsets fundamental problems of participation inequality, demographic bias and spatial bias that are typical of most of the content of the so-called GeoWeb. Concerning public spaces, these problems of access to digital social media are extremely relevant because the exclusionary effects are further enhanced by serious issues of physical accessibility and social filtering, characteristic of some of those places, particularly the privatised ones. As Kathryn H. Anthony observed, the mall is a fundamental place for social life for young people, a “third place” between home and school. It now has an extension in the digital sphere of social media that, with its ubiquitous and achronic properties, networks and magnifies the reach of their actions. Instagram’s social network platform, released in 2010 as medium for photo sharing, is one of the most popular means among younger generations for granting this connection and is particularly used in the mall to express experiences and desires. The incremental nature of the production of space is progressively articulated by the representational component produced and diffused by digital networks and devices. Through this accelerated interaction, “concerns, memories, stories, conversations, encounters, and artefacts,” steadily “tune social relations.” Social networks for image sharing, like Instagram, enable people to convey personal reflective processes, expanding their “audience base beyond the user’s close social ties.”

The study these data offers new invaluable empirical evidence to the complex discourse on the condition of public space in the digital age, complementing the many critical and theoretical elaborations on control and commodification, fragmentation and displacement, and spectacle and illusion. The access to spatially rooted communication is particularly relevant to the study of public space since it provides detailed information on presence (space and time attributes) and/or reference (place tagging). Due to their non-commercial character and their propensity to transpose individuals’ everyday practices into images, the unaffected quality of data provided by social media such as Instagram allows the exploration of emerging forms of interaction. This form of communication indeed potentially introduces into each event both synchronous and asynchronous as well as multi-scalar geographical exchange (i.e. spatially referenced information can be retrieved anytime and from everywhere down to the finest available map resolution). Adopting the notion of “affordances,” as proposed by James Gibson, to describe the properties of an environment (i.e. what actions it allows the perceiver to perform, their values and meanings), our study directly elaborates on a defined type of performance, without selecting participants, but only using all the images that users of the malls had made and uploaded. We did not need to ask people to make sketches, choose photographs or to take them. Our perceivers, some users of the mall, indicated affordances by what they photographed – meals, clothes, friends and, sometimes, the architecture of the mall. What they produced, collectively, was a record of their attention. They also photographed themselves, often, making records of being in the mall and showing others their experience.

5. EXPLORING AUCKLAND’S PERCEIVED SPATIALITIES

The use of Instagram georeferenced data in Auckland’s shopping mall environment allowed us to directly access a key means of modern communication technology to study the emergence of new practices in the elaboration of collective urban space. The investigation draws upon studies on the contribution of shopping malls to urban fragmentation and the consequent physical and social de-territorialisation, and on their introverted and privatised public spaces with associated social and cultural re-territorialising
agency. It aims to describe a becoming condition of public place increasingly heterotopic, inverted, externally disconnected and internally integrated environmentally, socially and culturally.

The popularity and availability of Instagram data gave us the opportunity to observe how its users perceive the environments where they make and upload photographs. A preliminary phase of the study investigated the eight largest malls in Auckland, focusing on the relations between conceived (form and organisation), performative (activities and practices) and represented (images and texts) spatialities. The work on images concerned photographs uploaded from these malls by a combination of descriptions, tags and geo-tagging. Images, initially sorted using software that identifies likenesses between photographs, were individually analysed together with their accompanying texts and tags, then classified in appropriately formed or merged categories. This process created ten categories of photograph: Spatialities, Selfies; People; Activities; Animals; Textual; Food; Objects; Other interiors; Other exteriors. “Spatiality” photographs, including images with focus on the architectural environment, then were articulated in three sub-categories: Exterior, Interior and Signage. The analysis of images then evaluated the character of the spatial representation in relation to the architecture of the mall, ranging from (1) strong spatial identity and primary role of the represented spatial context/feature, (2) distinctive spatial identity and denotative role of the represented context/feature, and (3) identifiable spatial attributes and secondary role of the spatial context/feature. The analysis concerned levels: a macro level considering photographs in relation to mall characteristics, an intermediate level looking at the characteristics of photograph categories, while the micro level specifically addressed spatial contents. At the macro level, the most relevant finding was the important variance across the malls in both the absolute number of uploaded photographs and the relative proportion between them and the number of visitors. The expected strong correlation between structural complexity — size, measured as total leasable area, and functional integration, measured as diversity of services and goods — and increment of upload number was confirmed: Sylvia Park, Botany Town Centre, and Westfield Albany have the highest
structural complexity and lifestyle component, and the most uploaded photographs, respectively, <70,000, <57,000, and <52,000. A strong correlation between the higher values of uploaded photographs and ‘socialising’ orientation – presence of lifestyle activities, measured in relative number and surface – of the malls was also found: the higher lifestyle component in Westfield Albany, Sylvia Park and Botany Town Centre is reflected in their disproportionate ratio of visitors to photographs, compared to the malls with little ‘socialising’ orientation. At the intermediate level of investigation the most relevant finding is the differences in spatial representation of the malls.

The analysis of the data shows a strong correlation between structural complexity and frequency of representation. As in the macro level, results show a strong correlation between malls’ ‘socialising’ orientation and the disproportionate absolute number and ratio of visitors to uploaded spatial representations (e.g. the three top malls for both structural complexity and ‘socialising’ orientation have the highest relative value of spatially relevant posts, with Sylvia Park reaching ca. eight per cent of the images, while the total mall average is ca. two per cent). At the more refined level of analysis, the most relevant findings are the pre-eminence of images of interior spaces (a value that, including the representations of external but introverted squares and lanes, reaches 97% in Sylvia Park) and
the high correlation between the relative number of images with strong spatial identity and primary role of the represented spatial context/feature, and the composite value of structural complexity and 'socialising' orientation of the malls (e.g. the three highest relative values of photos of spaces with strong spatial identity is found in the three top malls for both structural complexity and 'socialising' orientation).

6. CONCLUSIONS

Ours is not the first research to use Instagram as a tool of urban studies, but other researchers have worked on a much larger scale and with less detail, using hundreds of thousands of images to discover differences between entire cities or to track activities in particular locations and time periods. These studies did not require researchers to look at and sort individual images. We were not the first to use a large corpus of photographs for research on images of place, but their interest was all such images, commercial, civic and personal. Our methodology avoids the artificiality of questionnaire research. Rather than ask people what they like, we see what they have posted. Ours is a study of environmental perception that, instead of working with bi-dimensional maps or photographs of scenes, seeks to capture the subjective quality of the urban landscape as experienced daily. Using georeferenced data from social media platforms, we critically analysed each upload, concentrating on their spatial character. The preliminary results of the study of iconographic and related textual data shared on Instagram, confirmed our hypothesis that there is a multiple correlation between lifestyle characteristic and spatial perception, providing a considerable amount of empirical evidence. It also gives impulse to research aimed at understanding the relationship between the spatial qualities of everyday amenities and the elaboration of a collective cognitive geography of urban space in the age of digital communication.

15 The way in which real location can play a fundamental role for digital communication was for instance shown during the Gezi Park protest, when open cell-phone wi-fi networks that allowed Istanbul protesters to communicate in real time while in the Square, using social media platforms, such as Twitter and continuously change hashtags (communicated using pen and paper technology).
16 Lefebvre, "The production of space."


25. The steadily increasing quantity and quality of social media platforms with georeferenced upload data, such as Twitter, Foursquare and Instagram, is increasing along with other systems that use place reference and tagging both for private (e.g. Facebook, WeChat and Whatsapp) and public (e.g. Flickr, Panoramio and Weibo) uses.

26. Of particular interest for our research is Gibson’s observation on the reciprocal relationship existing between the perceiver and the affordances, the actions that can be performed there. J. J. Gibson, The Ecological Approach to Visual Perception (Hillsdale, N.J.: Lawrence Erlbaum Associates, 1979): 127.


28. The number of photographs uploaded from each mall was: Albany 2536; Manukau 1651; Newmarket 1735; St Lukes 1303; WestCity 1021; Botany 1311; Sylvia Park 2165; Glenfield 584.

29. The Content-Based Image Retrieval Demonstration Software, Fraunhofer-Institute IOSB.

30. The numbers of photographs for each mall in the Architecture category were: Albany 74, Manukau 40, Newmarket 53, St Lukes 28, WestCity 25, Botany 45, Sylvia Park 146.

31. Nadav Hochman and Raz Schwarz, “Visualizing Instagram: Tracing cultural visual rhythms” (paper presented at the Proceedings of the Workshop on Social Media Visualization (SoMeVis) in conjunction with the Sixth International AAAI Conference on Weblogs and Social Media (ICWSM–12), 2012).


Urban Collaborations

HELEN NORRIE
University of Tasmania, Australia

ROSS BREWIN
Monash University, Melbourne, Australia

INTRODUCTION
Deyan Sudjic contests that the problems of our cities and towns need to be understood and managed through collaboration between three groups: policymakers, builders and theorists. In an essay in *The Endless City: The Urban Age Project* (2007), Deyan Sudjic proposes that the problems of our cities can be understood and managed through collaboration between three groups: policymakers, builders and theorists. This model is being explored through collaborative design research by the School of Architecture & Design at the University of Tasmania (UTAS) and the Monash Architecture Design and Art (MADA) that links the academy – as theorists – with local government – the policymakers and city builders. Projects involve direct engagement with municipal councils to examine urban issues in small towns and cities, developing collaborative processes that examine the specific nature of design issues that are socially, culturally and/or situationally conditioned. Research through the medium of design provides a process of iterative thinking, and the crossover between the disciplines of architecture, urban design and planning provide fertile ground for research investigations.

Four models of collaboration underpin this work. Firstly, direct engagement between the universities and the councils examines specific issues within regional municipalities. Projects identify research questions and present new knowledge or ways of understanding particular urban issues for small regional towns. Secondly, collaboration between the universities involves the investigation of common issues through divergent, yet complementary processes, or working in tandem, employing iterative processes between the respective studios. Thirdly, research methods embed an engagement with the teaching research nexus, providing new insights into both teaching and research practices, and into the field of enquiry itself. Fourthly, projects are extended through research consultancies or via internships with the councils, which are supervised jointly by council and academic staff. This paper explores the nature of each of these collaborations, examining the reflective learning that emerges for each of the groups involved.

The Regional Urban Studies Laboratory (RUSL, pronounced Russell) in the School of Architecture & Design at the University of Tasmania (UTAS) and Monash Architecture Design and Art (MADA) are examining ways of connecting the academy (as theorists) with the local government (the policymakers and city builders) through collaborative urban design research. This paper reflects on two projects that were directly commissioned by the local councils, generating urban design research and speculative ideas for regional urban settlements.
Work Integrated Learning (WIL), which situated these live projects clearly within a dynamic context. Secondly, collaboration between the two universities investigated common issues through divergent, yet complementary processes, working in tandem to employ iterative processes between the respective studios. Diverse forms of practice-led design research presented both solutions and questions, fostering critical thinking about open-ended questions. Thirdly, research methods engaged with the teaching/research nexus, providing new insights into both teaching and research practices, and into the field of enquiry itself. Engaging directly with real-world issues created a form of practicum, and students work directly with staff who shift between dual roles of ‘coach’ and ‘equal’ researchers. This established a two-way relationship between academic and students, with the teamwork process facilitating peer-to-peer learning and a process of reflection-in-action. Fourthly, projects were extended through research consultancies, and in the future will be complemented by students internships with the councils, supervised jointly by council and academic staff. The collaboration between council and universities is seen as the first stage in an ongoing relationship that will continue to examine urban design issues. This process is not intended to replace traditional consultancies, but to assist council in developing briefs for projects that are based on urban theory and empirical research that is directly connected to the local community.

PROJECT STRUCTURE AND AIMS
Two projects in Tasmania demonstrate this process: one in the small east-coast town of Triabunna; and the other in the suburban fringe municipality of Brighton, north of Hobart. Each project involved 20 to 25 students; 16 to 20 MADA students in a semester-long Design Studio and 5 to 8 students from RUSL who were enrolled in an Advanced Design Research (ADR) studio conducted across two semesters. Each group was supervised by academic staff from the respective institutions, who coordinated the individual groups and jointly managed the collaboration between students, the council and the local community.

A similar organizational structure was used for both projects. Over the course of the semester, three consultations with the council and local community were collectively conceived, organized and executed by the two groups, with assistance from council. Both groups reviewed and critically assessed reports previously commissioned by the council, in order to inform a complementary, ideas-driven process that aimed to tease out the urban qualities of the place. The initial site visit provided an opportunity to record and analyse the physical conditions of the region, and to meet the council and the community, highlighting the social, cultural, environmental and economic issues of the locale.

From this point on, both groups worked in different ways. RUSL focused on understanding how the broader context could provide opportunities future strategic regional thinking. Documentation and analysis engaged with a broad range of factors from history to demographics. Both projects included the collation and visualisation of demographic statistics, that illustrate the social profile of the municipality. In Triabunna this involved...
examining the relationship of the town to the broader region of the east coast, while the Brighton project focused on identifying urban principles for the future development. In contrast, MADA focused on understanding how an analysis of urban space, form and social activities and interaction could assist in identifying particular locations and ideas for site-specific design propositions.

The groups returned to site mid-way through the semester to present the regional analysis and initial strategic design ideas to the community. Feedback was invited in the form of verbal discussion, ‘marking-up’ drawings and filling out of feedback forms. The two groups then drew on these discussions to continue research and design development for the remainder of the semester, then returned to site for the final presentation. Projects were displayed in a public exhibition, in a places that were openly accessible to the community in order to invite further public comment and input.

Projects were specifically designed to address the typical challenges for regional councils to attain quality design consultancies within limited budgetary means. The universities were positioned as collaborative research partners, rather than consultants, and this meant that they were not constrained to delivering a fixed outcome but were able to explore a broader range of ideas. The semester-long projects allowed for a slower, repeated interaction with the council and community than can be afforded within the temporal and financial constraints of traditional consultancies, and this revealed a number of issues and ideas that may not have come to the fore otherwise. The duration of the projects enabled an iterative process that allowed the teams to spend time on site, a and the open-ended process resulted in a stronger ‘people focus’ than produced by traditional professional consultancies. Direct engagement with the council and the community through the consultation meetings and ongoing conversations providing the key to this process.

Projects addressed key research questions, particularly issues of connectivity, urban legibility and social inclusion. Outputs were freed from the obligation to ‘deliver’ realizable propositions, allowing for ideas based on imagined future scenarios that ranged from highly realistic to provocatively utopian. Work was collated into an Urban Design Report, which presented a wide spectrum of ideas for the council to consider, at both a detail and strategic level, none of which they are necessarily committed to executing. Visualizations of these propositions allowed both the council and the community to entertain future scenarios that might not seem possible within the current financial, physical or social context, assisting them to think strategically about longer-term outcomes. This
process engaged the community, council and the university in a form of practice-led research through design, which allowed for a process of ‘reflection-in-action’ that fostered critical spatial practices and emphasised the importance of theoretical and value-based ideas.9

BENEFITS COMMUNITY/COUNCIL/UNIVERSITY EXCHANGE

There are a wide range of benefits in undertaking ‘live’ community-engaged projects with students. The interface between students and the community provides a different model of interaction than is offered through traditional professional consultation processes. As the students are entering into entirely new territory, they tend to bring an openness to engage and listen to the community, which is different to the engagement with more experienced professionals who are often looking for specific information or answers. The students are often very direct in expressing their opinions and interpretations, and the community are equally direct with the students. This creates an ‘honesty’ of exchange that engenders a sense of trust. Also, on site in the neighbourhoods, the students are perceived as less intimidating to the community than ‘suited’ practitioner may be, and the locals engage openly in conversations. In both projects various community groups offered an openness and willing welcome, which allowed the team to access a broader range of local knowledge, and the community enjoyed hosting a group of young people whose positive energy was a welcome counterpoint to some of the more negative issues that were facing the towns at the time.

The direct exchange with the community was a valuable learning experience for students interacting with the public highlighted their responsibility as designers in the public realm, designing for people. It was also beneficial for the council in that the openness of the exchange between the students and community generated ‘a buzz’ where council were seen to be being proactive and forward thinking in engaging with fresh ideas. In this way, the benefits for the council were broader than just the ideas presented. The process also provided opportunities for the council and university to engage with mainstream and professional media, to promote involvement and disseminate ideas. Throughout both projects the team were interviewed by ABC radio, and the final presentations of the Brighton project included a live 2 hour outside broadcast from the exhibition in which council, community, staff and students were interviewed. The ABC also used this as an opportunity to discuss a range of other community-based issues from the region, which provided an positive news stories from a municipality that is quite often portrayed negatively. Media attention allowed for a positive conversation around the council, rather than a complaints-focused commentary. The presentation of proposals that are outside the limits of annual budgets offered ideas that could become the catalysts for longer-term strategic thinking. As a consequence, the ideas developed through this collaborative process may challenge the council to think about staged strategic plans that span across years and scales, and involve the engagement of others, including a broad range of stakeholders and funding bodies. The speculative propositions allowed for the council and the community to discuss ideas of various scales, and this offers the potential for an ongoing collaborative engagement process that enables the municipality to determine the priority of projects.
BENEFITS UNIVERSITY – LEARNING, TEACHING AND RESEARCH

Critically reflecting on the projects, the students revealed their appreciation of the benefits of working on live projects that were situated within a specific community, particularly the direct interaction with both council and the local public. Local knowledge of the social and spatial dynamics of the settlements provided an invaluable starting point, and the students acknowledged the importance of the insights of the various community groups in assisting them to develop the scope of the projects. Feedback at the interim stage provided a level of support that boosted the students’ confidence in their proposals. The students also acknowledged the importance of learning how to communicate to an alternative audience, rather than the closed internal discipline-specific conversation that is central to most studio projects.

This model of engagement also has a diverse range of benefits for the project leaders, with projects productively bridging the teaching/research nexus and leading to publication outputs. Both projects were funded research, and the students were active participants in this process, generating empirical research and developing literature reviews and ideas that informed the design research. Students were central to the production of Urban Design Reports delivered to the councils at the end of each project. The Triabunna project led to a continued professional engagement to develop the designs for a series of stage one ‘catalyst’ projects that are scheduled to be built later this year, extending the realm of practice-led research. Students from the studio have been involved in this design development process, gaining valuable insight into the rigors of taking a design idea through to built execution. This project has evolved into ongoing interdisciplinary design research, directly engaging community and working within and between the two universities.

Cross-institutional exchange between the universities was central to both projects. Throughout the process, the project leaders explored ways to address the complementary requirements of the different curricula, while also keeping the projects open to new opportunities for interaction and engagement. The site visits and workshops provided opportunities for exchange between council, community and both student groups, establishing a feedback loop that encouraged further iterations.
of projects. This also allowed sites to be revisited, recording details that may have been initially overlooked. This process was common to both the Triabunna and Brighton projects, but in the latter the interaction was also extended through Skype link-ups between the two students groups for review and discussion. The RUSL students also provided feedback on the interim proposals of the MADA students, through marking up drawings and written critique. This iterative process allowed the broader-scale ideas of connectivity and urban legibility that were the focus of the RUSL study to be overlaid onto the site-specific propositions produce by MADA. This was extended in a shared critique presentation session in Melbourne with both team of students, project leaders and external guests directly before the final community presentation.

While the pedagogic focuses of each of the institutional groups differed, there was an increasingly productive exchange between the groups. The second project, in Brighton, provided clearer connections between the two groups as their respective tasks were more closely aligned. Facilitating Skype discussions between the groups also yielded better results than relying on the students to communicate directly with each other.

Central to this process was the professional and personal relationship between the project leaders of each group. An open and generous willingness to engage in both creative and critical thinking was mediated by striking a balance between the interconnection and separation of the projects. The process provided a productive exchange, which establishes collaborative track record for future grants and projects.

**CHALLENGES**

Like any ‘live’ project, these situated and community-based student engagements presented a number of challenges, compared to more traditional models of design studio delivery. Both involved large amount of preparation and organization from the staff and required a higher than usual commitment from students, in that they were expected to travel and spend time on site in order to get to know the places and people. The strict timetabling of the semester presented challenges in terms of scheduling, and our experience has been that a single semester isn’t actually enough time to ‘dig as deep’ as might be necessary to truly understand a place. Facilitating interaction between the two student groups was also challenging. While the technology allowed opportunities for exchange, the students were very tentative in self-initiating interaction, both in person and remotely. Continuing to develop stronger reciprocal working relationships would allow stronger critical reflection between the strategic and site-specific approaches of each group.10

Image 5. Walking tour of final work exhibited in shop windows. Image by author.
CONCLUSION

Engaging students with situated and community based projects provides a range of diverse educational and practice benefits which develop new ways of thinking about urban issues, particularly in regional towns and cities. The projects exposed students to an alternative form of architectural practice whereby the architect is an active participant in the development of research questions and project scope, rather than being instructed to carry out a specific design task. The overarching intention of this collaborative process is to ‘stretch’ traditional modes of planning, urban design and architecture practice, finding and filling gaps in and between these processes that are currently not acknowledged. Traditionally, urban development is guided by planning policy, which attempts to define boundaries or limits, and this can be a very blunt and ineffective tool for instigating positive change. The limits of the terms of reference of traditional design consultancies can also restrict these processes to tight timeframes, which can be un-engaging and disempowering for the community, and lead to limited outcomes. In contrast, the collaborative process employed in these projects were ideas driven, and the duration of the project allowed for more in depth investigation than traditional consultancies, with the field trips providing valuable community engagement. Although the projects were free from specific budgetary constraints, the limits of funding was taken on board as a part of the design problem. This was manifest in various ways, either through the development of staged propositions, or the continual refinement of projects to reduce complexity while optimizing performativity. The students acknowledged the council’s limited resources as a major consideration, and this encouraged them to ensure projects maximized inherent value.

The outputs of the project focused on the visualization of possible futures, creating a mode of communication that is more accessible than vision statements, policy frameworks and strategic directions outlined in dot point text and diagrams. This process allowed for a more inclusive mode of community interaction in which stakeholders were able to begin to project themselves into the projects, providing a contrast to other modes of community engagement in which the council frequently struggles to garner significant levels of participation and involvement. The projects present a productive model for the university as a ‘practical theorist’, working collaboratively with the policy-makers and city builders to imagine urban futures, through a practice-led research model.

References:
Caught in the Act of Collaboration: Students’ Experiences of Collective Learning within a Real-World Design Studio Context

LINDY OSBORNE
Queensland University of Technology, Australia

JILL FRANZ
Queensland University of Technology, Australia

JULIE DAVIS
Queensland University of Technology, Australia

LYNDAL O’GORMAN
Queensland University of Technology, Australia

JESSICA ELLIS
Queensland University of Technology, Australia

GLENDAL AMAYO CALDWELL
Queensland University of Technology, Australia

This study is an evaluation of design students’ perceptions of the benefits of collective learning in a real-world collaborative design studio. Third year students worked in inter-disciplinary teams representing architecture, interior design, landscape architecture, and industrial design. Responding to a real-world brief and in consultation with an industry partner client and early childhood education pre-service teachers, the teams were required to collectively propose a design response for a community-based child and family centre, on an iconic koala sanctuary site. Data were collected using several methods including a participatory action research method, through the form of a large analogue, collaborative jigsaw puzzle. Using a grounded theory methodology, qualitative data were thematically analysed to reveal six distinct aspects of collaboration, which positively impacted the students’ learning experience. The results of this study include recommendations for improving real world collaboration in the design studio in preparation for students’ transition into professional practice.

INTRODUCTION
In the design workplace, collaboration is an organisational tool commonly utilised to support information sharing, design generation and knowledge transfer among staff from different practices or discipline areas. The qualitative case study reported in this paper involves an evaluation of third year design students’ perceptions of the benefits of collective learning in a real-world collaborative design studio, and how this learning prepared them to transition into professional practice. The design students worked in inter-disciplinary teams to respond to a real-world brief. In consultation with an industry partner client and early childhood education (ECE) pre-service teachers, the teams were required to collectively propose a design response for a community-based child and family centre, on an iconic koala sanctuary site.

This study seeks to respond to the need as identified in design education literature to more fully understand the learning impact of the implementation of real world collaborative design experiences within a tertiary educational setting, as experienced from the students’ perspective.

CONTEXT
The focus of the study was a collaborative design studio comprising 12 teams of five third year architecture, interior design, landscape architecture, and industrial design students, from a large Australian university. The selection of this particular student cohort was relevant to this study, as the students were nearing completion of their undergraduate study, and preparing for transition from design student to active workplace participant. Sixty students elected to participate in the design of community-based child and family centre on an iconic koala sanctuary site, after being offered several project alternatives.
representative from the sanctuary prepared a design brief and regularly engaged with the students during timetabled classes to review their design progress and answer brief-related questions in her capacity as the project client’s representative. Students were also provided with the opportunity to visit the physical proposed site to conduct a preliminary site analysis.

ECE pre-service teachers and academics from the same university, and practicing early childhood teachers, also collaborated on the project. One representative from the ECE field was allocated to each team of designers. On several occasions throughout the teaching period, these early childhood teachers met with the design teams to provide feedback on the developing proposals and to suggest ways in which designs might be refined to better meet the needs of future users of the building – teachers and young children. The project brief required design teams to enact a distinct vision for an early learning centre based on the philosophy of education founded in Reggio Emilia, Italy. The brief also outlined how the centre would endorse principles of Education for Sustainability (EfS), in line with the goals of the sanctuary. Thus it was important to include the perspectives of early childhood teachers who had knowledge and interest in both Reggio Emilia, and EfS principles.

LITERATURE REVIEW

REAL-WORLD COLLABORATION

In the architectural profession, innovative outcomes are reliant on team collaboration – the more complex a design proposal is, the more complexity there is in understanding and managing collaboration processes. IBM’s white paper (2008) focusing on new approaches to collaboration, seeks to understand how collaboration actually yields results. They argue that this is by fostering innovation: ‘…true innovation is virtually impossible without collaboration. And innovation is indispensable to success’ (IBM, 2008, pp. 02).

Successful collaboration in the workplace is contingent not only on the available digital technologies, but also the communication skills of those involved. Also cited in a white paper by IBM, Klaus Kleinfeld, President and Chief Operating Officer of Alcoa argues that: ‘The only sustainable competitive advantage is the type of people you have and the way they work together’ (Ringo & MacDonald, 2008, pp. 01). Chiu argues that design practice is project-oriented and that when enacted, several dependency relationships develop amongst group members, including ‘data, task/process, and temporal dependencies’ (2002, pp. 194). To facilitate a collaborative workplace culture, these dependency relationships must be fostered, to ensure transparent co-operation and communication amongst group members, and a clear, united work ethic and goals. Thus, we saw the project outlined here as an important opportunity for designers from diverse fields and early childhood educators to enhance their communication skills through real-world collaboration, and to build professional relationships across disciplinary boundaries.

REAL-WORLD LEARNING

The value of real world learning has been acknowledged for the role it plays in preparing graduates across many fields for their entry into the workplace. Universities are increasingly enacting and discussing real world, or work-integrated learning approaches as part of the daily business of tertiary education (Brown, 2010). Some authors stipulate that genuine real world learning must take place outside the walls of the university, while others such as Fitch (2011) take a broader view that encapsulates activities in practice settings such as studios, and involving, “real client projects” (pp. 492). Lee, McGuigan and Holland, (2010) describe “community-based” (pp. 569) learning activities, which are located beyond traditional classrooms into real world, work-focused projects for the benefit of students, university staff and business partners.

While the literature presents various views on the benefits of real-world or work-integrated learning, the intersection of collaborative and real-world learning approaches in universities is not a well-developed space, particularly with respect to design education. Firstly, the literature does not identify an obvious relationship between the collaborative structure within design education and that which exists in professional practice. Although it is apparent that collaboration is an essential component of a successful workplace, there has been little research into how this can be successfully reinterpreted into a collaborative learning experience. While there is published information on the importance of teaching professional collaboration (Slavin 1990; Gokhale 1995; Harrer et al 2006; Roseth, Garfield & Ben-Zvi 2008; Popa et al 2010; Kyriyanidou et al 2012), there is little written from design students’ perspectives – on how they might perceive group work and how collaborations within design learning might benefit their design education. This study aims to close this gap, by attempting to better understand the implementation of real world
collaborative processes within the design classroom, and reviewing the experience of group work from the students’ perspective.

METHODOLOGY
In order to investigate students’ experiences of collaboration, a qualitative case study research approach was employed. Through the review of previous literature and preliminary discussions with students and academics, an initial set of collaborative themes was developed to inform a framework for data collection. These themes aimed to:

• Establish students’ perceptions of collaboration, in order to understand their perceived value of it and their motivation to participate in it;
• Investigate students’ attitudes towards collaboration and how this affects their ability to cooperate within group work;
• Explore the incentives or goals that positively promote student involvement within group work based projects; and
• Ascertain how students value collaboration as a tool to aid them in their transition from student to active workplace participant, and how their understandings of collaboration might be extended to include collaborators (early childhood education students) from outside the design disciplines.

Data collection structured using the themes just identified took place over four steps, each involving different data collection methods, for example: short-answer questionnaires, multiple-choice surveys, in-depth interviews and participatory action research. The participatory action research step was enacted in the form of an oversized collaboration jigsaw puzzle. Puzzle pieces with a series of questions relating to their experiences with the client, education students/academics and their overall experience of group work, were issued to each of the 12 groups. Students were asked to anonymously complete the questions on each puzzle piece and then place their pieces on a board. This allowed students to physically engage in the data collection process and allowed responses to be gathered from all 12 student groups.

Qualitative data collected through the questionnaires, survey, interview and participatory action research were thematically analysed using a grounded theory inductive methodology, to allow themes to emerge rather than restricting them within an overarching theory. These themes outlined the students’ experiences of the real-world collaboration, and were utilised to form recommendations on how to improve future collaboration learning experiences.

EARLY FINDINGS
Early findings emerged through thematic analysis of the data obtained from the first three steps of data collection. The aim of this preliminary data collection was to highlight issues with respect to previous collaborative experiences that may impact students’ expectations of group work, when engaging with the collaborative design studio.

1. Previous Negative Collaboration Experiences
When questioned about their past experiences of collaborative group work, 65% of students advised that their attitude toward group work had been negatively affected by a previous experience – in particular, a lack of commitment and attendance from fellow group members. One of the biggest concerns for students undertaking collaborative projects was
the notion of having to ‘carry’ non-collaborators within the group who, at the completion of the project would receive the same grade, even if they did not actively contribute. The assessment issue aside, students sought to address potential communication problems and lack of commitment by working with at least one fellow team member with whom they already had a relationship, and whom they knew worked well.

“At least if the rest of the team is ‘slack’ then I can count on that partner to help carry the load equally rather than on my own.”

Students also felt that the type of collaborative project impacted communication and commitment.

2. Improving Collaborative Learning through Authentic Projects

When questioned about their past collaboration learning experiences, 75% of students agreed that the way in which they were taught collaboration could be improved. All students agreed that the introduction of multidisciplinary teams to collaborative learning was vital in preparing them for real-world design practice. Finally, 90% of students agreed that a project with a real-world outcome would produce greater incentive to collaborate, than traditional hypothetical collaborative assessment pieces.

3. Student Perceptions of the Value of Collaboration

While it was clear that initial perceptions and attitudes towards collaboration were somewhat negative, the data showed that students believed that collaboration is a valuable tool and that they understood the importance of developing collaborative skills in preparing them for real-world professional practice.

“It is not often you will work with people who completely agree with your ideas and thus collaboration helps a person develop skills in listening, learning and compromising.” [S19]

FINAL FINDINGS

Thematic analysis of the fourth step of the data collection revealed the impact of six distinct aspects of collaboration that positively contributed to the development of student work and provided invaluable learning experiences for the students.

1. The Impact of Real-world Outcomes

The tangible and potentially real outcome of the collaboration not only created an incentive to produce high quality work, but it also helped to build a positive work ethic amongst students. This, in turn, boosted the participation of team members.

“It wasn’t just about trying to think about doing things that best you could, it was more about doing the best for everyone.” [S4]

Due to the exciting incentives of the real-world collaboration, student attitudes towards group work were shifted, positively. The project provided them with the opportunity to overcome negativity towards group work, through the provision of a unique tangible consequence to their collaboration – this acted as a common goal to unite team members and produce a more successful collaborative experience.

2. The Impact of Working with a Real Client

Interacting directly with the client gave students an invaluable insight into how they should communicate their design ideas, and first-hand experience of how to deal with clients’ expectations of the design process.

“Understanding the real-world needs and wants of the client solidified the boundaries of the project.” [S29]

Students also communicated how their interaction with the client through ‘client meetings’ prepared them for professional practice – it gave them an insight into professional conduct between the client and the design professional.

3. The Impact of Client Changes to the Design Brief and Scope of Work

Interaction with a client also taught students to be flexible with their design proposals. When asked what could be improved with regards to their client collaboration, one group of students stated:

“I think the client was helpful with the collaboration, however, she changed a key point halfway through the project. This could be improved.” [S18]

This comment provided the research team with an important insight. The students’ capacity to interact with the client gave them a real-world experience with regards to the client’s prerogative to request variations to the brief and expected scope of work throughout the design process. The learning encounter with a real client provided students with an understanding and experience of real-world variations to the project scope and how to manage client expectations.

4. The Impact of Working in Multi-disciplinary Teams

Through working in multi-disciplinary teams, students were able to gather an understanding of how different disciplines progress through the various design stages of projects and how they influence the design process. Students both recognised and valued how this interaction would help prepare them for professional practice.
“It has extended my understanding of the role of other professionals within the built environment, allowing me to interact and communicate between disciplines more effectively.” [S22]

Receiving critique and advice from the ECE students and ECE academics, gave design students a unique insight into what it is like to work in collaboration with consultants and experts, outside of the design professions. The experience of working in multi-disciplinary teams also provided students with an understanding of the parameters of each discipline’s scope of work within a project. This insight allowed the students to appreciate and understand the benefits of collaborative teamwork, and the necessity of contributions from people with different areas of expertise, within real-world practice.

5. The Impact of Good Communication

In addition to students gaining an understanding of the different roles required within design collaboration, the experience also gave them insight into the importance of good communication and negotiation.

“Design requires collaboration between all areas of disciplines involved, including those outside of design. I have learned that it is important to consider everyone involved as well as how to communicate with them.” [S26]

6. The Impact of Collaboration on Design Outcomes

Access to communicating directly with ECE students and ECE academics, who would eventually be potential end users of the types of learning environments being designed, provided students with an understanding of how their design decisions impacted the day-to-day usability of the building.

When questioned about how the interaction with the ECE students and ECE academics would help prepare them for practice as design professionals, students responded:

“I think they have helped me realise the impact on other people, not just designers in the collaborative group, our design decisions during the design process will have in the future.” [S55]

Critique from ECE students, ECE academics and the client during design presentations, also helped to build awareness with respect to how designs are understood and interpreted by those outside of the design professions. Collaborating with ECE students and ECE academics, who were able to give feedback from an end users perspective, gave students an experience of:

“…dealing with multiple user groups with different perspectives about how the design should eventuate.” [60]

OVERALL EXPERIENCE

Overall, students were enthusiastic about being part of the real-world collaboration, however, they also expressed concern about their lack of previous collaboration experience. A new respect for collaborating team members also developed.

“There is an understanding now that there needs to be a level of openness of ideas amongst team members, valuing of opinions and respecting design ideas.” [29]

Students developed an enhanced understanding of the principles of collaboration as they apply to the design context, rather than seeing collaboration as a simple delegation of tasks.

While the majority of feedback was positive, there were still problems faced with attendance and participation of some students. Overall, student experiences of the collaboration were positive.
AREAS FOR POTENTIAL IMPROVEMENT

Five areas for potential improvement are provided in response to the outcomes of the thematic analysis, and to assist in improving the real-world collaborative learning experience:

1. **Sufficient timeframes to complete work**: Students believed that the timeframe for completing their work, combined with the amount of work expected of them, did not allow sufficient time for reflection on the collaboration experience.

2. **Sufficient in-class contact time and teaching ratios**: Students believed that the weekly four-hour studio time allotted was not enough face-to-face contact time. Students argued that more time was required, not only for the groups to come together collaboratively, but also to gain adequate information and critique about the design project itself. Students also believed that the class required a higher staff-to-student ratio, as some groups missed out on one-on-one contact time with their tutor, at times.

3. **Appropriate timing of expert feedback**: Although the feedback from the ECE students and ECE academics was highly beneficial to the design students, the consensus was that this was provided too late in the project, and did not occur often enough. Students also requested that in order to make better use of the collaborative opportunity...
and the specialist expertise and knowledge offered by the ECE students and ECE academics, in future they should attend class each week and be added as an additional and formal member of the design team.

4. **Sufficient timing of client contact:** Similarly, although feedback received by the client was also highly beneficial students, they believed the client could have had a stronger involvement in the project and more contact hours with students.

5. **Potential addition of a Project Manager role:** Some students also suggested that the addition of a Project Manager’s role would be useful and aid in keeping the collaboration on track.

**CONCLUSION**

The real-world collaboration with the wildlife sanctuary was a successful positive experience for students – both from the design and the ECE disciplines. The experience provided students with an in-depth understanding of the collaborative design process within a simulated professional practice context, and strengthened their skills with respect to engaging in collaborative processes. In all, the study provided evidence of the added value of integrating a structured real-world collaborative design studio into a design student’s education. Along with this were improvements in students’ perceptions and attitudes towards group work, the development of incentives to reach a common goal collectively, and improved participation and motivation levels of the collaborating team members. This very beneficial development of design students offers clear advantages in helping to prepare them for future collaborative processes within the professional design workplace.

**REFERENCES**


Practitioners in the built environment know Patrick Geddes (1854-1932) as an innovative urban planner. Geddes is less known for his contributions as an educator. Yet these remain a source of inspiration for experiential education communities today. Geddes advocated a holistic approach to education by arguing that learning is based on the ‘three Hs’ (Heart, Hand, Head) – through the senses and personal experience – rather than the ‘three Rs’ (Reading, Writing, Arithmetic). He often illustrated his thoughts on subject areas through “thinking machines”, i.e. diagrams showing the relationships between concepts/subjects and disciplines. For example, with the “thinking machine” Place, Work, Folk (1915) Geddes argued: “Town Planning is not mere placeplanning, nor even work planning. If it is to be successful it must be folk planning.”

A century on, a prominent community of practitioners in the field of experiential education has developed a contemporary approach to the ‘three Hs’. As design thinkers they are equally holistic in their approach and utilise tools that are very similar to Geddes’ “thinking machines”. Leading design thinkers, such as Tim Brown, Roger Martin, David Kelley and Robert Curedale believe that as long as they stay grounded in what they have learnt together with people in the situational context they explore, solutions can be generated that meet the world’s needs.

This paper takes Patrick Geddes’ renascent practical vision as a starting point. I will then anchor my discussion in the debate that calls for a new pedagogy of design thinking education, and will draw on two particular case studies to explore this debate in a situational context. Akin to Geddes’ vision, I will illustrate how designerly thinking offers a framework that expands the perimeter of collaboration in the built environment.

PATRICK GEDDES’ PRACTICAL VISION
The typical blurb about Patrick Geddes (1854-1932) goes something like this: “botanist, town planner and social reformer”. However Geddes was significantly more than that. He was the pioneering champion of a new style of inclusive, hands-on education and an important radical thinker. His ideas, prompted by a biologist’s understanding of the natural world, led him to see humankind in the widest possible context.

As an empathetic doer and thinker Geddes never tired of highlighting his aspiration to represent the local population. For him modern urban planning was based on the inclusion of local experiences and the genuine incorporation of local voices. He repeatedly emphasised the role of urban planners as “go-between” or “in-between” professionals. In Geddes’ eyes, the planner’s responsibility was to facilitate such involvement and incorporation across a broad range of local people(s). Geddes’ solution was the emphasis on a holistic approach to education by arguing that learning is based on the ‘three Hs’ (Heart, Hand, Head) through the senses and personal experience.

For Geddes the powerful knowledge of place and people that planners gained from surveys and other professional tools such as maps and plans had to be complemented by the planners’ continued empathetic involvement with the situation of those planned for. The main theme of his work Cities in Evolution (1915) was to emphasise that modern town planning was to direct the process of urban and social evolution. With the desire to appeal to “practical men” and “civic workers,” Geddes pointed out that the process of urban improvement had to be understood as a comprehensive evolutionary cycle, representing progression from “the individual’s activities” to the “highest deeds in City.” Sophia Leonard claims that in relation to planning, “public participation for Geddes was not the ‘icing on the
Moreover, Noah Hysler-Rubin argues: "[that] the greatest contribution of Cities in Evolution was to allow a better relationship between planner and community. Similarly, the regional survey constituted an opportunity to involve as many people as possible in decisionmaking […] bringing together the planners and the planned."6

It is interesting to observe however that on the occasion of the 1968 edition of Cities in Evolution Peter Green took stock and came to the conclusion that Geddes' expectations for the collaborative responsibilities of the individual planner had turned out as an unrealistic attainment. It had also become clear that during his lifetime Geddes himself had not lived up to his own high aspirations and/or did not have the means to achieve "public involvement".7

The Failure Of Geddes' 'thinking machines'
Geddes himself claimed that "[a]s 'sociography', visual forms of classification allow not only for comparison but may also suggest relations between seemingly disparate phenomena in the manner of geometry."8 Whereas Geddes optimistically believed the two-dimensional forms captured in these diagrams and charts to be visually arresting 'thinking machines', they have often been dismissed as incomprehensible artifacts that were unable to express time in spatial representations. Mumford first termed Geddes' 'thinking machines' as 'art of ideological cartography,'9 only to later state that they had become a rigid, calcified graphic system.10

If considered as standalones these diagrams perhaps indeed remain incomprehensible. Yet, if considered as embedded in various other layers of thinking, dialogue, and action, they might, at times be the best possible expression and method available to capture emergent knowledge. Moreover they are not dissimilar to current white board drawings used, for example by software engineers to clarify their thoughts and work processes.

Geddes 100 Years on
During the course of the last 100 years urban theory has become a more open-ended framework. We have learnt to better capture and sustain necessary variations and local considerations. Geddes' aspirations to represent the local population in planning processes are no longer disparaged or
doomed to failure from the outset. The prospects of 21st century culture and technology offer more advanced tools that enable us to shape our social landscape through inclusion, visualisation, ordering, comparison, and to utilise such tools in planning by means of selection, schematization, and synthesis.

Just as Geddes did a century ago, design thinkers take issue with an educational system that still exults the ‘three Rs’ (Reading, wRiting, aRithmetic) to the exclusion of the benefits of a more holistic approach to education. Proponents calling for a new pedagogy for design thinking education argue that learning is better based on the ‘three Hs’ through the senses and personal experience. In their eyes, the contemporary school system is not geared up for 21st century challenges that require deeply contextualised observation and effective interdisciplinary practical effort.

In response to this situation, design thinkers have developed an empathetic and prototype driven practical approach. They have become the “go-between” or “inbetween” professionals of our time. They employ a well-formed framework to facilitate involvement and the incorporation of ideas from a rich spectrum of participants.

PART II
DESIGNERLY THINKING TO CO-CREATE POSSIBLE FUTURES

Like Geddes, design thinkers believe that as long as they stay grounded in what they have learnt with people in the situational context they explore, solutions can be generated that meet societal needs. Iterating through modes of discovery, interpretation and prototyping emergent solutions sustains this grounding. Designerly thinking in action is about effective co-creating. The co-creation activity is initially about unfolding awareness, events, observation, real-time intervention, and a holistic body-mind alertness that is highly adaptive and evidence based rather than theorycentric. Experiential learning, the inter-disciplinary exchange of ideas and the rapid prototyping of experiences, ideas and/or tangible objects are key characteristics of the design-thinking framework.

The Youth Hub Christchurch Project

In 2014 Alejandro Haiek Coll, a Venezuelan urbanist, initiated an architectural public art project in Christchurch in collaboration with The Physics Room. In his work Coll demonstrates how architecture can assist in the creation of participatory citizenship with
regards to the renewal and resuscitation of inactive urban landscapes. The impact of the destruction of large parts of Christchurch – resulting from a series of major earthquakes in 2010 and 2011 – created an opportunity for Coll to contribute with his approach to architectural public art.

Coll agreed to a series of workshops specifically to generate ideas with local residents and Christchurch communities. With Coll engaging remotely, two initial workshops that applied a design thinking strategy to problem finding in early 2014 led to the decision to work on a project aimed at finding solutions for young people in need of housing and or medical care. For close to a decade Christchurch’s youth in need, who cannot rely on family support, can access services provided at the 298 Youth Health Centre. The need to expand, however, as well as the current lease situation and the desire to centralise various dispersed services, spurred the center’s director Dr Sue Bagshaw to plan a NZ$10m Youth Hub that includes transitional housing.

With Coll on site in Christchurch in mid 2014, three workshops were held with various local groups: youth who either work at the Youth Hub or use the centre; representatives from various local organisations who belong to the more established community of stakeholders; and a number of smaller and more recently established NGOs and start-ups not previously involved.

All three workshops followed the same format to generate ideas in an empathetic and iterative way that allowed for a rapid and effective cross-fertilisation of ideas. Small teams developed ideas in response to challenges presented in the form of “How might we…?” questions such as “How might we use the youth hub to develop knowledge about the relationship between art and health?”; and “How might we facilitate social entrepreneurship and training for young people?”.

Participants were asked to express their ideas using cheap props and simple everyday objects, to find expression in a three-dimensional form. These solution artifacts, as rough and uncut as they inevitably turned out after such a short creative process, were presented to other teams in order to generate feedback and so make improvements. The results were captured in various media.

After his departure Coll provided a detailed proposal for the future Youth Hub. The container-based solution shown above is in step with the spirit of related projects in Christchurch at the time. Parallels can also be found in relation to Coll’s project Tiuna el Fuerte Cultural Park in Caracas for which he won the IAPA 2013 award. The overall output of the workshops fed into various applications for funding.

This empathy-based and action-oriented form of integrative thinking aimed at reframing the current situation in search for better solutions. Rapid prototyping strategies and techniques were key to
generating such solutions as they were achieved through collaborative interdisciplinary teams. The use of props as means of discovering and exploring ideas and the tangible expression of these ideas in the form of auxiliary artifacts, drives thinking beyond two-dimensional expressions such as written notes or reports.

Through this holistic form of “thinking with your hands,” existing ideas are combined and extended and thus new breakthroughs become possible. By taking into account the desirability and feasibility of emergent ideas, the workshops built on the same principles that Geddes encapsulated in his “thinking machine” ‘Place, Work and Folk’. Geddes urged planners to plan with rather than for people through deeply understanding their situational logic from a geographic, economic and anthropological point of view. As the next example will likewise illustrate these aspirations have become an obvious starting point for design thinkers as social problem-solvers.

The Bike Tank at the u.Lab in Sydney

The U.Lab at the Faculty of Design, Architecture and Building at the University of Technology Sydney (UTS) was located – during 2011 and 2014 – along a pedestrian strip connecting the Australian Broadcasting Corporation’s main office with Sydney’s Central Railway Station. As a result, the U.Lab – loosely described as “your place to experiment and accelerate ideas” – was easily accessible for the general public. One of the many concepts the U.Lab developed is the BikeTank 5x5, described as:

“...an experiment in collective creativity for cities; a new form of think tank that you cycle to. It is comprised of a multiplicity of members, all self-elected, who come from diverse pockets of the Sydney community. Together we are exploring how design can make cities more human.”

Over the period of ten successive Tuesday mornings twice a year, the U.Lab opened its doors to people who dropped in for an hour at the start of the day to collectively think about urban challenges. This approach comprises the following five steps, each time boxed to last 5 minutes: Empathy, Storming, Stoking, Ideation and Prototyping. Based on this structure, design challenges are typically introduced...
by local thinkers, leaders, or activists in short inspirational speeches. Subsequently small teams form and race against the clock to develop solutions for the posed challenge. The 60-minute event is structured in a way that people are geared towards thinking outside the box and on their feet, that they use props to find three-dimensional expressions for their ideas, that they work in teams and present back to gain and then utilise feedback.

The U.Lab has been teeming with activities and the founders of the initiative have documented these and their findings in a series of books, which go beyond the propagation and discussion of new models of teaching. So-called infusion programmes aim at inclusion with industry, local government and communities, and the aim is to deliver “innovation in practice,”14 on a strong citizen-driven participatory basis.

Figure 7. Adapted from Design Thinking process model from Stanford d.school. The model illustrates that Design Thinking is not only a linear model. The dotted lines show that the design process often requires multiple iteration and the revisiting of stages following learning through prototyping and testing.

Robert Curedale (2013: 106).
See Geddes’ Chart of Life (Figure 3) for an essentially related diagrammatic expression of the same idea.
CONCLUSION

Patrick Geddes, were he alive today, would most likely be a leading proponent of design thinking as a form of experiential education. Like Geddes, design thinkers see social groups in a broad context. They build on the ideas of others, using visual tools and aiming for a high degree of inter-disciplinary collaboration based on the ‘three Hs’ approach to education. As illustrated, design thinkers favour the visualisation of ideas and develop their own flavour of ‘thinking machines’ that are best understood from within a specific context. An enhanced level of collaboration allows every participating player to assess the viability, desirability and feasibility of a project beforehand rather than post-project. Subsequently, on an organisational level a project manager, for example, can beneficially balance legitimate business requirements for stability, efficiency, and predictability with the design thinker’s need for empathy, spontaneity, and focused experimentation.

In contrast to Geddes and by nurturing the potential of co-creating in an inclusive way from the outset, 21st century design thinkers have arguably been more successful with respect to truly engaging participants from a range of behavioural, cultural, physical, and social backgrounds. For design thinkers, the potential of outstanding individual thinkers does not present itself as of great relevance. Despite reverence for Victorian thinkers and doers such as Patrick Geddes and Isambard K. Brunel, design thinkers emphasise that the potential for finding solutions to the complex challenges of our time is located in well-tuned inter-disciplinary teams. Thus, Geddes and design thinkers have in common that as facilitators or “educators they purposefully engage with learners in direct experiences and focused reflection”.15
How can architecture help restore a sense of identity and place for disenfranchised urban Māori youth in post-earthquake Ōtautahi/Christchurch? Ngāi Tahu historian Dr. Te Maire Tau likens Māori without a knowledge system to ‘ghosts on the plains’. He explains how the impact of colonisation on a Māori worldview caused the collapse of the Māori knowledge system that was the root of all the specific rituals of Māori life. Caught between two worlds, in a 'Twilight of the Gods', Māori have had to reconstruct their identity in the face of a global hegemony, and this is still evolving to this day.

This research investigates how architectural design can help return a sense of identity and belonging to disenfranchised urban Māori youth through the resurrection of the Māori carving school. The design research investigation is set within the complex challenges that exist within post-earthquake Ōtautahi/Christchurch, where many Māori lost homes and livelihoods, especially Māori youth in the Eastern Suburbs. In this design-led research, the whare whakairo is used as a mnemonic device aiding in creating a collective sense of Māori identity and belonging within a community. For architecture to reflect cultural identity we must go beyond the mere appropriation of traditional forms and motifs; rather, we must integrate ritual into the experience of architectural space, integrating people with the architecture and architecture with the land.

CULTURAL REVITALISATION THROUGH ARCHITECTURE

Architecture in the Māori tradition is a cultural construct; it derives its meaning from the activities that take place within. Memories of these activities ‘haunt’ architecture, as we are unable to witness the architecture without supplanting cultural meaning upon it. Likewise, Māori derive elements of their own identity from witnessing themselves within the architecture around them. According to architect and theorist Neil Leach, as individuals begin to identify with an environment, their identity comes to be constituted through that environment or architectural backdrop. In this sense, the expert carver in Māori society, the person who imbues architecture with stories and meaning, is both the protagonist of this relationship and subservient to the mechanisms of culture. This is particularly evident in the architecture of the whare whakairo or carved Māori meeting house, which plays an important role in Māori society and identity. Often embellished with ornate carving and decoration, these whare tell the tale of their origin, and in so doing, the origins of their people.

Sir Apirana Ngata looked to the whare whakairo as a means of cultural revitalisation and to reverse the effects of colonisation. As a member of parliament, Ngata used his political influence to try and restore the dying arts of carving and house building, and through this he hoped to restore Māoritanga – a term that represents all the elements of a uniquely Māori way of being in the world. The program of a carving school was selected for this investigation, as it was the model Ngata used Ko Wai te Ingoa o Tenei Whare? to revitalise Māori communities in the North Island. South Island Māori did not have a strong tradition of carved whare; rather they identified with the gathering of mahinga kai (natural resources), specifically the gathering of eels for the swamp dwellers of Ōtautahi/Christchurch. For this reason, the architectural design for this research investigation

* At the completion of the house opening ritual the elder climbs to the apex and asks of the crowd: "Ko wai te ingoa o tenei whare?" "What is the name of this house?"
is modelled on the hinaki (eel trap) to reflect the importance of ‘eel’ culture to the Māori of Ōtāutahi. The location of the building design in the central city of Christchurch reflects Ngāi Tahu aspirations to have an urban identity within the city. Its central location acts as a beacon for cultural revitalisation for the whole city, inclusive of all the many communities that make up Christchurch.

The carved pou pou (post) of the whare whakairo and of the pataka (carved store house) served a real social function, in that they helped perpetuate the memory and exploits of famous tupuna (ancestors). The whare whakairo can be regarded as a type of kōrero pārākau, an account of tribal histories or collective memories contributing to a sense of cultural identity. But this history can only attain its full meaning and significance when understood within the wider context of Māori myth and legend.6 The histories expressed in the whare whakairo’s decorative and structural elements are inextricably linked with and dependent upon the structure of the world created by myth and the Māori worldview. And this can only truly be experienced through the ritual of the powhiri (welcoming ceremony) where visitors go through a progression from waewae tapu (sacred feet) to honorary tangata whenua (people of the land).7 Encapsulated in this ritual process are all the stories and traditions important to the local people as they establish their identity within the landscape around them.

After the Christchurch earthquakes, the idea of a post-colonial not just a post-earthquake city emerged, driven by Māori design and planning professionals and with the leadership of local elders. Ngāi Tahu professionals in Christchurch developed key design aspirations pertaining to the future architecture and urban design of the new city. The role of Ngāi Tahu as a partner to the Ko Wai te Ingoa o Tenei Whare? Christchurch City Council and CERA in the rebuild demonstrated and reinforced the value indigenous cultures can bring to the restoration of post-disaster cities.

SITE OF THE INVESTIGATION
Within the Christchurch area, it was the early tribe Waitaha that first established the Puari settlement over 700 years ago on a large island-like area between the modern day Carlton Mill Corner and the loop in Ōtakaro (Avon River) near the King Edward Barracks site. In the 1500s another tribe, Kāti Mamoe, migrated from Te Ika a Maui (North Island) and settled within the Waitaha area, including at Puari before spreading further south. This was followed by the migration of Ngāi Tahu from the north onto Banks Peninsula, into Canterbury and throughout the South Island during the 1700s. The site selected for this design research investigation is the Ngāi Tahu owned King Edward Barracks, within the Ōtāutahi/Christchurch CBD (fig. 1). This traditional Māori settlement site has been covered with a disparate collection of urban colonial buildings, several of which were destroyed or damaged in the Christchurch earthquakes.

In the design research experiment for post-earthquake redevelopment of this site, the whare whakairo is used as a mnemonic device, integrated with the allegorical program of a Māori carving school. The principal objective is to examine architecture’s ability to re-create a collective sense of Māori belonging and identity to the community. This carvers’ school is a MāoriMāoriorative community investigation. The design arose from user and community participation through intense consultation with Ngāi Tahu elders, architects and carvers. The result is a uniquely indigenous response to postearthquake Christchurch.

THEMATIC DEVELOPMENT
A thematic matrix (fig. 2) and an experiential whare whakairo phenomenology matrix (fig. 3) were developed to establish the narrative and sacred progression through the carving school. These are also used to develop the conceptual thresholds of the whare whakairo and powhiri into a functioning program for the carving school. The identification of public and private spaces is articulated through the progression from waewae tapu to tangata whenua. Once you enter the building and enter into the ritual of the powhiri you are in tapu spaces; and it is not until you have passed through and removed the tapu that you can enter into the noa spaces and exit the building safely. The differentiation between tapu and noa is based upon the importance of that space and its role within the ritual of the powhiri.

REALM OF THE EEL GODS
The urban Christchurch site over which the structure traverses was originally a swamp; and so in the new design intervention the site is conceived as a metaphorical swamp (fig. 4), an eternal reminder to the youth of Ngāi Tahu as well as the inhabitants of Ōtāutahi/Chirstchurch of the original swamp landscape. Local knowledge dictated how one traversed through such a landscape, and in this way the original landscape was dependant on storytelling. In the design, the site is excavated below the water table into the realm of the eel gods, revealing the lost landscape (fig. 5). Kaitaki tuna or spring eels were considered sacred by the Ngāi Tahu people...
as the protectors of the waterways and of local eel populations. The overall enclosure of the carving school is designed to act symbolically as a traditional hinaki (eel trap) and the ‘eel’ becomes the path by which the visitor experiences the internal spaces and the progression through the building (fig. 6).

The hinaki design for the carving school also acts as a bridge spanning the artificial swamp and metaphorically linking the past with the future. The reference to the Bridge of Remembrance, a key feature of the Ōtautahi/Christchurch landscape, provides an anchor that keeps the design in the present. The bridge is also a metaphor for a journey to the past that occurs through the articulation of ritual in the internal spaces. The bridge can be considered a metaphorical pathway to the past, reconnecting people to the landscape and their heritage.

“Now it is time that gods emerge from things by which we dwell...”³⁹
– Ranier Marie Rilke

PROGRESSION FROM LIGHT TO DARK

Dr. Pakaariki “Paki” Harrison, renowned tohunga whakairo, demonstrates the importance of understanding the procession from light to dark as one progresses through a whare whakairo:

The house is light in the front, expressing warmth and optimism and gradually gets darker to the rear, symbolising the awesome power of night. Those elements that are useful and friendly to man are in the front and those that are hostile or indifferent are at the back. The subtle changes from darkness to light have been created to illustrate in visual metaphor the creation genealogies of Te Kore (the void), Te Po (the night) and Te Ao Marama (the world of light). This extra dimension imposes a grander design on the total format, capturing the emotional context of these perceptions and superbly embodying the Māori myth of creation.¹⁰

In this way, the whare whakairo tells the tale of the Māori creation myth, the emergence of life from the void of darkness. The house itself may be seen as the embodiment of a common ancestor, his head presented on the koruru at the apex of the bargeboards where another important ancestor stands as a full tekoteko figure. The maahi or bargeboards at the front of the house are his arms, which end in raparapa, or fingers. The porch area is known as the roro or brain, and the inside is the poho or belly. The symbolic passage for living members of the tribe between the world of myth and the world of history is the doorway to the interior of the house, traditionally recognised in all meeting houses as a dangerous tapu threshold and boundary between two cosmological orders.¹¹

SACRED SPACES

In the design research investigation, the interior spaces are large open spaces, like the whare whakairo, which allow for multiple interpretations of how the spaces can be used. Entranceways are framed by glass to explicitly read as sacred thresholds, the light framing the darkness as one progresses from one realm to another. There are three entrances to the sequential carving spaces which students use, based on the stages of their education (fig. 7); the first space encountered is for the youngest students and the final space is for the most experienced. For the main entrance powhiri space, a pair of steel columns is reminiscent of traditional poupou within the whare whakairo (fig. 8). It is envisioned that the large steel elements might encourage the carving students to look at other materials and how they could possibly tell their stories through a steel beam or concrete column incorporated into the whare whakairo. Each entrance has the quarters of the carving master residing above, as a reminder to students of their lessons and as a kaitiaki over the students. These quarters are accessed in the same way as the traditional pataka or raised storehouse – set upon a single pole and accessed by another pole with diagonal cuts carved into it for steps.

For the carving of waka in this structure, large timber logs are to be floated below the structure and raised into the waka carving area (fig. 9). Once the waka is hulled out and carved, the waka can be lowered back down into the swamp. The many wood chips that accumulate below the waka fall down into the swamp, changing the landscape over time. Thus the sacred carving chips are returned to the landscape as an offering to the gods for the safe travel of the waka.

STRUCTURAL ELEMENTS

The structural elements for the carvers’ school are constructed of large steel structural framing elements that are rooted in the ground and support the weight of the building (fig. 10). These elements delve deep into the earth to find bedrock and emphasise the importance of the relationship between the structure and the landscape, just as the carved elements of the whare whakairo were entrenched in the landscape. These structural frames connect to circular reinforced concrete elements reminiscent of the hinaki (eel traps) (fig. 11). All architectural services and amenities are hidden within these large structural elements. A network of service walkways allows for access and
routine cleaning of the exterior structure, and these walkways act like a system of spines connecting the structures. The main circular reed elements of the hinaki are translated into the structural frames that contain the amenities. The principal transverse reeds of the hinaki have been translated into the service walkways so that a visitor enters like the eel and moves through the hinaki building as the mythological eel god once did. These aspects of the structure and circulation are placed so as to return the visitor into the realm of the eel god, the swamp, the history, mythology and ritual of Ngā Tahu.

COMMUNITY INVOLVEMENT IN THE PROJECT
The author was a key part of hui held by Ngā Tahu elders and design professionals to discuss how they could contribute to the future Christchurch, following the words of Ngā Tahu elder Te Ari Pitama: “Kia atawhai ki te iwi” – “To care for the people”. A key premise was that the city would welcome people and share the identity of the tangata whenua, which became the basis of this design. In the development of the design, critical considerations pertaining to the sacred role of the powhiri were discussed with Ngā Tahu elders to ensure everything presented was ‘tika’. At their request the author attended and participated in powhiri rituals to gain first hand experience on the author’s own marae, gaining first-hand knowledge at the ‘feet’ of whanau elders.

CONCLUSION
It is clear that the whare whakairo has played an important role in the revitalisation of Māori communities. The whare whakairo has provided an unwavering symbol of Māoritanga that has acted like a cultural anchor to which Māori in both rural and urban areas have clung. Although Māori in the South Island did not have a strong tradition of carved whare, Ngā Tahu leaders such as Te Aritaua Pitama were aware of its function as a means of cultural revitalisation. Today Ngā Tahu have many carved whare as symbols of local hapu identity that are also symbolic of a wider cultural renaissance within the tribe. Most of these whare have been carved by students of the New Zealand Māori Arts and Crafts Institute; and in the carving of these whare, local Ngā Tahu people have been trained, and developed a Ngā Tahu carving style.

Ngā Tahu is now in a position to have a strong influence in the rebuild of Christchurch city and to have a Ngā Tahu vision integrated into the city’s urban plan – a chance to fulfil the aspirations of the many Ngā Tahu leaders such as Te Aritaua Pitama, who petitioned for some form of habitable structure to acknowledge Ngā Tahu identity and to add to the vitality of the city as a whole. The rebuild of Christchurch is, therefore, not only a chance to rebuild the city for the future; it is also a chance to fulfil the aspirations of the past.

Ko wai te ingoa o tenei whare?
What is the name of this house?
– Māori elder, at the completion of a house opening ritual

2. Ibid.
Figure 1. Ngāi Tahu owned King Edward Barracks site in Christchurch
Figure 2. Thematic matrix for the carvers’ school
### Figure 3. Experiential Whare Whakairo Phenomenology Matrix for the Carvers' School

<table>
<thead>
<tr>
<th>The Threshold</th>
<th>The Bow</th>
<th>The Darkness</th>
<th>Lost in Myth</th>
<th>The Light</th>
<th>The Cleansing</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
<td><img src="image6.png" alt="Image" /></td>
</tr>
<tr>
<td><img src="image7.png" alt="Image" /></td>
<td><img src="image8.png" alt="Image" /></td>
<td><img src="image9.png" alt="Image" /></td>
<td><img src="image10.png" alt="Image" /></td>
<td><img src="image11.png" alt="Image" /></td>
<td><img src="image12.png" alt="Image" /></td>
</tr>
<tr>
<td><img src="image13.png" alt="Image" /></td>
<td><img src="image14.png" alt="Image" /></td>
<td><img src="image15.png" alt="Image" /></td>
<td><img src="image16.png" alt="Image" /></td>
<td><img src="image17.png" alt="Image" /></td>
<td><img src="image18.png" alt="Image" /></td>
</tr>
<tr>
<td><img src="image19.png" alt="Image" /></td>
<td><img src="image20.png" alt="Image" /></td>
<td><img src="image21.png" alt="Image" /></td>
<td><img src="image22.png" alt="Image" /></td>
<td><img src="image23.png" alt="Image" /></td>
<td><img src="image24.png" alt="Image" /></td>
</tr>
</tbody>
</table>

The Experiential Whare Whakairo phenomenology matrix for the carvers' school.
Figure 4. Design site conceived as a metaphorical return to the original swamp
Figure 5. Site section of carvers’ school hovering above artificial swamp

Figure 6. Section demonstrating circular form modelled on traditional hinaki (eel trap) emphasising the importance of eel culture to local Ngāi Tahu
Figure 7. Entry sequences based on stages of a student’s education
Figure 8. Main entrance with steel columns reminiscent of traditional poupou
Figure 9. Carving room demonstrating waka carving
Figure 10. Axonometric of the design framework of the carvers’ school

Figure 11. Traditional hinaki (eel trap) from the collection of Okains Bay Māori and Colonial Museum
Design Ideas Workshop as Model for Empowering Youth Participation

JANET THOMSON
Janet Thomson Architects. University of Canberra, Australia.

PATRICK STEIN
Janet Thomson Architects. University of Canberra, Australia.

Often public consultations don’t engage specifically or effectively with young people. The Young Designers Light Rail Ideas Competition organised by the Australian Institute of Architects ACT Chapter in collaboration with Capital Metro, an ACT Government agency, was a successful forum to bring young people’s voice to discussions about the future of their city. The two-day workshop brought together students from schools across Canberra to explore design ideas for the city’s proposed light rail system.

Working in teams with University of Canberra architecture students and recent graduates as their tutors, they developed stimulating design responses. Each team were able to articulate the principles they wanted to pursue as they allowed their ideas to evolve.

The design of the brief was critical to engage the students and give them space to be imaginative. The brief was both specific and open, and was topical. The role of the tutors was also significant. They created a supportive and encouraging environment. Unlike a focus group, the teams were led by the students who could take conversation, and their design projects, in any direction.

The design ideas workshop successfully demonstrated that young people can make a real contribution to shaping our built environment. It allowed the students to develop their confidence and ability to critique and form design ideas. It is a model for effective participation.

INTRODUCTION
In March 2015 the Australian Institute of Architects ACT Chapter in collaboration with Capital Metro, an ACT Government agency, organised a competition and two-day workshop bringing together more than 120 students from 15 high schools across Canberra to explore design ideas for the city’s proposed light rail system. Working with University of Canberra architecture students and recent graduates, as their tutors, the high school students in teams of 3-5 explored and developed a range of stimulating design responses.

Previous consultation on the proposed light rail had included a website and call for submissions, a pop-up shopfront in the city, stalls at suburban locations and meetings with interested community groups and experts/stakeholders. The views of young people were not specifically sought. The Young Designers Light Rail Ideas Competition was a successful forum to bring young people’s voices to discussions about the proposed light rail, and through this towards the future of their city.

YOUTH PARTICIPATION CONTEXT
Often public consultations don’t engage specifically or effectively with young people. Typically consultations are directed either through invitation to specific interest and community groups and/or opened broadly towards the general public. Young people are rarely considered key participants to be actively engaged around issues of governance or urban design.

Internationally, the 1999 Lisbon Declaration committed to “ensuring and encouraging the active participation of youth in all spheres of society and in decision-making processes”. The ACT Government in their Guide to Community Engagement (2011) recognise that, to empower participation, young people’s participation should be meaningful and that this is only possible when young people are informed and supported, when they are valued, when their engagement has purpose and is not tokenistic, and when they are provided with feedback on how their input is being used.

Similar guides have been produced by other states in Australia, for example the Victorian Government promote for successful engagement a partnership model to consulting with young people where they are treated as equal stakeholders and respected as having expertise and knowledge. In a recent study of youth participation in community planning, Cushing found that the presence of a community
champion alongside the collaboration of multiple entities within a community was important to initiate and actively promote planning processes and ensure they continue effectively once started.6

Internationally, widely cited frameworks have been established for understanding participation. For example, while Hart’s ‘Ladder of Participation’ categorised effectiveness of participation from tokenism to degrees of citizen power,7 Bhatnagar and Williams in 1992 determined for the World Bank four participatory roles – information sharing, consultation, shared ownership of decision making and proactive youth initiative – and described participation as both an end and a means: “It is an end because participation builds skills and enhances people’s capacity for action and for enriching their lives. It is a means because participation contributes to better development policies and projects.”8

Youth participation initiatives in governance typically include conventional consultations such as surveys, forums and focus groups as well as youth reference and advisory groups and young people as members of boards and committees. Sometimes youth organised networks and initiatives are also supported.

COMPETITION/WORKSHOP DESIGN

AND THE BRIEF

The design project focussed on ideas, and elaborated with drawing and model making inherently allows and was used to encourage a degree of free exploration or play, which supported creative idea generation. The design of the brief was critical to engage the students and to give them space to be imaginative: the proposed light rail had prominent political opposition and so was topical (relevant), which encouraged engagement; and the brief, structured as a series of prompting questions, was both specific and open, deliberately seeking critical exploration beyond convention and the constraints of immediate pragmatic concerns.

Questions such as “What do you want Canberra to be like in 20 years?”, “How do you see yourselves using the station?” and “What is the criteria you would adopt to develop the adjoining areas?” allowed students to establish commonalities within their team which then informed shared interest in the direction and themes for developing design proposals.

Assessed by a jury, prizes were awarded in 3 categories: Best Station or Light Rail Stop Design, Best Connection to Neighbourhood/Community; and Most Innovative Idea. The categories were determined to be widely inclusive, allowing a broad range of submissions from specific designs of a physical entity (a station) to more abstract and community focused or service orientated explorations of what the light rail meant.

The brief was supported with introductory talks. Eminent climate science expert Professor Will Steffan9 introduced the idea that we are entering the ‘Anthropocene’ and highlighted broad issues that designers face into the future. Ann Cleary, who in partnership won an earlier Australian Institute of Architects’ Light Rail Station Ideas Competition for practice members, presented her scheme and spoke about the critical thinking behind the concepts.

Shortlisted entries to the Institute competition were also exhibited during the workshop, together with a looped slide show demonstrating a range of approaches to stations, carriages and public spaces. These were used to prompt discussion and identify issues to investigate.

The role of the tutors was significant too. They created a supportive and encouraging environment and assisted teams to facilitate idea generation, particularly acting as a sounding board, allowing students confidence to verbalise thoughts and talk in small groups. The workshop was facilitated with a few tutors sharing their time between multiple teams to expose students to different perspectives and avoid constant external direction. Unlike a focus group, the teams were led by the participants who could take conversation, and their design projects, in any direction.

STUDENT RESPONSE

The students came with great ideas to explore and they had the confidence to put them on the table, workshop them and let them evolve. Each team were able to articulate the principles they wanted to consider.

Most identified connectivity and accessibility as key priorities, conceiving light rail stops as public space. There was a strong social responsiveness and particular interest in providing facilities that would support community. Environmental sustainability and links to nature were common themes.

For some it was the landscape setting and trees, while others were focussed on ecological principles, materials and adaptable designs. A number of teams also put forward recognition of Canberra’s indigenous heritage as a significant focus.

In detail, the students proposed many practical solutions like deflecting cold winter winds with appropriately located screens that doubled as vertical
gardens or integrated art. More abstract themes of Canberra’s original design and geometry, its political and evolving history were also explored. All of these design ideas are widely applicable to the city as well as being specific contributions to consideration of the urban design of the light rail corridor, where the ACT Government plans to encourage ‘urban renewal’ and densification.¹⁰

The jury noted that “each project had a distinctive connection to place and provided architecturally vibrant, sustainable, and community focused environments” and also commented that “the winning entries were strong in their resolution of creative ideas and were communicated through eye-catching graphics, hand crafted illustrations and eloquent written descriptions”.¹¹

RECOGNITION
The students were acknowledged by the Minister for Capital Metro Simon Corbell MLA, who presented the prizes and was impressed with their participation, as well as with presentations at the winning schools’ assemblies, media coverage and Capital Metro making Facebook posts that were then shared with family and friends. Recognition for the students was an important consideration in promoting a positive experience.

The Minister noted that “It is important for young Canberrans to get involved in the conversation on how Canberra should be developed as a vibrant, sustainable and liveable city” and that “It’s also important that we listen and acknowledge when ideas from young creative minds are voiced”.¹²

Capital Metro have now proposed to invite the winning teams to present their design ideas to the agency’s planners, which would further show the students that their perspective is valued and allow the students to better understand the workings of government and how their input contributes to continued design discussion.
BUILT ENVIRONMENT EDUCATION

The Australian Institute of Architects organised the Young Designers Light Rail Ideas Competition as part of its agenda for community engagement to promote good design. The Institute has had a program of Built Environment Education (BEE) for over 40 years to encourage interest in the built environment and the literacy to engage with it.

There is a lack of formal curriculum around the built environment in schools and the critical language and tools used by designers are often not inclusive to the general public. In previous years, a learning resource kit called Your House was developed as a national based curriculum unit, but this was difficult to implement as it required additional resources and time to educate the teachers in schools.

The Institute hosted event facilitated by members of the profession and university students is an alternative high quality educational experience. However the successful Young Designers Light Rail Ideas Competition almost didn’t happen. It followed an aborted first attempt which was widely advertised but undersubscribed – the lesson being to co-opt champion teachers within schools to directly target interested creative students.

CONCLUSION

ACT Chapter President Andrew Wilson explains the value the Institute sees in the workshop:

“Education is the most powerful means which you can use to change the built environment. Competitions like this are an excellent opportunity to increase the understanding of architecture and the endeavours of architects among our future leaders. The contribution of younger Canberrans in generating ideas and aspirations is invaluable and provides them with a strong sense of ownership and identity for their city.”

In feedback, students said that through the workshop they had reflected on and identified their individual strengths and how in teams they could each contribute to the development of a project. The design ideas workshop successfully demonstrated that young people can make a real contribution to shaping our built environment. Further, school students are perhaps uniquely positioned to explore imaginatively from first principles, with others, even university students, tending to be more aware of pragmatic considerations, exemplar precedents and past failures, which can be limiting.

The workshop, as a supportive and structured environment, allowed the students to develop their confidence and ability to critique and form design ideas. It is a model for effective participation, which could be used more widely in city planning and potentially adapted generally to explore imaginatively other areas and issues, even perhaps substituting other creative or playful activities for the design project. The ACT Chapter of the Institute is now planning more design ideas workshops to engage young people in exploring ideas for their city.
Planning Temporary-Use Projects from Above: The Case of Testing Grounds

BREE TREVENA
University of Melbourne, Australia

TIMOTHY MOORE
University of Melbourne, Australia

In the wake of the Global Financial Crisis (2007–08) a new economy is emerging that is more open, social and neoliberal. This shift has not gone unnoticed by government planners and property developers who now see bottom-up, participatory processes as an opportunity to jump-start formal planning strategies. Harnessing the spatial tactic of “temporary-use” – impermanent infrastructure – offers the tantalising possibility of low-cost and low-liability urban regeneration for cash-strained and risk-averse governance and development bodies.

The paper considers how temporary use is leveraged as an interim step towards the long-term success of urban redevelopment through the exploration of the Testing Grounds project in Melbourne, Australia, and asks how this project is situated within larger local and state government precinct frameworks. The purpose of this investigation is to contribute to the taxonomy of temporary use “from above” by evaluating how collaborative temporary projects are used – or indeed fail to be used – to inform policy and planning directions.

THE VALUE OF THE SHORT TERM

Defined by a large arterial road, the back of buildings, poor soil, skyscraper shadows and a wire-mesh fence, the two-thousand square-metre corner site of One City Road appears like a missing tooth in the City of Melbourne. Its gritty and gummy isolation, along with its overlay as a vacant block of Crown land (reserved for Arts purposes) has allowed the site to escape speculative property development and major government building upgrades that have engulfed the rest of the neighbourhood over previous decades. In response to rapid urban development the state and local governments have developed a number of high-level urban design frameworks intended to act as a road map for the future of the area – the Southbank Structure Plan (2013), Melbourne Arts Precinct Blueprint (2014) and the City Road Master Plan (2015 – ongoing) – all of which recognise One City Road as an anchor site to the axis of a major Arts Precinct housing the state’s largest cluster of high-profile arts institutions.

From February 2013, in parallel with the development of the Melbourne Arts Precinct Blueprint, a few shipping containers and timber palettes were carried onto the One City Road site without fanfare or press release. The quick installation and iterative construction of these temporary architectural elements was the work of These Are The Projects We Do Together (The Projects), who were invited by state agency Creative Victoria to provide an open-air project space on the site for designers and artists, and an outdoor space for nearby workers and residents over a sixteen month period. Since it opened, the site now known as Testing Grounds, has hosted hundreds of events, including: Australia’s first drone projection system, a month-long tattoo studio residency, and as a festival site for Midsumma and Next Wave Festivals. After an extended eighteen months, the site went into hibernation during winter, 2015, while the next iteration of the project is being determined.

The interim or temporary use of vacant sites and buildings has been exhaustingly catalogued, exhibited and analysed over the previous decade in architecture and urbanism. Within this context, temporary use is defined as occurring in a site between when it ceases its previous purpose but before its redevelopment. This interim period is recognised for the opportunity to re-imagine a site in a “time and space for alternative forms of development and for users from outside the dominant planning and ownership framework” because its immediate economic value of use is negligible. This may simply be in the form of social amenity by providing a platform to dance, chat, cook or create.

The increased visibility of temporary use within wealthy economies has paralleled broader structural
changes to these places under neoliberalisation.\textsuperscript{8,9,10} While there are a multitude of perspectives of neoliberalisation and its actualisation, it is evident that there is a trend in the calibration of the urban environment as an engine for economic growth, which includes the coupling of land to its exchange value (the ability to exchange the land for profits) rather than its use value.\textsuperscript{11} Neoliberalisation, including the use of property for its exchange value, has sustained criticism for its unbalanced and noninclusive allocation and distribution of resources in the built environment. Alongside the criticism of neoliberalisation is an increase in a re-imagination of the economy to address this issue.

One proposition was provided by architect Indy Johar who identifies an emerging paradigm called the “civic economy”, which is characterised by being open and social, and having a civic orientation.\textsuperscript{15} It can include new tools of communication and collaboration of distributed production: distributed currencies, peer2peer learning, social lending, crowd funding, and micro-factories\textsuperscript{14} along with the temporary-use of space identified by Johar. These modal changes among a landscape of financial, climate, and democratic crises are having an impact on how we create the built environment, which includes a shift towards interdisciplinary engagement, collaboration and communication.\textsuperscript{16,17} Interdisciplinary collaborations represent an opportunity to engage with planning and policy dialogue where users can be active decision makers, creators and managers during conceptualisation, delivery and implementation. The potential of temporary-use projects, as part of this rhetoric on interdisciplinary collaboration, has been recognised by built-environment professionals to the point that it is becoming a planning orthodoxy\textsuperscript{18} with temporary projects delivered as part of larger urban renewal developments.

The advantages of temporary-use projects for planners and developers within long-term urban frameworks are many (and have been well documented). First, it can provide a rent-a-crowd: temporary users can increase street-level activity while a site lies dormant, which provides surveillance and cultural amenity. Second, users act as cleaners through maintenance and improvements.\textsuperscript{19} Third, it utilises a site as a place of assembly for adjacent communities. A fourth and less explored benefit is that temporary-use projects can become a fulcrum to address the wider culture of governance by visualising through action how one can transform places, as a temporary project can be a physical and speedy symbol of a bulky, lengthy, invisible and slow process to stakeholders. And finally, it may act as a counterpoint to a top-down consultative processes by being active engagement with open-ended outcomes, predicated on collaboration and ongoing adaption. By engaging with users from the early stages to inform a prototyping and testing process, these projects can actively leverage both “expert citizens” and “citizen experts”\textsuperscript{20} across the life of the project.

The value of temporary-use projects sits optimistically under the landscape of neoliberalisation where “as the state continues to sell off its responsibilities… that our new networking tools will ultimately shift the balance of power to citizens themselves.”\textsuperscript{21} The positive potential of temporary-use has also played out at Testing Grounds, a project created in partnership with a government agency.

**TESTING GROUNDS**

The outdoor arts space Testing Grounds opened to the public in October, 2013. An amalgam of shipping containers, palette crates and recycled building construction material, its architectural aesthetic reflected in the DIY, ad-hoc and low-cost manner in which it was constructed by two local creatives belies the large government organisation, Creative Victoria, instrumental in its making. The brief for One City Road was the outcome of consultation work related to the Melbourne Arts Precinct Blueprint. The blueprint, initiated by the former state Premier and Minister for the Arts Ted Ballieu for a cost of $900,000 (given by both federal and state government), was a collaboration between Creative Victoria, the University of Melbourne (whose VCA campus is in the heart of the area) and the City of Melbourne to “map out a vision for the future of the area and how it can be realised, and prioritise any future development.”\textsuperscript{22} This ambitiously worded concept led to a consultation process with almost one-thousand residents, students, visitors and workers. The most common themes emerging from the consultation was a call for more temporary, more low cost, less formal, more creative development spaces.\textsuperscript{23} Testing Grounds was developed by Creative Victoria as a low-cost, low-risk and hands-off opportunity to verify this feedback, and as a way to jump-start momentum for the blueprint through a tangible and visible outcome while the blueprint was being finalised.

Creative Victoria funded the capital aspect of the project and contributed a low level of ongoing
funding that included $2,000 per month, originally earmarked for security, weeding and graffiti removal. Typical of temporary-use projects delivered from above, while the cost to the top-down institution is low, the cost for the creatives who developed the project has been extremely high, especially in terms of labour. The Projects has dedicated significant sweat equity to the project: they are on the site daily as caretakers while working from the site, but do not pay themselves from onsite activity. Profits from an onsite bar are driven back into the site rather than to The Projects, used to fund additional staff and an artists-in-residency program. The Projects have also spent over $80,000 of their own money on the project. The trade-off for their sweat equity is recognised by The Projects that the project has garnered more work for them while providing them studio space to pursue their own side projects.

During the time of its operation, Testing Grounds has provided an open public space in an area with a high social infrastructure deficit – with no schools, no libraries and limited play space, although its uptake from residents was minimal. It has been successful, however, in attracting a diverse range of arts and design practices that were generally not present in a precinct. It has been used by individual practitioners, collectives and tertiary institutions (including RMIT, the University of Melbourne, Monash University and the Victorian College of the Arts) for over 300 design and arts projects. The work has been varied and without criteria or outreach. Creative Victoria senior project manager Bree Trevena notes: “We didn’t want a criteria for around the types of use except that it should be legal and creative in some capacity, We didn’t want it to be exclusionary ... It’s a loose space.” She continues: “We were looking for something informal in order to see what was possible.” Some projects have engaged with the site, including its history and future, while others have ignored it entirely. There is no mandate, however, to ensure the various explorations will carry through to future imaginings of the site.

The site contributes to immediate social and creative production in the Arts Precinct for a select audience but does this approach contribute to an informed, knowledgeable place for creative and critical enquiry that can influence local city shaping and state decision-making in the long term? Can these projects help to forge new approaches to city building by integrating opened ended and transitional approaches into standard governance frameworks rather than as experimental outliers?

Testing Grounds addresses some of the outcomes of the blueprint it falls under, that is, by providing more finegrain activation in the precinct that attempts opens up the area to diverse street-level uses. This is implied in the blueprint strategy aims to “bring life into the streets”, “create a Melbourne experience” and the demand for “More to see and do”. In particular, “More to see and do” asks for encouraging the development of vacant sites [that] will help to enliven and activate the overall area. We will also find ways to feed the appetite for temporary transformations of under-utilised spaces with pop up bars, retail and creative events.” Despite the fact it addresses these objectives, the project itself was never a priority project from the report; the blueprint has not prioritised projects; there is no road-map or accountable metrics for delivery (unlike the suggestion of a 2012 government media release); there is no ongoing budget for moving the vision forward. This is a problem of many urban planning vision documents where vision exercises can be short-term acts divorced from the provision, delivery and governance of outcomes. Despite the lack of broader precinct-wide governance or strategic alignment, individual projects in this precinct have moved forward in an ad-hoc manner. In fact, the blueprint appears to have stalled, losing momentum after a change of minister, and then a change of government. It is part of a larger trend of government authorities “charged with the task of encouraging the revitalisation and redevelopment of urban areas are now finding that, for the most part, they lack the resources, power and control to implement formal masterplans” albeit almost one million dollars of public money was spent on a stalled document as opposed to the approximately $200,000 spent on Testing Grounds.

Regardless of the lack of formal action on the blueprint recommendations, the consultation process achieved a number of unanticipated things. The University of Melbourne is moving ahead with a redevelopment of the VCA campus that places human scale, informal and finegrain at the heart of the process. The City of Melbourne will close the nearby Dodds Street to traffic this year, making it a dedicated pedestrian and event space. Some responses have been less successful. The neighbouring Melbourne Recital Centre organised a street festival Summersault, which had a budget of one million dollars (including a marketing budget of $300,000), premised on an intention to
further extend the reach of outdoor programming in the Arts Precinct. Based on the festival’s inaugural performance, the project has not been continued. However, a large summer music festival, Sugar Mountain, held at the VCA campus of the University of Melbourne attracted 6,000 people to the precinct, many of them hitting the young and contemporary taste-maker target demographics that the blueprint sought to attract. The event was held in partnership with Creative Victoria and the VCA but rather than the centrally controlled approach of Summersault, Sugar Mountain was approached with the same 'hands off' attitude that can be seen with Testing Grounds. This signals the tightrope governance bodies often walk, as flagged by Jocelyne Bourgon, between “not enough intervention” and “a little too much”\(^{29}\), becoming flexible and adaptable for the next opportunity without deregulating responsibility. The role of the citizens in delivering temporary-use projects for government organisations does not have to mean a withdrawal from the state in the creation of public life or a type of austerity urbanism.\(^{30}\) In juxtaposition, it is the recognition that the state has a role to play in shaping the built environment by enabling its citizens to live out their creative desires outside of market demands, and in turn, play a part in the making of the city. In this collaborative process, it also draws citizens closer to government in order to hold it to account.

Despite not being directly related to formal planning visions in its inception, Testing Grounds has also begun engaging with planning frameworks in other, less formal ways outside of the blueprint. It has been identified by the City of Melbourne as a location to support its Urban Forest Strategy, by testing out trees in its soil for the surrounding Southbank precinct. It also has been used as an exemplar for the City Road Master Plan as it reinforces and supports the ideas the City of Melbourne already has around open public space, informal use, greening, and slowing traffic to create a friendlier and more welcoming environment for pedestrians.

For the state agency, Creative Victoria, the project has opened the door a crack to explore new ways of delivering affordable creative infrastructure and a number of developers and local governments have approached Creative Victoria and The Projects to roll out similar projects. The site’s success has seen a funding boost and support from Creative Victoria to up-scale and provide additional infrastructure and programming, shifting from a codified “temporary” design language of palettes and crates to a more permanent look and feel. The next iteration of Testing Grounds, with a significant funding boost is set to open in Summer, 2015.

**THE MEANETIME**

Temporary-use projects like Testing Grounds have become an increasingly visible tool in urban development in the last decade across Melbourne with developers and governments engaging with temporary-use as short-term activation in parallel with or within formal development frameworks for urban renewal (cf. Nine Smith Street; Victoria Harbour; Docklands; South Wharf; Studio 9). Temporary projects like Testing Grounds highlight an impetus for more experimentation in urban planning frameworks that have “now been seen from a planner’s perspective as a sensible and programmatic aspect of a process-based approach to planning.”\(^{31}\) But with experimentation comes unexpected consequences and a looser planning vision, which can be unsettling for government stakeholders. Despite this anxiety, there is still room for “advocating a public experiment in letting public demand take its course, and seeing if it really could be any worse than what was prescribed by government or by local councils.”\(^{32}\) It is important to continue with experiments of city making: "The only thing more dangerous than beginning to rethink the relations of the economy, public life, social justice, would be to refrain from doing it."\(^{33}\)

Temporary-use projects embedded as priority projects within master plan and blueprint documents can be valuable: for community engagement, social amenity, testing the delivery of blueprint recommendations among other unexpected outcomes. This requires that the enablers of temporary-use projects have the power, authority, metrics and finances to act on outcomes from the temporary-use projects. This is fuzzy with respect to Testing Grounds, which is detached from wider governance mechanisms of future urban development of the precinct.

Temporary-use projects that sit among large-scale urban frameworks have the potential to influence actors that come into contact with them. Testing Grounds has several unintended consequences – including challenging the organisational delivery of creative projects and testing strategic recommendations – while providing an affordable (free) space for artists in one of the most expensive cities in the world. However, for all of its activity, this pop-up adult playground may quickly shut down –
if there is another change of government or actors within the champion state agency move on. For all the cultural capital that the interim users bring to the urban development of cities, their rights, visions and value are still not enshrined as a powerful tool in planning documents for city-making.

24. These are the projects that we do together, interview by author, 18 May, 2015.
Figure 1. Melbourne Arts Precinct Blueprint map
Figure 2. One City Road site

Figure 3. The low-cost temporary project of Testing Grounds
Figure 4. Testing Grounds has become a popular location for temporary festivals.

Figure 5. Over 300 events and projects have been held on the site.
Make Believe: Activating a Strategic Practice

KATHY WAGHORN
University of Auckland, New Zealand

This paper discusses make believe: imagining a new park for New Lynn. A two-year long collaboration with Auckland Council, the intention of this project was to generate and employ new approaches for the public’s engagement in the design of an urban park. Through a suite of event and installation projects make believe adopted a spatial, material and performative approach to the collective imagining of a novel condition, a future ‘urban park’. Each project or event allowed a fleeting and propositional manifestation of this future urban park to emerge with each bringing together a different group of makers and constituents – students, artists, school children, performers, designers, building owners, residents, choreographers and new migrants. The reflective engagement with this project given here aligns it with the idea of ‘strategic practice’ from the eco-philosopher Freya Matthews. Strategic practice may be understood as an agentic practice wherein knowledge is socially generated ‘on the ground’ and re-invested in agency: make believe acted in this manner, accepting the limits of established modes of discourse and in response applied performative means to generate exchanges of knowledge, in this case knowledge of public urban space, how it might be shaped and used, what specific importance, meaning and desires it might hold for different communities. make believe therefore indicates an ambition to avoid the abstraction of ‘top down’ planning through a recognition of the temporal, intimate and specific aspects of the city by prompting and gleaning local knowledge and by generating different ways of knowing.

AN INSTANCE OF STRATEGIC PRACTICE

This discussion of make believe will borrow the idea of ‘strategic practice’ from philosopher Freya Matthews. Concerned by the failure of ecological discourse to effect any actual shift in attending to ecological crisis Matthews suggests that the western project of ‘theory’, as the primary way of knowing the world, is faulty. She views the theoretical mode as operating a distancing mechanism, ineffectual in forming actual attachment to the world. Instead, and leaning towards Chinese philosophy, Matthews advocates for the use of more directly addressive and embedded modes of knowing. Strategic practice may be understood as concerned with the “coordination of collective or individual agency” where, and importantly, “cognition remains at the service of agency”. To make theory is one way to know the world, practitioners and makers develop and use others. Matthew’s strategic practice offers an affirming apparatus in that it supports a
different form of cognition closely affiliated with
the generation of knowing through practice. Such
an agentic form of knowing and connecting to the
world was activated through the various projects
and events in make believe. To illustrate this I will
now briefly describe three make believe events.

HERE NOW: RE-IMAGINING NEW LYNN
In Here Now, the largest make believe event, one
hundred and twenty architecture students designed
and fabricated fifteen installations that made visible
and experiential an aspect of the suburb’s past or
future. Occupying the vast, vacant and raw retail
spaces on the ground floor of the lone high-rise
apartment building in the town centre, Here Now
opened a space of conjecture – how might this
‘ground’ be considered not only as a space of
commodification but, perhaps like an urban park, be
conceived as a space of social exchange. One group
of students proposed a back yard for the anticipated
residents dwelling in the new apartments above.
Installing lawn, plants, timber deck, sun umbrella,
BBQ, paddling pool, playhouse and washing line,
the students imagined an urban park that provides a
social back yard for apartment dwellers to share with
other publics. Another student group developed a
mobile cinema. Responding to a land sale legacy
in which a covenant prohibits the development of
a cinema in the town centre, their roving cinema
projected directly onto building facades, challenging
the spatial domination of the covenant by turning
the entire town centre into a potential cinema,
distributing elements of an urban park programme
on every building. A third group fabricated a
large and mysterious contraption that blew huge
smoke rings horizontally across a large empty car
showroom. Lit by pulsing lights this mesmerising
space evoked the underlying combustible nature of
the Auckland volcanic field, the smoking chimney
stacks of the suburb’s disappearing industrial
past and the traffic exhaust of the neighbouring
arterial road, while proposing that an urban park
might be generated through atmospheres as much
as infrastructure. Collectively the installations and
events in Here Now demonstrated a capacity to use
the temporal nature of event to imagine this place
differently and to prompt a public use of space in
ways not yet conceived.

COME JOIN THE CIRCUS
In Come Join the Circus ten local primary school
children worked with choreographer Christina
Houghton and artist Kathy Waghorn to create a performance-walk that imagined and enacted the industrial, social and spatial history of the town centre as experienced within the contemporary urban-scape. Encouraged to approach the public realm as a place in which improvised performance it is appropriate, the children responded in immediate and intuitive ways.6 As just one example, finding an old brick-making kiln and the large rusted iron relic of a clay-working machine situated alongside some new terrace housing, the students quickly invented a ‘game’ responding to the qualities of this discovery. The cogs and levers of the machine were suggestive of a larger industrial process, and it was this process that the children imagined and acted out as a small sequence in the performance walk. The physicality of working with such machinery appealed to many of the children – they chanted one, two, one, two as they ‘worked’ in teams pretending to churn the cog. Sequences in the performance walk were developed in response to a variety of other places in this town centre including the war memorial and a seating area adjacent to the train station. Other sequences were developed from found social history cues, such as from a waka prow carving situated outside the library that hints at a hidden water geography, no longer visible on the urban surface.

Gillian Rose, citing Nancy says, “A performance produces a relation and ( . . . ) this relation is understood as communicating subject positions not produced by discourse”.7 The mode of the performance walk allowed each student’s own psycho-geography to find a place in the collective work, but not through a discourse of negotiation or reduction to singular forms or symbols but through such a performative relation. From this exploration of the existing urban realm in New Lynn we developed a ‘make believe’ Children’s Design Kit’ for the park. Illustrated with documentary photography of the children exploring New Lynn and developing the walk by ‘performing’ in place, the design kit makes a series of specific spatial and material suggestions for the park. As one example, from the clay working machine performance already described we made the recommendation that the new park includes play equipment that is less identifiable as such, and more open to a loose interpretation, that activates playful exploration through its material and tectonic qualities and an impressive industrial scale.
PARK FOR A DAY
Some make believe projects were generated with the specific intention to extend this performative, spatial and material form of conversation to groups not usually reached through conventional consultation methods. In Park for a Day the Suburban Floral Association⁸ (SFA) generated a daylong installation that both responded to and made space for an ongoing conversation with a group of elderly Chinese new migrants known as the Eco Elders.⁹ As the result of a series of meetings, the SFA created a landscape on the ground floor of a car park building. Fabricated from stretched tarpaulins, rope, huge cable reels, concrete blocks, timber planks, potted plants and large scale photographic prints this park for one day responded to a series of conversations with the elders and used provisional materials to provided spaces and shelters in which to eat, move, exercise, relax, gather and converse. The provisional nature of the materials used was important in communicating that the installation wasn’t a design for the actual park per se, but was instead a finely tuned setting for an extended conversation that had already picked up on cues from previous meetings. As an example, the stretched canvas ‘floating’ roof under which we gathered to eat provided a dry space where one might exercise daily outdoors despite the long wet Auckland spring – an activity noted as desirable by the elders.

The occupation of this park, as it took place over one day by the Eco Elders with their friends, family and the artists, was documented through photography. Akin to the way in which a festival might transform a street to provide the temporal suspension of the everyday, Park for a Day allowed for multiple ‘en-actings’ of the use of public space. Over the course of Park for a Day a very specific design direction for the urban park emerged. Park for a Day demonstrated the importance of conceiving a park not as a pictorial or scenographic space, but by asking how it might be inhabited. What emerged is that this park should not be considered a fixed landscape but instead as a dynamic space that shifts with the seasons and with seasonal programmes, and that the landscape itself is full of cues to our inhabitation. Following Park for a Day the new New Lynn Urban park could be conceived as two elements – a variable and comfortable ground and a roof that is seasonally responsive and adaptive, generating a richly programmed social space between.

MAKE BELIEVE AS AN INSTANCE OF SITUATED STRATEGIC PRACTICE
make believe, as the name suggests, draws on our capacity to imagine places differently and in so
doing attempts to access the potential of a place ahead of its instrumental definition and reduction to site through an architectural brief. *make believe* grew out of the frustration by those commissioning the park that the designs received to this point were generic and did not respond adequately to the specific spatial, social and heritage potentials of New Lynn generally and the Crown Lynn site in particular. Operating as a critique of master-planning, in which the park is already conceived as a flat, bounded, green rectangle, *make believe* uses the temporary as a testing of potential. In so doing *make believe* responds to the dilemma succinctly articulated by the practice Muf Architecture/Art who ask,

“How do you develop a city-wide strategy when you are fascinated by the detail of things? And how can you make something small-scale in the here and now if you are driven by the urge to formulate strategic proposals for the future?”

The *make believe* projects, by accessing the imagination of a wider client body, offer insights as to the spatial, material, temporal and programmatic directions this new park might take.

Through this form of work then we are activating what Freya Matthews calls *strategic practice*. Matthews draws our attention to the limitations of *theory* as a means of understanding the world. In a historical sense the theorist, Matthews argues, is concerned with the world as, “a completed totality projected by the subject onto an ideal screen, where that totality is then perceived as external to and independent of the subject”. In projecting a mental reflection that captures and reduces everything via universal laws. This piecing-it-together approach they say “is a way of being in the world; it’s improvisational approach to understanding (or performing) the world rather than a big-picture, spectator approach to singular truth but to move from intelligible field of influences in which we are immersed and the way in which that field impacts on our agency”.16

What I am describing here is of course a compressed version of Matthew’s argument, which is finely developed with regard to the emergence of *theoria* in relation to subject and object dualism, rational thought, logic, universalism in scientific law, causation etc. And it should be noted that Matthews herself observes that “to posit *strategia* need not mean discarding *theoria*, but may be to situate *theoria* within a larger epistemological context”. To make theory is one way to know the world, as practitioners we have always known that there are others. The current emphasis on design and creative practice research in the academy is one example of locating this larger epistemological context.

As practitioners we seek a way to proceed, to act in the world. As an exemplar of strategic practice Matthews points to the figure of the Chinese sage who proceeds by cultivating sensitivity to the “field of influences (…) in which he is immersed”. She calls this practice ‘con-formational’, the sage she says inhabits, “a jigsaw world, everything shaped by and shaping everything else”. The feminist economic geographers J.K. Gibson Graham suggest that Mathew’s jigsaw puzzle metaphor “conveys an up close, piecing-it-together, participatory approach to understanding (or performing) the world rather than a big-picture, spectator approach that captures and reduces everything via universal laws”. This piecing-it-together approach they say “is a way of being in the world; it’s improvisational and experimental”.

Hinged to this then is an emphasis on practice, it is through practice, immersed in the world, rather than through thought, that the addressive mode Matthews describes might occur. The intelligibility produced through such practice is harnessed not to point to singular truth but to move from intelligible knowledge back into practice, cognition at the service of agency.

**IN CONCLUSION: PROPOSING AN URBAN PEDAGOGY**

In *make believe* knowledge of the specific New Lynn urban realm and its spatial and social potential was generated and shared. Improvisational and experimental performance and installation making opened the space for this collective and individual agency to emerge. The practice exemplified in *make believe* is productive of and produced from a hybrid
research collective that includes expert citizens, citizen experts, everyday performers, places, objects and processes set up in strategic space, where the identity and subjectivity of those involved may shift and where “translations and cross fertilization between different forms of knowledge take place”.22 Through the making of performances, events and installations place is performed into new meanings and these new meanings allow novel ways of projecting the potential of this public urban realm.

Matthews says, “to train the strategic faculty, one does not teach reason, which is to say the rules of logic and abstraction, but rather one sets exercises or practices which cultivate sensitivity and responsiveness”.23 make believe enacted such a sensitivity cultivating practice. The cognition (act or process of knowing) the potential of this urban landscape remained in the service of agency through its iterative folding back into further make believe projects, into an expanded design brief for the park and into a critical engagement with normative institutional procurement process. make believe actioned knowledge not to generate the theory for making an urban park in New Lynn but to perform its very potential. This project acknowledges the limits of theory and discourse as a way of engaging the collective imagination and seeks to reposition design for the urban realm not as an instrumental pursuit but as a sensitive way of being in and knowing the world. As such it proposes an urban pedagogy, a way of learning and knowing where “knowledge emerges only through invention and re-invention, through the restless, impatient, continuing, hopeful inquiry human beings pursue in the world, with the world and with each other”.24

BIBLIOGRAPHY

1 make believe: imagining a new park for New Lynn was a collaborative project between Kathy Waghorn and the Community Development Team (West) and Parks Team (West) at Auckland Council. It was funded by council. I would like to make special acknowledgement of Andrew Wood and Gail Fotheringham from Community Development and Helen Biffen from parks who supported this approach.
2 Crown Lynn was a ceramics manufacturer famous for its table and decorative ware. The park will be sited on land that was used to house the Crown Lynn factory in New Lynn, which closed in 1989.
3 Urban park is a term used but not defined in the New Lynn master plan. “The jewel in the crown of this network will be a large (one hectare) urban park for the whole community on the former clay pit site within the Crown Lynn precinct”. New Lynn Urban Plan 2010-2030, p. 56.
5 Here Now: re-imagining New Lynn was part of the Auckland Heritage Festival, October 10-14, 2013. See website http://here-now2013.tumblr.com
6 The performance walk Come Join the Circus was generated by ten students from New Lynn Primary School. My thanks to the students and to the principal Greg Roebuck for embracing this project. To generate a sense of ease in developing performance in and for public space we likened the activities we were undertaking to other urban performance forms such as parkour and flash mobs.
8 The Suburban Floral Association is primarily the collaborative art enterprise of two artists, Monique Redmond and Tanya Eccleston. See facebook.com/suburbanfloralassociation
Eco Elders is the name the group is informally known by. Their proper name is the Auckland Environmental Protection Association.


Matthews, "Why Has the West," 343.

Matthews, "Why Has the West," 344.

Matthews, "Why Has the West," 342.

Matthews, "Why Has the West," 349.

Matthews, "Why Has the West," 357. Original emphasis.

Matthews, "Why Has the West," 351.

Matthews, "Why Has the West," 351.

Matthews, "Why Has the West," 351.


Matthews, "Why Has the West," 349.

Marae Melbourne is an organisation that represents Melbourne’s Maori population. Over many years this group has been developing the opportunity to establish the first Marae outside of Aotearoa/New Zealand.

Protocols which enable this marae to operate across the various Iwi represented by Marae Melbourne have been established. Support for its development has been offered to Marae Melbourne by Iwi groups in Aotearoa New Zealand.

In semester 1, 2015 RMIT Architecture worked with Marae Melbourne to create concept designs for this Marae on two Melbourne sites. This paper sets out how the design studio that developed these designs responded to the key design and strategic questions of this project:

- How can the structures of this Marae, in particular its Whare Nui, assist in the establishment of Turangawaewae on a site which holds only very recent histories?
- How can this Marae provide a community base for non-Maori immigrants from New Zealand or Melbournians of New Zealand descent?
- How can design be an effective means of advocacy in developing community projects?
- How can the design studio have provide design useful propositions for cultural and community groups?

A Place to Stand is the name of the Master of Architecture Design Studio which, both directly and indirectly, investigated these questions. All the students were either from Australia or countries across Asia. For them, with little knowledge of Maori culture or that of Aotearoa in general, the project was a doubly difficult task: to research and interpret the customs of the Marae and the meanings contained in its architecture, and to imagine how they might be reinterpreted on an Australian site. A process that produced both insights and missteps, for Marae Melbourne it was also a clear strategy: the design of the Marae should come from its location, produced by young people, and that the discoveries made by the students can offer the reinvention of the Marae that they required.

This paper will present the documentation of this studio, exploring how the complexities of the project were navigated by a close engagement of RMIT staff, students and the Marae Melbourne group. This studio structure sought to combine speculation with guidance, and to build relationships as much as knowledge.

A PLACE TO STAND.
This design studio was run in semester 1, 2015 in conjunction with Marae Melbourne, a group representing Melbourne’s Maori population. Marae Melbourne had developed a protocol model for a multi-iwi marae and were working towards establishing the first Marae, with a Te Kohanga Reo, outside of New Zealand. This paper tracks how this studio investigated design questions associated with this unique project, and how the studio model and its design outcomes became tools for further advocacy by Marae Melbourne.

For Marae Melbourne, the central question for the design of this Marae was how Turangawaewae might be expressed within sites and locations only recently encountered and whose histories belong to others. The specificity of this Marae to its Melbourne context was also important as many of Marae Melbourne’s community, particularly those born in Australia, have little connection back to New Zealand.

For these reasons, Marae Melbourne initially approached RMIT Architecture with the intent of running a design competition among students, with the winning designer to develop the project with them. The intention of this approach was to ensure that the designs arose from the interpretation of what a Marae was, or could be, as seen by a student in Melbourne, working in a Melbourne’s architectural context. Marae Melbourne’s logic was that they could brief the students in how Marae functioned, in both practical and cultural contexts, but that the students voice in how these ideas translated into a Melbourne location were what they were seeking.

“Marae Melbourne felt it was important to
collaborate with an institution that operated in the space of architectural design where students were already engaged in this discipline. With the reputation of RMIT University and Melbourne’s attractiveness as the World’s Most Liveable City, we believed there was a unique opportunity to engage the skills, diversity and expertise of students studying in this field.1"

STUDIO MODEL AND ADVOCACY OF DESIGN
Following discussion with Marae Melbourne the proposal for a competition was loosely retained but undertaken inside a design studio structure. The reasons for this are that the models of design studio undertaken at RMIT with external partners have historically developed design proposals useful for the advancement of the project like Marae Melbourne’s – as a means of advocacy for further community, political or financial support. As Vivian Mitsogianni explains, though the outcomes of studios are “not always immediately applicable in practice… they produce ideas and speculations, in the form of building examples for possible futures, and that is one of their highly valuable aspects”2.

In this studio the advocacy of design – the form and materiality of the projects – became the useful outcome for Marae Melbourne. This was not only to explore expressions of a Melbourne Maori culture, but for presenting those ideas back to the Iwi Chairs Forum in New Zealand. In addition to this, there were specific Melbourne sites and partners in those sites to be investigated, essentially a feasibility analysis through design to help Marae Melbourne understand where, as well as how, their community could be best established.

This relied on a studio structure that put ‘a foot in both camps’. One side of the studio was to carefully explore the specific social-spatial requirements of the group – acting ‘ethically’ as Jeremy Till proposition where “the elements and relations [of architecture] deployed in the name of the other through the formation of empowering spatial contexts”3. The other side was to use the studio’s capacity to be venturous, shaping the studio structure so students are given, as Mitsogianni puts it, “significant scope to shape the direction of the exploration, thereby increasing the diversity of responses and propositions”4.

FRAMING THE STUDIO
The creation of that studio structure commenced through the development of the brief with Marae Melbourne over several weeks prior to the design studio commencing. We used the brief as a tool to mediate between venturous practice and community hopes, test possible strategies students might use with the community group, and clarify the important aspects of the project. This briefing allowed us to test possible frameworks with the community group and for them to clarify which parts of the program needed to be carefully respected prior to the commencement of the design studio. At a moderation session of the grades, where a panel of industry/academics view the work and give critical feedback while ensuring the spread of grades across all studios is consistent, there was inquiry as to how the students benefited from the community contact. This contact was vital in giving more detail to the uses both ceremonial and functional that the students used to inform their architecture.

With a student cohort either from Australia or countries throughout Asia, we realised early on that we needed to maximise the community contact and exposure to both Maori and non Maori New Zealand culture. Within the time constraints of a design studio, we could not expect students to develop both a sophisticated understanding of Maori culture and a sufficiently explored design project. Instead we sought to create a studio culture where the community group was respected through the seriousness of the students endeavours. The groups needed to be sufficiently at ease with each other so design ideas could be explored, mistakes freely made and guidance given. Creating this studio culture required constant communication between RMIT Architecture and Marae Melbourne, as well as the leadership of staff well versed in external consultancies and community engaged projects. Two experienced practitioner-academic staff, Leanne Zilka and Simon Whibley, co-led the studio. Originating from Napier and with his undergraduate degree from the University of Auckland, Simon provided a knowledge of the New Zealand context to the internal studio group.

RMIT hosted three events for the Marae Melbourne group: a mid-semester and end of semester presentation, and a community lecture night. At the first presentation, the Marae Melbourne group simulated part of a welcome, and a Powhiri was performed for the final presentation.

Students developed individual projects following a series of four week-long design investigations along a theme. By expecting design responses from the first week, and using blunt provocations, naivety could be encountered, discussed and more sophisticated approaches explored.
DESIGN CONTEXTS FOR A MELBOURNE MARAE
Framing a project that deals with a cultural building that has a deep and expansive range of precedent to draw from, as is the case with contemporary Marae, gave us the difficult task of framing a design studio that could cope with the time frame and also excite the group to pursue unique and venturous positions in the design studio.

During the briefing period we worked on developing a range of precedent that could help them navigate this terrain. We also worked in close consultation with Marae Melbourne, who generated precedents of their own and tracked the studio: editing areas that they thought needed more thought, such as the important entry sequence. The project became more about the architecture of the Melbourne Marae rather than a Marae in Melbourne and we tried to understand a broad body of knowledge around cultural approaches to architecture both in Melbourne and beyond in order to empower students to develop their own expression in boundaries of prescribed sensitivities.

For us, this meant undertaking a somewhat radical departure from New Zealand based examples as central sources of precedent. Some of the work we looked at included work by the Canadian native...
ABSTRACT

Indian architect, Douglas Cardinal, who designed the Smithsonian for National Museum of the American Indian, or NMAI. His work expresses the relationship indigenous cultures have to the land. The curvilinear building is void of any formal references from the NMAI culture but instead a contemporary interpretation of the strong connection to the land.

Expo architecture was also a source of precedent, that despite some of the cliches, do illustrate the way a single practice can express their culture through form and content. This included the work of Heatherwick Studio and their 2010 UK Pavilion.

ARM was also closely looked at as it is a defining Melbourne practice that takes on cultural discourse when producing space. Illustrating how the unique culture in Melbourne is expressed through architecture. Examples here included the William Barak building with the face of Barratt etched on the surface, and National Museum in Canberra with a composite of universal cultural icons.

Lastly, in terms of the Marae precedent, we looked closely at the Whare Nui in both history and in more contemporary examples such as the Te Marae in the Te Papa Museum of New Zealand and relevant projects such as Nga Purapura by Tennent and Brown.

New Zealand architecture, landscape, writing, film and art were also influential areas of research and points of departure and for developing design approaches.

OUTCOMES OF THE STUDIO

The benefit of the studio model for Marae Melbourne’s ambitions have been immediate and substantial. Student projects were presented as part of a successful application by Marae Melbourne to create an Iwi Leadership Working Group to progress the project. Marae Melbourne are hosting an Iwi Chairs Forum delegation in October 2015 to that will involve exhibition of the projects and workshops to around the project and its design.

Internally, the studio project has been important for clarifying and communicating the identity of a Melbourne Marae within the group itself; Project Director Te Hira Cooper summarises these different aspects of design advocacy in two ways:

“We have been very happy with the outcomes of the studio both internally as an organisation, but also externally through the wider community that have been able to connect with the designs. Selected designs have been used to give a glimpse of a conceptual design of the Marae and some of these have been rolled out on the website, on facebook and other social media portals. We have used one of the animations in our presentations to stakeholders in Australia and also to the Iwi chairs back in New Zealand.”

Four projects selected here exemplify design approaches that emerged from the studio. There were 2 sites that students could select; one was in Altona approximately thirty minutes drive southwest from Melbourne CBD, the other in Melbourne’s CBD sports precinct.

The Altona site sits between the protected coastline of Port Melbourne and suburban Altona with its largely single family dwellings. It is characterised by shed structures loosely placed on the site and a bank of protected trees. The second site, Gosch’s paddock, is adjacent to the AAMI park soccer stadium in the heart of the sporting precinct of Melbourne.

To illustrate the approaches we have selected 3 schemes which captured clear directions and really pushed the idea of what a cultural/community centre could mean formally, programatically and spatially. These are explained below:

1. Memory of the Wharenui – by Jun Kit Chan. Early on in the design studio we gave the students a
variety of techniques to assist the students in generating form. They experimented with some of the traditional buildings of the Marae specifically the Wharenu (meeting house), which has a strong exaggerated and exposed gable that is often delicately carved with representations particular to the Marae’s Tangata Whenua. Jun chose to run a series of digital operations that used and manipulated the Wharenu, traditionally a stand alone pavilion, expanding the structure so that it could house all the program, whilst keeping its connection to the exterior and its strong over-articulated structure legible throughout the variety of spaces. The singular nature of the traditional Wharenu was adapted to absorb not only the diverse program that ranged from community centre to childcare facilities but also allowed for a contemporary interpretation of what the Marae could be in a non-New Zealand location. The community that will use the Marae in Melbourne will be from diverse tribal backgrounds and have different reasons for their need for connection to the Marae in Melbourne. It will be a place for not only Maori or ex-New Zealanders but for Australians and other cultures to exchange stories and experiences. The demands of this new Marae mean that the traditional structures need to be rethought in order to be an appropriate, responsive and engaging space.

2. Reverse Appropriation by Van Hoang. Looking carefully at the existing Maori iconography in both traditional and contemporary architecture and art, Van used these works as a way to understand Maori culture and conditions and as the conceptual framework for creating a new and existing Maori iconography. Referencing another culture always straddles a fine line between insensitivity and cliche. Van’s work was
not looking to construct a narrative through the appropriation of cultural imagery, but rather to conceptually inject a sense of otherness or ‘New Zealand-ness’ into the site and to create a journey through the building’s various spaces. As such, the work of Gordon Walters was cleverly used as a figurative site strategy, curving figure/ground linework vertically extruded to inform the spaces and blur the boundary between inside and outside. Reinterpreting the traditional marae of separate buildings into a singular building with direct connection to the landscape, the response to this project’s form from the community group was especially strong. Also appreciated by the group was the humour evident in the appropriation of the appropriator, alongside an acknowledgment that the attempt to create a sense of Turangawaewae on this site is in itself an appropriation.

Two other projects provided exemplary investigations on how the Marae’s design might instill connection to its site. These projects dealt more overtly with the concept of Turangawaewae, and drew heavily on the processional aspects of Marae Melbourne’s welcoming protocols to set up spatial and topographic design strategies.

3. Michael Ross’s project uses this procession to take Tangata Whenua and Manuhiri through the site in a manner that straddles the symbolic and the everyday. The primary enclosure formally shifts between the recognizable gable of the Wharenui and patterns of lava, an overlay of abstracted geology from the ring of fire onto Australia’s ancient, inert mass. This clear signifier of origin, transfer and relocation is then carried through the site with a series of alterations to the existing context: the extension of the lava pattern across the site as a planting pattern together with smaller, more subtle interventions. Taken together, the architectural and landscape design forms a narrative, tied to the procedures of entering the Marae, that on the one hand inscribes a foreign landscape on the site and at the same time revalues what was already there. For a student commencing his fourth year of study the poetic sophistication of this project was deeply impressive.

4. The transformation of the Powhiri from Tapu to
Noa formed the siting and sectional strategy for Edward Hick's project. The Wharenui and Atea together form a raised platform of landscape and architecture that faces the entry to the Marae and is aligned along an east-west axis to the shoreline beyond the site. When entering the Marae, this territory has as its backdrop an inversion of this formality – the Whare Kai, administrative and ablution facilities are dug into the earth, opening onto a sheltered, intimate space between the buildings and a stand of trees that runs along the north boundary of the site. Drawing on the work of John Scott, this project combines the compositional structures of the Martin House with the roof tectonics of the religious projects such as Futuna Chapel: a sense of nobility alongside habitual delight.
This paper presents a novel platform, ModRule, designed and developed to promote and facilitate collaboration between architects and future occupants during the design stage of mass housing buildings. Architects set the design-framework and parameters of the system, which allows the users to set their space requirements, budgets, etc., and define their desired way of living. The system utilizes gamification methodologies as a reference to promote incentives and user-friendliness for the layperson who has little or no architectural background. This enhanced integration of a both bottom-up approach (user-centric/player) with a top-down approach (architect-centric/game-maker) will greatly influence how architects design high rise living. By bridging the gap between the architect and the user, this development aims to instil a greater sense of belonging to people, as well as providing architects with a better understanding of how to give people more control over their living spaces. The paper also presents an evaluation of a design process that employed ModRule.
Collaborative Mass Housing

Arrangement and Planning

Form-making

This paper presents a novel platform, MoB-Rule, designed and developed to promote and facilitate collaboration between architects and future occupants during the design stage of mass housing buildings. Architects set the design framework and parameters of the system which allows the users to set their space requirements, budgets, etc. and define their desired way of living. The system takes reference (Detrangl et al. 2011) to parametric methodologies to promote flexibility and user-friendliness to the person who will use it or live architecture background.

The demand for mass housing has sharply increased over the past decades due to the rapid population growth and migration to urban areas. To address the demand, prefabricated constructions methods (Sears 2006) and mass housing are more employed throughout the industry to provide fast and efficient building deliveries. While at the same time family structures have changed drastically—the typical two-parent, two-children family is no more—the mass housing designs do not react to the multi-laced social needs of housing. This condition forces people to live in identical units designed and prefabricated for efficiency, affordability, and not for the actual occupants and their needs. Architects have been trying to understand the essence of people (Modygan et al, 1998), yet the outcome remains very much the same.

With the current advancement of digital architecture, novel possibilities have emerged. User-centric design processes (Fabric et al. 2013). Remote housing system (Madrazo 2009) are such examples, yet the full potential has not been exploited to allow more individual variation for the occupants. In present, most of the computational methods addresses the possibilities of a fully parameterized design. They are merely generated by a top-down approach and being controlled by architects without or with only little involvement of the users. It has been a well-established practice to offer a housing design that highly engaged occupants. These were generated by using non-digital methods (Modygan et al. 1998). Sophisticated computational systems can aid the architects in their choices of designs while at the same time allowing for a customized mass production of housing that is economically viable (Sears et al. 2013).

Our here presented research was undertaken with the use of MoB-Rule to facilitate and subsequently to understand a collaborative design process in mass housing that is both bottom-up approach (user-centric) with the top-down approach (architect-centric). This system will greatly influence how the architect designs for high rise living. By bridging the gap between the architect and the user, this development aims to infuse a greater sense of belonging to the people as well as giving the architects better understanding and control to the people. The paper presents the evaluation of a design process that employed MoB-Rule. We present how we adjusted the parametric algorithms of MoB-Rule to allow more automation to accompany the design phase. We conclude with a critical discussion of how computer-supported collaborative mass housing design processes can contribute to both good design and healthy living reflecting the needs and desires of dwellers in urbanized areas of the 21st century.
ModRule: An Architectural Design Learning Platform

System architecture
- Parameters
  - One
  - Rules
  - Multiple
- Framework
- Outcome
- Clusters
- Decision

Registration instructions

Interface introduction

Merge "triangular" geometries
Take note: if they are not in one piece in Rhino, they cannot be merged, any changes have to go back to Rhino (3D software)

Divide plans/sections into units
Take note: the colour indicates which

Set those which should be fixed
Take note: corridors, core and public spaces.

Set pricing on each unit (max 8 types)
Take note: the floor will be locked (draping and fixing will not be possible)
Set 0 to UNDO

Process

Outcome

MOD RULE: SNOWFLAKE
(Sketchup Game)
Outside-in: Dwelling in the City

MARK SOUTHCOMBE
Victoria University of Wellington, New Zealand

NIC AYRES
Victoria University of Wellington, New Zealand

This poster documents and critically reviews a context specific design-led research investigation and outcomes towards March (prof) in 2014. This project, resulting from a collaborative Masters studio focused on Housing Fieldwork, is significant for the manner it privileges landscape within the design of medium density New Zealand housing. A range of building scales working in close association with landscape also through a range of scales facilitates interrelationship between internal and external environments. Occupants experience the site and buildings as a series of precincts that combine as a cohesive integrated whole.
This poster documents and critically reviews a context specific design-led research investigation and outcomes towards March (Prof) in 2014. This project resulting from a collaborative Masters studio focused on Housing Fieldwork is significant for the manner it privileges landscape within the design of medium density New Zealand housing. A range of building scales working in close association with landscape also through a range of scales facilitates interrelationship between internal and external environments. Occupants experience the site and buildings as a series of precincts that combine as a cohesive integrated whole.
SubUrban Dream

MARK SOUTHCOMBE
Victoria University of Wellington, New Zealand

HENRY READ
Victoria University of Wellington, New Zealand

This poster documents and critically reviews a context-specific design-led research investigation and outcomes towards March (prof) in 2014.

This project, resulting from a collaborative Masters studio focused on Housing Fieldwork, is significant for the manner it stacks and layers high medium density housing in redeveloping a fringe suburban suburb as high quality contemporary high-medium density housing meeting expectations more usually associated with low-density suburban subdivisions. The research documents characteristics of New Zealand’s preferred ‘suburban dream’ and through design-led research experiments details how these characteristics can be achieved by a combination of two new high-medium density housing typologies named Ground Hugger and Cloud Buster. These new typologies also develop a visual relationship to the underlying grain of the existing suburb.
This poster documents and critically reviews a context specific design-led research investigation and outcomes towards March (Prof) in 2014. This project resulting from a collaborative Masters studio focused on Housing Fieldwork is significant for the manner it stacks and layers high medium density housing in redeveloping a fringe suburban suburb as high quality contemporary high-medium density housing meeting expectations more usually associated with low density suburban subdivision. The research documents characteristics of New Zealand’s preferred ‘suburban dream’ and through design-led research experiments details how these characteristics can be achieved by a combination of two new high-medium density housing typologies named Ground Hugger and Cloud Buster. These new typologies also develop a visual relationship to the underlying grain of the existing suburb.

Individual:
GROUND HUGGER

Collective:
RECREATION LOOP

Community:
EXISTING GRAIN + CONTEXT
This poster documents and critically reviews a design-led research investigation and outcomes towards March(Prof) in 2013. This project resulting from a collaborative Masters studio focused on Housing Fieldwork is significant for the manner it reinvents historic close built housing patterns as a contemporary high medium density urban village with private outdoor spaces and some shared courtyard space. A site specific investigation results in an compelling visual argument. Closely located individual buildings are maintained through a series of new single and stacked duplex housing typologies resulting in a close match between medium density housing and NZ expectations of suburban housing.
The principal objective of this design-led research investigation was to explore how design can engage the damaged historic buildings of post-earthquake Christchurch in ways that maintain these remnants while returning them to economic viability. By preserving these broken architectural remnants as dynamic, working elements of the urban fabric, they can act as historic memorials of the event and associated loss, while actively participating in the regrowth of the city.

Neil Challenger, Head of the School of Landscape Architecture at Lincoln University, argued in 2010 that suburban malls surrounding Christchurch are what drove the retail life out of the Central Business District. An urban architectural solution to the decline is challenging because the sheer horizontal size of the suburban mall does not have any place in the finer and ornate grain of an inner city. To return economic viability to the urban centre of Christchurch, this student-led design research investigation proposes a new more competitive form of inner city retail typology – an urban form of the suburban mall – that maintains and leverages the original heritage character of the city.

The research site along the Avon River forms a threshold between the struggling historic retail area of Cashel Street and the thriving historic cultural precinct of Worcester Boulevard. Both could provide strong anchors within the city, but as parallel routes they are disconnected. This site includes structures with historic value, some intact, some broken, some gone forever. The tectonics and shifting orientation of the proposed new architectural intervention on this site were conceived to link the two main precipices, while strategically reinforcing the importance of the heritage fragments and the Avon River in Christchurch’s place identity. Christchurch’s devastating earthquakes of 2010–2011 have sadly provided an abundance of sites.
The site selected for this design research investigation is the area west of Oxford Terrace, fronted by the Avon River and bound by Worchester Boulevard and Hereford Street. The research proposes that this inner city site when integrated with the landmark feature of the Avon River can become a far more ‘competitive and attractive’ economic model than the suburban mall.

One of the problems the Christchurch inner city faces is how ‘contemporary’ or ‘new’ architecture of the rebuild should respond to the existing and historical remaining architecture. In this design investigation, the Public Trust Heritage Building’s roof line was used to provide the height datum for the new intervention while acting as a formal anchor on the site, as well as a ‘pivot’ for the new intervention’s rotation towards the river. The Public Trust Heritage Building’s column and plinth levels were used to establish a horizontal datum that is echoed in the new intervention as an elevated void, forming an open and permeable ground floor outdoor market.

The Clarendon Hotel’s Renaissance revival style front and side façades were retained as a free-standing architectural ‘skin’ in counterpoint to the new intervention – conceived as a ‘contemporary skin’ defining the overall volume of the complex. The massing of the new intervention is fractured and pulled open to reveal the Clarendon Hotel frontage. The permeability and adaptability of the ground level forms a direct response and critique to that of the solid and impenetrable edge condition of the typical suburban mall.

A pedestrian-only link directly takes the user to the point of deflection where the intervention and the historic architecture meet. This link allows visitors to simultaneously move in and through the historic layers of the heritage architecture.

As the next step in the investigation, it would be useful to test the feasibility of this project based on the amalgamation of additional inner city sites and the requirements needed to accommodate large-scale retail and related parking.

For inner cities to become more truly attractive, the large retail element which is so prominent in today’s society must become integrated into the existing fabric of an inner city. A new approach is therefore needed – one that challenges the typical retail typology by better responding to and assimilating the inner city’s existing history, context and culture. These elements create a city’s characteristics of uniqueness, diversity and surprise.
New technologies, social media and spatial representations: Auckland’s public space of spectacle and consumption

MANFREDO MANFREDINI  
The University of Auckland, New Zealand
ROSS JENNER  
The University of Auckland, New Zealand
AARON HILLS  
The University of Auckland, New Zealand

The poster documents a community based research project concerning identity and character of places. It studies the collective production of spatial representations through textual and iconographic data shared on public social networks through mobile devices and popular applications can provide empirical evidence to develop a deeper understanding of the relationship between the spatial qualities of the everyday amenities and the elaboration of a collective cognitive geography of the urban space. Using experimental analytical tools to evaluate basic characteristics of social life in representative spaces of consumption and people’s spatial representations – with Instagram as main source – the study revealed insights into a selected sample of Auckland shopping centres, ultimately confirming the hypothesis that there are multiple correlations between people’s everyday practices and collective elaboration of spatial production.

The study investigates how the continuous expansion of means and popularity of digital communication technology has an increasing impact on people’s relation to places, particularly affecting the conception, perception and experience of public spaces. It focuses on the way through proliferation of information networks and interconnection of related platforms, communication flows combine and hybridise messages across the entire spectrum of their origins and contexts, disregarding their characters, whether formal or informal, grassroots or institutional, recreational or work-related, mundane or scientific: in the openness and limited control of the current public sphere, the digital realm recombinations and remembering of the political public sphere provide access to dialogue to independent and critical positions of the social “multitude” that are otherwise marginalised in most public domains by the powers that control information and behaviour with various forms of disciplinary regimes. These expressions indeed include all the spectrum of actors. On one end those beholders subdued by the illusory spectacle of the disjoined and semi-autonomous elements of the contemporary city conceived by the corporations of mass consumption, such as entertainment districts and shopping centres. At the other end of the scale, the critical actors that are actively engaged in the identification and exploitation of the areas of freedom and autonomy emerging from the contradictions and multiple entanglements of the control systems implemented in these very same spaces. Places of consumption, particularly shopping and entertainment environments, are noticeable as sites where people upload large number of images that emphasise key events and references which shape their daily life.

The study of data provided by sources of genuine information on people’s experiences, perceptions and conceptions of public space in relation to their mental constructs, social life and shared spatial interpretations. It can offer new invaluable empirical evidence to the complex discourse on its condition in the digital age, complementing the wide critical and theoretical elaborations of the aspects concerning control and commodification, fragmentation and displacement, spectacle and illusion. This is because the use of spatially rooted communication, including presence (space and time attributes) and/or reference (place tagging), is relevant to people’s use of public space and access to the public sphere. This produces a steadily increasing quantity and quality of non-commercial information concerning individuals’ everyday practices, including iconographic spatial representation. These allow forms of interaction that are both synchronous and asynchronous but also
seamlessly multi-scalar in geographical coverage range. While the number of social media platforms with georeferenced uploader data, such as Twitter, Foursquare and Instagram is increasing, other systems both private or semi-private and public make use of place reference and tagging.

The expansion of interaction granted by the new technological framework is problematic: the widening of the user basis is still very selective and only partially offsets the fundamental problems of participation inequality, demographic bias and spatial bias typical of most of the content of the so-called GeoWeb. Concerning public spaces, these problems of access to digital social media are extremely relevant, because the exclusionary effects are further enhanced by the serious issues of physical accessibility and social filtering characteristic of some of those places, particularly the privatised ones.
The virtual public thing: Or about the res publica in the post-consumerist society

MANFREDO MANFREDINI
The University of Auckland, New Zealand
ROSS JENNER
The University of Auckland, New Zealand
AARON HILLS
The University of Auckland, New Zealand

The posters present a community-based research project concerning people’s everyday practices in urban public space, counteracting the increasing disjunction of urban places subject to commodification. In low density cities within neoliberal political frameworks, these factors have developed peculiar places of social relationship within integrated urban enclosures devoted to lifestyle consumption – the latest evolution of shopping centres. These shopping enclosures are key manifestations of the new form of complicity between the leading economic powers and the wider society. They are mobilised by spectacle that quickly subsume the fundamental changes occurring in the relations between architecture and associative life in our contemporary post-consumerist, digital society.

The posters present the findings of a comparative analysis on urban morphology of six selected areas around new Auckland shopping centres, documenting the challenges they pose to architecture and urban design in defining the future of public space. The investigation on the spatial aspects of the architecture of a sample of new enclosures in Auckland, aims to provide an insight into the poorly explored effects of design on social life in New Zealand, where privatization of public space proposes new idiosyncratic models of ‘depoliticized spaces’ with sophisticated transductive characters and finely tuned physical, social and cultural effects of displacement. It describes our concerns with the processes of production of space resulting from this privatization and the accompanying retreat of public authorities from the management of both suburban commons and infrastructural systems. We consider it particularly critical as it occurs when the main social activities of production and consumption converge in a new ambivalent condition framed in the incipient hybrid and participatory “interreality” of post-mediatic culture. Our interpretation elaborates on the contemporary dimension of public culture, discussing the important and on-going transformation of the public realm of the entire Auckland conurbation. It foregrounds the effects of the progressive marginalisation of the commons and the dislocation of what was once understood as genuine collective public space into the private property of urban enclosures.

The study aims to contribute to the discourse on changing scopes and means in the design of public space, relating it to the poorly explored effects of privatisation and associated physical, social and cultural displacements in the progressively hybrid experience of physical and virtual reality within the urban phenomenon.
urgeoning developments in Asian cities have recently been transforming traditional integrated urban patterns into semi-connected systems of discreet and estranged patches, often of mega-block size. Public space is more and more fragmented, displaced and increasingly privatised, introverted and decontextualized. At the forefront of this transformation are the developments of large shopping and entertainment centres, which are progressively becoming autonomous and all-encompassing urban elements for social interaction. These structures steadily expand in size and functions, transforming their original model from enclosed, spectacular “cathedrals of consumption” into heterotopic mini-cities, with even more impervious external boundaries, celebrative entry portals and spatial transductions. The new paradigm further aggravates the strongly criticised erosion of the non-commodified public space trend, causing profound effects on urban life both on everyday practices and collective representations of the inhabitants. On one side they produce disassociations in patterns of movement flows (vehicular and pedestrian), urban streetscapes (levelled surfaces, façades and other elements) and social infrastructures (culture, education, health, community and recreation facilities). On the other they transfigure the perception of the urban space and its limits, providing interpretations that, with the ubiquitous and a-chronic communication granted by the digital infrastructure, draws upon an urban tradition of a country where the central meaning spatial enclosures is reflected both in the classical language, where a single character, ‘cheng’, means both ‘city’ and ‘wall’, in its urban structure, where finite and integrated socio-spatial units, the ‘danwei’, have characterised its recent political history.

This poster documents the spatial analysis of the changes occurring in the city of Changsha, one of the fastest developing capital cities in Midwest China, home to more than 7 million people. Changsha was chosen as it epitomizes the current heterotopic spatial trend, with shopping centres proliferating throughout its urban area (currently it hosts more than 50 large-scale structures). The documentation shows key findings of the analysis on “otherness” of a representative selection of recently developed shopping and entertainment centres. While for the urban form the it used traditional analysis methods, to explore citizens’ perception of the city and the collective representation of space and it has developed an experimental process to retrieve and collate iconographic information, using social media as main source of image-based communication with attributes of presence (space and time) and reference (geo-referenced and tagging). Results provide empirical evidence on the changing relations between the formal and structural aspects of public space, and the public life of people and communities articulating the discourse on commodification, fragmentation, displacement, spectacle and illusion.
Collaborations
Manfredo Mamfredini, Xin Tian, Chunyu Wei with the students in Hunan University
The Energy gallery is Inter-disciplinary and collaborative project from various relevant point of view. It is a research project aimed to the development of a multi-purpose glass energy generator. For its relevant public interest the project has been funded by the Regional Government of Tuscany and by Roberglass a private company specialised in glass manufacture.

The climate crisis will be the main driver of social pressure in the next twenty years. Large-scale urban coal tarred areas contribute immensely to the heat island effect and to excessive carbon emissions. One of the strategies that can guarantee results, in short term, is introducing energy generating galleries that can transform urban districts into power generators.

The present study provides possible solutions and applications of this approach through energy-generating/reducing systems like modular pavilions, green houses, winter gardens, or public facilities in the city’s open spaces, in order to produce results for power generation (energy-plus) and overall benefits of comfort generated by the optimization of indoor microclimate. From the structural point of view, the pavilion is made by a series of fifteen portals composed by TVT truss beam elements (Trave Vitrea Tensegrity – Tensegrity Glass Beam).

The project idea was to design a modular tunnel made entirely of glass held by steel connections, having a predominantly linear configuration due to the concatenation of pre-stressed glass-steel portals made with the TVT construcional system. The architectural design of the tunnel has been developed by pursuing the following mentioned target:

- standardisation, modularity and scalability offering economic feasibility;
- possibility of realizing the gallery in different climate zones and urban locations;
- optimizing energy efficient performance of the complex by reducing consumption and by generating onsite using renewable sources, i.e. using high efficiency photovoltaic panels integrated within the glass;
- optimisation of bioclimatic conditions;
- functionality.
The Energy Gallery

Form finding and optimization of a structural steel-glass system for passive cooling and energy harvesting.

The Energy Gallery is an interdisciplinary and collaborative project from various relevant points of view. It is a research project aimed at the development of a multipurpose glass energy generator. For its relevant public interest, the project has been funded by the Regional Government of Tuscany and by Roberglass, a private company specializing in glass manufactures. The structural system has been awarded the prestigious Vespucci prize by the Government of Tuscany.

The climate crisis will be the main driver of social pressure in the next twenty years. Large-scale urban coal tarred areas contribute immensely to the heat island effect and to excessive carbon emissions. One of the strategies that can guarantee results, in short term, is introducing energy generating galleries that can transform urban districts into power generators. Urban centres have a great capacity to be converted into beneficial galleries that can generate electricity using renewable sources and house within them a micro-climatic atmosphere that encourages urban agriculture.

The present study provides possible solutions and applications of this approach through energy-generating/reducing systems like modular pavilions, green houses, winter gardens, or public facilities in the city’s open spaces, in order to produce results for power generation (energy plus) and overall benefits of comfort generated by the optimization of indoor microclimate. From the structural point of view, the pavilion is made by a series of fifteen portals composed by TVT truss beam elements (Trave Vitrea - Tensile Glass Beam), covering an average span of fourteen meters aimed at the development of large spanned yet ductile glass beams.

The original idea of the TVT constructional system consists in dry assembling laminated glass panels held together just by pre-stressed steel rods, according to the principle of Tensile Integrity. The final form of the Energy Gallery, characterized by a predominantly planimetric development, achieves the following dimensions: length: 58 m; diagonal: 78 m; height: 6.5 m; minimum width: 12.5 m; maximum width: 16.5 m; minimum wheelbase: 3.1 m; maximum wheelbase: 5.4 m.

The pilot project was aimed at designing and producing an energy envelope with high architectural value oriented towards environmental (passive features, power generation, recyclable materials), social (multipurpose, collective facility) and economic (standardization, modularity and scalability of the architecture) sustainability. The project idea was to design a modular tunnel made entirely of glass held by steel connections, having a predominantly linear configuration due to the combination of pre-stressed glass-steel portals made with the TVT constructional system. The architectural design of the tunnel has been developed by pursuing the following mentioned target:

- standardization, modularity and scalability offering economic feasibility;
- possibility of realizing the gallery in different climate zones and urban locations;
- optimizing energy efficient performance of the complex by reducing consumption and by generating onsite using renewable sources, i.e. using high efficiency photovoltaic panels integrated within the glass layers;
- optimization of bioclimatic conditions;
- functionality.
This research is about site specific spatial design interventions for Melbourne’s Queen Victoria Market. It intersects with Melbourne City Council’s intention to invest into and renew large parts of the QVM market and precinct.

‘Walk and Talk’ consists of a mobile community and public engagement infrastructure involving a series of live and interactive events/situations for the generation of visions, design ideas and networks.

The project is a collaboration between Christof Mayer of Raumlaborberlin, MADA Monash Art Design & Architecture with students from its Interior Architecture program, and Queen Victoria Market (QVM), Melbourne.

The research explores a variety of urban and performative based strategies for their application to enhance the life of the market and to produce a more inclusive and vibrant community. It aims to engage in the improvement of the 2014 draft master plan. The research specifically enquires into what the characteristics and dynamics of the market and its precinct are, and what opportunities this constitutes to generate change and improvement. It also seeks to gauge and articulate what the challenges and impeding forces are to achieve action and change.

The design studio format offered a threefold lab: the traditional studio context; the design-make workshop and 1:1 construction environment; the city and market as a real-life site for situation based intervention.

A site analysis was undertaken in a range of formats and media, and included the recording and collection of data and narratives resulting in a range of drawings and other outputs.

This was followed by 1:1 interventions into the site – the QVM market and its edges/precinct. These situations/interventions tested the insertion and generation of new programs and how site-specific narratives as well as newly inserted narratives could be engaged with. They also explored the effectiveness of preconceived imaginations and how serendipity can play its course to generate as yet unknown imaginations and opportunities. The market visitors became central to this process as they variably took the role of an audience as bystander, active participant and actor/constructor, or passively and unwittingly involved in a constructed mise-en-scene. Furthermore, a design process was undertaken to explore a range of infrastructural options that would aid communication and facilitate community and stakeholder engagement processes in a future real-life context.

The outcome of this project consisted of a range of constructed situations encompassed and formalised as ‘Walk and Talk’ events.

Walks consisted of a range of spatial design interventions into the Queen Victoria Market that explored the use of existing spaces in new and unexpected ways suggesting new programs and activities for Melbourne CBD’s market precinct.

Walks consisted of a community kitchen infrastructure, a dinner cooked on site and short Pecha Kucha style presentations and discussions between existing and future stakeholders and designers on the challenges possible spatial strategies around the proposed QVM renewal project. Its focus was to explore the development of new programs, activities and alternative ways to densify the existing market and adjacent precinct spaces. This event was based around a previous project ‘Monument Kitchen’ by Raumlaborberlin which was designed to generate discussion between existing and future stakeholders and to develop ideas and responses to broader space based challenges.

The design-make studio research method with its built infrastructure and undertaken real-time/real-life situations uncovered design opportunities and potential imaginations for unconventional
experiences and effective ways of developing this urban precinct. They are framed and articulated through notions of tactility, performativity and curatorial designing and directing. At the same time however, it also exposed resistance to the more unconventional and challenging propositions, often due to existing ingrained operational and commercial practices and possibly also due to a fear of change. A selection of the Walk situations will be presented and annotated in poster 1. Poster 2 will provide the documentation of the infrastructural component and outcomes of the Talk event.

It is suggested that a further design and engagement stage would require the establishment of comprehensive partnerships and effective collaborations to develop a mutual understanding of agendas, visions, actions and investments. As part of this, the Walk construction method and the Talk infrastructure would continue to serve as agents and catalysts to imagine, activate and realize the transformation of this urban precinct.
Once we had established the size of the table and the shape it was important to test that in the specified location. Unfortunately we had to move the site further away from the brick wall because there wasn't enough room. Working within the shed gave a more intimate atmosphere.

**TALK:** Table Infrastructure

03.11.2014.12:00-20:30 - the Talk Infrastructure is made up of a mobile kitchen and reconfigurable tables / chairs and can be deployed to offer a dinner and discussions with community groups.

03.11.2014.12:00-20:30 - the QVM Talk dinner gathered council planners, designers, academics and students as well as QVM to exchange ideas about the Market Precinct development.

20.10.2014.12:00-20:30 - intermittent interventions creating new networks between traditional and new user groups.

03.11.2014.12:00-20:30 - recycled material and objects are reconfigured to create temporary infrastructures such as billboards and stalls.

14.10.2014.11:30-13:10 - diy seating is offered and deployed at specific locations and moments during the day and constructed / deconstructed as part of the market's material and ecology.

26.10.2014.11:00

**WALK:** Guided Walking Tour

03.11.2014.12:00-20:30 - a derive to encounter forgotten stories and events with performances from tour guide, the architecture and stall owners.

**WALK:** Curated DIY Seating

**WALK:** Program Layering

**WALK:** Pop-up Billboards & Stalls

**TALK:** Mobile Kitchen Unit

**TALK:** Table Infrastructure
Arclight is a lighting installation put on display as part of the Sydney Vivid festival in 2015. This spatial and atmospheric project brings the quality of architectural inhabitation and visceral experience to an urban festival through a biomimetic proposition emulating dense bundled systems found in the natural environment, such as Australian mangroves or Strangler Fig trees, using parametric tools and digital fabrication processes.

The installation serves as a register of the non-human environment. Embedded LEDs parse an environmentally driven data set, which provides a dynamic ambient interaction rather than the direct sensing of human actions. The result is an experience for occupants which is fluctuating mysteriously and indicative of a context beyond immediate human comprehension.

To achieve the conceptual aims of the project, a range of material, structural, and computational aspects required experimentation to resolve. Generally described, the project consists of 3 groupings or ‘thickets’ of ‘trees’ made up from elements ranging from 2.4m to 7m tall, of which there are 16 bundles overall. Each bundle is made from 6 grouped strands, formed into triangular box sections from riveted HPDE plastic sheets. A principle aspect of the research involves the testing of sheet thickness and the introduction of a shear connection to induce double-curvature into the flat-cut material. An integrated workflow from computational tools to full scale prototyping was developed to carry out the project. Testing and engineering of the individual member strength and the composite strength of bundles was pursued for delivery of the project for a high wind exposure site (60+ mph) and for hundreds of thousands of pedestrian occupants over the three week festival.

The strategy employed for generating the bundled strands begins with a line in the Z direction representing the average height of a bundle, which in this case was between 2.4 and 9.0m as installed. A parameter along the length of this line represents the “gather” location, or where all the triangular bundles will nest together with minimum spacing and form the area where all strands are fastened together neatly, in this case using colour-matched zip ties.

Adjustable parameters also control the allowable extension, spread, and height domains. Using these parameters, the gather points are moved in the x, y, and z directions and then connected back to the original gather points via tangent curves which serves to create the fluid shapes of each strand.

Once the strand centre curves are created, a series of planes are oriented along the curves which are rotated incrementally within a specified domain. These planes are in turn used for orientation of the triangular profiles for lofting of the strands, which gives the basic overall geometry of the structure. This process also ensures that the ‘strands’ are composed of ruled surfaces which can be accurately unrolled for 2d fabrication.

During the prototyping stage it was discovered the HDPE is quite flexible and tends to bend not only in the longitudinal direction, but in order to allow the decorative exterior tabs to be riveted together, it also bends transversely. Further it was found that modelling these tabs during the shape generation phase was too imprecise to be of value during fabrication as the tabs and rivet holes tended to not line up accurately. Thus it was decided to add the riveting tabs and holes much later in the computational process, after the unrolling of the geometry. This not only reduced the tolerance required for fabrication (+/- 1mm) but saved significant computation time while fine-tuning the parameters for the overall design.

The strands were manufactured from 3mm HDPE which was chosen for its translucence, high strength, isotropic composition, durability, recyclability, and value. In order to maximise material efficiency, it was necessary to dissect strands into multiple parts.
along their length and each strand was separated into its 3 constituent sides and further divided so that pieces fit neatly within the material bounds.

Originally we had planned to weld the pieces together to achieve a seamless transition between sections but this method proved difficult to master and ensure structural integrity. The final solution was to overlap each section by a distance of two rivets which had quite a few benefits:

- Simplified assembly by maintaining a single process
- Allowed us to perform partial pre-assembly
- Facilitated running the LED lights through the strands at any point in time
- Reinforced all joints to make the strands stronger

The entire project uses approximately 1.3 tons of sheet HDPE with a material efficiency yield of about 68%, approximately 12,000 aluminium pop rivets, and nearly 500m of LED lighting. The resultant strands vary in total length from 2.4m to 8.5m and are light enough to be carried and positioned comfortably by one person.
The strategy employed for generating the bundled strands begins with a line in the Z direction representing the average height of a bundle, which in this case was between 2.4 and 9.0m as installed. A parameter along the length of this line represents the "gather" location, or where all the triangular bundles will nest together with minimum spacing and form the area where all strands are fastened together neatly, in this case using colour-matched zip ties.

Adjustable parameters also control the allowable extension, spread, and height domains. Using these parameters, the gather points are moved in the x, y, and z directions and then connected back to the original gather points via tangent curves which serve to create the fluid shapes of each strand. Once the strand centre curves are created, a series of planes are oriented along the curves which are rotated incrementally within a specified domain. These planes are in turn used for orientation of the triangular profiles for lofting of the strands, which gives the basic overall geometry of the structure. This process also ensures that the 'strands' are composed of ruled surfaces which can be accurately unrolled for 2D fabrication.

During the prototyping stage it was discovered the HDPE is quite flexible and tends to bend not only in the longitudinal directions, but in order to allow the decorative exterior tabs to be riveted together, it also bends transversely. Further it was found that modelling these tabs during the shape generation phase was too imprecise to be of value during fabrication as the tabs and rivet holes tended to not line up accurately. Thus it was decided to add the riveting tabs and holes much later in the computational process, after the unrolling of the geometry. This not only reduced the tolerance required for fabrication (+/- 1mm) but saved significant computation time while fine-tuning the parameters for the overall design.

The strands were manufactured from 3mm HDPE which was chosen for its translucence, high strength, isotropic composition, durability, recyclability, and value. In order to maximise material efficiency, it was necessary to dissect strands into multiple parts along their length and each strand was separated into its 3 constituent sides and further divided so that pieces fit neatly within the material bounds. Originally we had planned to weld the pieces together to achieve a seamless transition between sections but this method proved difficult to master and ensure structural integrity. The final solution was to overlap each section by a distance of two rivets which had quite a few benefits:

- Simplified assembly by maintaining a single process
- Allowed us to perform partial pre-assembly
- Facilitated running the LED lights through the strands at any point in time
- Reinforced all joints to make the strands stronger

The entire project uses approximately 1.3 tons of sheet HDPE with a material efficiency yield of about 68%, approximately 12,000 aluminium pop rivets, and nearly 500m of LED lighting. The resultant strands vary in total length from 2.4m to 8.5m and are light enough to be carried and positioned comfortably by one person.
Sub Rosa: A phenomenological approach to community design

ROSS T SMITH
Abdullah Gül University, Turkey

Sub Rosa (under the rose) denotes secrecy or confidentiality to express silence, mystery, and the hidden. The term was used as a provocation for a design studio to reveal something that is not yet known about the architectural proposition or outcome developed through students’ conceptual research. The three student projects presented deal specifically with community and humanistic conditions, albeit theoretical, about issues of belonging, restoration, and integration. They are situated in communities that exist within the landscape and culture of Australia. Community collaboration is reflected in phenomenological, anthropological, social, and site-specific research necessary to achieve final results which enhance the future development, needs, and desires of these user groups: refugees, drug addicts, and a rural township destroyed by fire.
**ABSTRACT**

**s u b r o s a**

a phenomenological approach
to community design

**Study Profile**

Sub Rosa (under the mast) denotes secrecy or confidentially by press silence, mystery, and the hidden. The term was used as a provocation for this design studio to reveal something that is not yet known about the architecture proposition or outcome developed through students’ conceptual research. The three student projects presented deal specifically with community and humanitarian conditions, where their research is based on an understanding of the lived experience and the spatial gestalt that exist within the landscape and culture of Australia. Community collaboration is reflected in phenomenological, anthropological, social, and site-specific research necessary to achieve final results which enhance the future development needs, and desires of these user groups: Indigenous people, drug addicts, and a rural township destroyed by fire.

**Quarantine**

I am neither here nor there. I drift in a haze of the in-between.

This project examines human migration, the physical and psychological implications of departure, arrival, and a perpetuation of liminality. It is a condition of existing between states of longing and belonging, not knowing when you belong to and unsure of how to establish roots in either.

It looks at indigenity to debate that the contours of their inherent architecture are not defined by the temporalities of the landscape and culture but by experiences of migration.

This architectural proposition is a Quarantine Centre which is embedded in the remote and unwritten Australian landscapes. The Quarantine Centre renegotiates the structured and shifting forms of the landscape and the manner in which they have been constructed and adjusted over many years. The Quarantine Centre attempts to achieve a balance between the site’s existing and its requirements. It challenges concepts of permanence, isolation, and disconnection.

"Art and architecture are frequently differentiated in terms of their relationship to `function` or `use`. Unlike architecture, art may not be useful in this conventional, functionalist mould. Similarly, architecture does not necessarily contribute to social and environmental change. But, we might say that it provides a space for other kinds of encounters – re-enactments, social networking and social change.” Jane Herrick

Art is one of these spaces. Take, for instance, the catalogue of Designing Places, Nurturing People: Beyond ICT, London, UK.
February 7th 2009 will forever be known as ‘Black Saturday’. It marks a day in Australia’s history when fire-devastated the Victorian landscape.
- 173 lives were lost
- 1500 homes destroyed
- More than 400,000 hectares of land was burnt

The challenge is how to rebuild our homes, our community, our lives? Is it possible to help to heal emotional and psychological scars? Our nature, like nature, heals itself as bodily memory.

The exchange combines artistic studios and a community school in which the natural landscape of the local environment is explored through design, art and education. It is hoped that this exchange becomes a place of gathering, education, and production. The space can be both a facilitator of destruction as well as regeneration of culture, economy, and community.

This project is proposed as an architecture of memories, restoration, and memorial.
This research project aims to improve the onsite living conditions for construction workers situated in Ahmedabad, India. Due to rapid urbanisation, large-scale housing developments litter city margins throughout India, catering to a new middle class. The rate at which these developments are being built thrives on the abuse of unskilled labour. Workers building these developments live temporarily on the construction sites in labour colonies.

These labour colonies belong to a Kinetic City; an incremental city in motion, characterised by recycling materials, constant modification and reinvention. Jugaad Urbanism describes the strategies of innovation that occur in order to survive in the Kinetic City. The project acknowledges and accepts the energy and innovation inherent in Jugaad Urbanism and harnesses it as a first tool of empowerment for the labouring community.

Much of my research took place on site in India, where I documented the materials and spatial configurations used in construction workers’ labour colonies, and throughout Ahmedabad’s Kinetic City. Drawing on this research, I designed a network of open spaces and housing units that anticipates and makes room for the innovations of Jugaad Urbanism. The result is a design that is simple in terms of its spatial configurations, materiality and structure, but complex in terms of the social, cultural and economic barriers it must negotiate.
The Allegorical Architectural Project

HAMISH BEATTIE
Victoria University of Wellington, New Zealand

DANIEL K BROWN
Victoria University of Wellington, New Zealand

This POSTER is proposed for the theme ‘Situated and Community Based Projects’ because it involves a situated investigation to support new social planning structures and offer alternatives to traditional practice, based on reflection, empowerment, participation, vision and activism.

According to Dr. Penelope Haralambidou at the Bartlett School of Architecture, “The allegorical architectural project is characteristically disconnected from the material construction of a building. [She argues] that the imaginative, sometimes poetic, bringing together of ideas in the [architectural] design positions it closer to visual literature and, because of its high dependency on narrative, [she sees it] as a cross between a work of art, painting or sculpture, and a literary piece, poem or novel.” In 2014 a group of VUW School of Architecture master’s students was challenged to design an allegorical architectural project – guided by literary narrative – to address a speculative future characterised by negative environmental, political, economic and social issues. This investigation argues that our ability to effect real change not only involves intervening with the realisable but also through the speculative.

Within the context of architecture in the Baruni landfill, Robbe-Grillet’s concepts were tested architecturally by collaging attributes of site and architectural intervention, permitting the viewer of the speculative outcomes to draw new understandings about the toxic dump site and the contemporary social, cultural and political problems it represents. The principal objective was to explore architectural design as a pathway for social and political activism, challenging our built environment to arrive at new solutions to 21st century problems we are facing. The resulting speculative design was selected as one of the finalists for the 2014 Graphisoft Competition held in Auckland.

Alain Robbe-Grillet’s 1976 “new novel” Topology of a Phantom City was used as the provocateur to generate an experimental architectural solution for the inhabitants of Baruni Dump. The nouveau roman or ‘New Novel’ of the 1950s provides an exemplary case for the application of theoretical topology as a new means of conceiving architecture within a fluid time/space context. As one of the original founders of the New Novel movement, French novelist Alain Robbe-Grillet not only championed the form but was also one of its most prolific writers and theorists. Robbe-Grillet transformed the mathematical definitions of topology – the measurement of folds, stretches, and transformations of irregular surfaces – and utilised the translations to describe those spaces that define the fluid environment of modern times. He adopted the conceptual bases of the mathematical definition of topology in order to provoke reform.

Within the context of architecture in the Baruni landfill, Robbe-Grillet’s concepts were tested architecturally by collaging attributes of site and architectural intervention, permitting the viewer of the speculative outcomes to draw new understandings about the toxic dump site and the contemporary social, cultural and political problems it represents. The principal objective was to explore architectural design as a pathway for social and political activism, challenging our built environment to arrive at new solutions to 21st century problems we are facing. The resulting speculative design was selected as one of the finalists for the 2014 Graphisoft Competition held in Auckland.
The Allegorical Architectural Project

Authors' Names here; Authors' Names here; Authors' Names here

According to Dr. Penelope Haralambidou at the Bartlett School of Architecture, “The allegorical architectural project – guided by literary narrative – can help provoke reform. As one of the original founders of conceiving architecture within a fluid time/space context, Robbe-Grillet not only championed the form but was also one of its most prolific writers and theorists. Robbe-Grillet transformed the mathematical definitions of topology – the measurement of folds, stretches, and transformations of irregular surfaces – and applied the concept of topology to describe those spaces that are in a continual state of flux. French novelist Alain Robbe-Grillet’s 1976 “new novel” Topology of a Phantom City was used as a literary base for Robbe-Grillet’s concept of topology in order to provoke reform. Robbe-Grillet’s concepts were tested architecturally to also help provoke reform.

The architectural design investigation utilized the topological literary transformation of Robbe-Grillet in order to generate a speculative environment responding to the fluid site and population. Like Robbe-Grillet, the architectural design investigation was not only a speculative study into architectural and social issues, but also a tool for exploring the contemporary social, cultural and political problems it represents. The principle objective was to explore architectural design ideas through poetic construction of new virtual worlds; one that would serve as a metaphor to address a speculative future characterised by negative environmental, political, economic and social issues. The investigation argues that our ability to affect real change not only involves collaborating with the material world but also through the speculative.

This design research investigation was situated in the Baruni Dump in Papua, New Guinea. Its inhabitants achieve within a dynamic physical environment, as the landfill continually changes configuration and composition. Waste is gathered and removed by the scavengers in one place while it is brought in anew by the city at another. Both are in a continual state of flux. The architectural design investigation utilised the topological literary transformation of Robbe-Grillet architecturally to also help provoke reform. Robbe-Grillet’s concepts were tested in an architectural site in order to generate a speculative environment responding to the fluid site and population. Like Robbe-Grillet, the architectural design investigation was not only a speculative study into architectural and social issues, but also a tool for exploring the contemporary social, cultural and political problems it represents. The principle objective was to explore architectural design ideas through poetic construction of new virtual worlds; one that would serve as a metaphor to address a speculative future characterised by negative environmental, political, economic and social issues. The investigation argues that our ability to affect real change not only involves collaborating with the material world but also through the speculative.

The resulting speculative design was selected as one of the finalists for the 2014 Graphisoft Competition held in Auckland.
One of our most unique abilities is to remember ideas, communicate them, and build on ideas from others. The Carvers’ School – a Māori student-led design response to post-earthquake Ōtautahi/Christchurch – was conceived as such a collaborative community investigation. The design arose from user and community participation through intense consultation with Ngāi Tahu elders, architects and carvers. The result is a uniquely indigenous response to post-earthquake Christchurch.

In times of great hardship that have threatened Māori communities, Māori leaders have looked to the creation of whare whakairo. These whare create narratives of collective identity bringing people together and strengthening their resolve. These whare tell their origin story and the origins of their people. The analysis of the meeting house, the histories expressed in its carvings, and its structural elements are inextricably linked with and dependent upon the structure created by the Māori worldview.

With the Christchurch earthquakes all of Christchurch’s inhabitants could understand the sense of total upheaval, requiring our united mantra to re-right the waka and to sail again in unison. But there was also the opportunity to acknowledge the role of iwi in the development of Christchurch city. The idea of a post-colonial not just a post-earthquake city emerged, driven by Māori design and planning professionals with the leadership of local elders. Ngāi Tahu professionals in Christchurch developed key design aspirations pertaining to the future architecture and urban design of the new city. The role of Ngāi Tahu as a partner to the Christchurch City Council and CERA in the rebuild demonstrated and reinforced the value indigenous cultures can bring to the restoration of post-disaster cities.

This postgraduate student research project investigates the role of rituals that are associated with Māori architecture, specifically the whare whakairo, and how we can build this into future buildings to restore a sense of belonging and cultural identity for a disenfranchised generation of Māori youth.

A traditional Māori settlement site within post-earthquake Ōtautahi/Christchurch was used as a design case study, and the design intervention was conceived to provide a sense of belonging and collective identity through the allegorical program of a carving school sited deep in the heart of Ōtautahi/Christchurch. The whare whakairo was used as a mnemonic device to aid in creating a collective sense of Māori identity and a belonging to place within a community.

The principal research proposition was that for architecture to reflect cultural identity we must go beyond the mere appropriation of traditional forms and motifs; rather, we must integrate ritual into the experience of architectural space, integrating people with the architecture and architecture with the land. The site for this speculative architectural intervention is on the Ngāi Tahu owned King Edward Barracks within the Christchurch CBD, an entire central city block situated on the edge of the traditional Puari pa and mahinga kai (food gathering) site adjacent to Otakaro (Avon River) and opposite the City Council building. The speculative outcome was based upon the concepts of three thresholds derived from the rituals of the powhiri and the stages of the carving student’s education: Te Karanga (The Call), Te Powhiri (The Invitation), Te Tuahu (The Bow); and three gods representing the lessons a carving student must learn: Tūmāntauenga (God of War), Tāne Mahuta (God of the Forest), Tangaroa (God of the Ocean).
The Carvers’ School: An Indigenous Response to Post-Earthquake Christchurch

An Indigenous Response to Post-Earthquake Christchurch

The Carvers’ School: A Māori student-led design response to post-earthquake Ōtautahi/Christchurch was conceived as such a collaborative community endeavor and community participation through intense consultation with Ngāi Tahu elders, architects and carvers. The result is a uniquely indigenous response to post-disaster cities.

In times of great hardship that have befallen New Zealanders, these elders have looked to the creation of stories and artifacts that would re-frame the sense of total upheaval. These stories and their creation are associated with Māori architecture, requiring our united mantra to re-right the world.

But there was also the opportunity to re-imagine the role of Ngāi Tahu in the city, and through their involvement, the leadership of local elders. Ngāi Tahu elders, architects and carvers. The principal research proposition was specific to post-earthquake Christchurch. The site specifically was the Ngāi Tahu-owned site within the tight box of Ōtautahi Christchurch. This choice established a role for architecture in reflected cultural identity. It required a sense of belonging and collective identity through the architectural creation of a place within a city.

The principal research proposition was the design of a space for the Māori architecture, which would be the site where an entire central city block situated on the edge of Cashel Street would be transformed. The creation of a space for the Māori architecture would be the place where a sense of collective identity could be reinstated.

The Carvers’ School – a Māori student-led design response to post-earthquake Christchurch was conceived as such a collaborative community endeavor and community participation through intense consultation with Ngāi Tahu elders, architects and carvers. The result is a uniquely indigenous response to post-disaster cities. This postgraduate student research project recognized as a role for architectural practice as an agent of change, requiring the leadership of local elders, and the role of Ngāi Tahu in the city, and the leadership of local elders.

In 2011, the site of the Māori architecture alliance was a symbol of Ngāi Tahu identity. In 2013, the site specifically was the Ngāi Tahu-owned site within the tight box of Ōtautahi Christchurch. This choice established a role for architecture in reflected cultural identity. It required a sense of belonging and collective identity through the architectural creation of a place within a city.

The principal research proposition was the design of a space for the Māori architecture, which would be the site where an entire central city block situated on the edge of Cashel Street would be transformed. The creation of a space for the Māori architecture would be the place where a sense of collective identity could be reinstated.

The Carvers’ School – a Māori student-led design response to post-earthquake Christchurch was conceived as such a collaborative community endeavor and community participation through intense consultation with Ngāi Tahu elders, architects and carvers. The result is a uniquely indigenous response to post-disaster cities. This postgraduate student research project recognized as a role for architectural practice as an agent of change, requiring the leadership of local elders, and the role of Ngāi Tahu in the city, and the leadership of local elders.

In 2011, the site of the Māori architecture alliance was a symbol of Ngāi Tahu identity. In 2013, the site specifically was the Ngāi Tahu-owned site within the tight box of Ōtautahi Christchurch. This choice established a role for architecture in reflected cultural identity. It required a sense of belonging and collective identity through the architectural creation of a place within a city.

The principal research proposition was the design of a space for the Māori architecture, which would be the site where an entire central city block situated on the edge of Cashel Street would be transformed. The creation of a space for the Māori architecture would be the place where a sense of collective identity could be reinstated.

The Carvers’ School – a Māori student-led design response to post-earthquake Christchurch was conceived as such a collaborative community endeavor and community participation through intense consultation with Ngāi Tahu elders, architects and carvers. The result is a uniquely indigenous response to post-disaster cities. This postgraduate student research project recognized as a role for architectural practice as an agent of change, requiring the leadership of local elders, and the role of Ngāi Tahu in the city, and the leadership of local elders.

In 2011, the site of the Māori architecture alliance was a symbol of Ngāi Tahu identity. In 2013, the site specifically was the Ngāi Tahu-owned site within the tight box of Ōtautahi Christchurch. This choice established a role for architecture in reflected cultural identity. It required a sense of belonging and collective identity through the architectural creation of a place within a city.

The principal research proposition was the design of a space for the Māori architecture, which would be the site where an entire central city block situated on the edge of Cashel Street would be transformed. The creation of a space for the Māori architecture would be the place where a sense of collective identity could be reinstated.

The Carvers’ School – a Māori student-led design response to post-earthquake Christchurch was conceived as such a collaborative community endeavor and community participation through intense consultation with Ngāi Tahu elders, architects and carvers. The result is a uniquely indigenous response to post-disaster cities. This postgraduate student research project recognized as a role for architectural practice as an agent of change, requiring the leadership of local elders, and the role of Ngāi Tahu in the city, and the leadership of local elders.

In 2011, the site of the Māori architecture alliance was a symbol of Ngāi Tahu identity. In 2013, the site specifically was the Ngāi Tahu-owned site within the tight box of Ōtautahi Christchurch. This choice established a role for architecture in reflected cultural identity. It required a sense of belonging and collective identity through the architectural creation of a place within a city.

The principal research proposition was the design of a space for the Māori architecture, which would be the site where an entire central city block situated on the edge of Cashel Street would be transformed. The creation of a space for the Māori architecture would be the place where a sense of collective identity could be reinstated.

The Carvers’ School – a Māori student-led design response to post-earthquake Christchurch was conceived as such a collaborative community endeavor and community participation through intense consultation with Ngāi Tahu elders, architects and carvers. The result is a uniquely indigenous response to post-disaster cities. This postgraduate student research project recognized as a role for architectural practice as an agent of change, requiring the leadership of local elders, and the role of Ngāi Tahu in the city, and the leadership of local elders.

In 2011, the site of the Māori architecture alliance was a symbol of Ngāi Tahu identity. In 2013, the site specifically was the Ngāi Tahu-owned site within the tight box of Ōtautahi Christchurch. This choice established a role for architecture in reflected cultural identity. It required a sense of belonging and collective identity through the architectural creation of a place within a city.

The principal research proposition was the design of a space for the Māori architecture, which would be the site where an entire central city block situated on the edge of Cashel Street would be transformed. The creation of a space for the Māori architecture would be the place where a sense of collective identity could be reinstated.
Studio Christchurch Retrospective Exhibition
The 48 posters Studio[ ]Christchurch of the Exhibition summarize the multiple projects that were organized through this collaborative Christchurch based research and design platform from 2012 to 2015. Studio[ ]Christchurch was conceived by Associate Professor Uwe Rieger and Camia Young in response to the seismic events of 2010 and 2011, which had left 80% of the center of New Zealand’s second largest city destroyed.

The different projects are used to introduce and reflect upon how the vision of an exemplary Christchurch rebuild was used as a shared opportunity to bring together tertiary institutions, local industries, the profession and governmental bodies. Through facilitating collaborative partnerships Studio[ ]Christchurch offered an open platform to investigate and develop concepts that lead to applied design propositions. The focus on real world issues was set up to prepare future professionals for contemporary practice through exposure to real-world design challenges. Over the course of three years approximately 1000 students participated in around collaborative 60 design studios.

The tertiary partners of the project were: The Architecture Department at Unitec School of Architectural Studies at CPIT, the School of Architecture and Planning at the University of Auckland, the School of Architecture at Victoria University Wellington, the School of Landscape Architecture at the University of Lincoln Geography Department and Engineering Department at the University of Canterbury.

Over the course of 3 years approximately 1000 students participated in about 60 design studios.
Large Scale Fabrication Studio –
FESTA – LuxCity 2012

Posters 49-52

PETER MCPHERSON, LESTER MISMASH, ANNABEL PRETTY,
JULIAN RENNIE, CESAR WAGNER
Large Scale Fabrication Studio
– FESTA – Canterbury Tales 2013

Posters 53-55

PETER MCPHERSON, ANNABEL PRETTY, JULIAN RENNIE

Three teams of Architecture students from the Unitec Department of Architecture joined with students from New Zealand and Australia to work alongside the Free Theatre Christchurch and local Christchurch hospitality businesses to create a city within a city for a carnivalesque procession through the city, based on Chaucer’s Canterbury Tales. Unitec teams were; Team 2013 Highlight, Team Illuminate, Anamorphic Shadows
Large Scale Fabrication Studio –
FESTA – CityUps 2014

Posters 56-60
GRAEME MCCONCHIE, PETER MCPHERSON, ANNABEL PRETTY, JULIAN RENNIE

Using the idea that the 'future will be live', 120 Unitec Department of Architecture students worked alongside architecture and design students from around New Zealand to reinstate a Christchurch city centre street with large scale installations, utilising a 12m high frame to glimpse into the city’s future. Unitec teams were Aurora, Influx, ING (Inspire, Nurture, Grow) Glow City, Scope City The Daze Maze.
The Vertical Farm

Poster 61

KIM CLARKE, REGAN LAIDLAW, DON PENPALA, JEANETTE BUDGETT, DUSHKO BOGUNOVICH
Breaking the Grid

THERESA SAMSON, CHRISTIAN BURGOS, JEANETTE BUDGETT, DUSHKO BOGUNOVICH

SYDENHAM SITE
The site is located east of Colombo Street and south of the CBD in the North-East corner of Sydenham.

The aim of this project is to create a live-work environment within the industrial fabric of Sydenham.

East Sydenham in the 1940s consisted of a mix of residential lots and a few industrial areas. Over time, industrial programmes took over, pushing residents to the south.

To counter the monotonous industrial occupation and the familiar Christchurch grids, the project introduces a diagonal cut that acts as an entry point into the industrial side of east Sydenham. It challenges the existing grid to create a pedestrian-friendly circulation route within the car-dominated grid. The diagonal cut brings life into the courtyards of the cold industrial blocks. A gradient of public and private spaces brings greenery and water into the site.

The urban strategy is to continue the pedestrian-diagonal cut through east Sydenham. The project proposes residential occupation to be mixed with office and suitable manufacturing occupations. The range of programs include residential and offices on the street, studios and public amenities located inside the block, and exhibition space at the centre of the block.

SUSTAINABLE FEATURES

- PV / SHW panels
- Natural cooling
- Atrium ventilation
- Rain water storage
- Passive solar heating/cooling
- Food production
- Natural ventilation

SYDENHAM 2013
The site is located east of Colombo Street and south of the CBD in the North-East corner of Sydenham.

SYDENHAM 1941 TO 2013
The area has transitioned from 100% residential into 100% industrial.

URBAN MASTERPLAN
Masterplan showing the new paths to be created allow for pedestrian access to public spaces.

EXISTING FIGURE GROUND

PROPOSED FIGURE GROUND

EXISTING PROGRAMMES

PROPOSED PROGRAMMES

- private
- semi-public
- public

FOOD
APARTMENT
CONSTRUCTION
CAR

GROUND FLOOR PLAN FIRST FLOOR PLAN SECTION A-A

NORTH ELEVATION

MASONRY EXISTING
MASONRY PROPOSED
EXTERNAL WALLS
INTERNAL WALLS
STRUCTURAL WALLS
SUSTAINABLE FEATURES

81
GREEN PROMENADE

This project introduces a promenade through the industrial area of Sydenham. The industrial area of north Sydenham divides the residential neighborhoods in the south from the CBD in the north, and acts as a barrier between the two areas. The area is predominantly made up of grey, large scale industrial buildings and very little else. The promenade works like a crack in a surface, bringing life into the concrete dominated landscape. The design of the promenade introduces greenery and residential housing along a path and connects Sydenhams residential neighborhoods with the CBD. The aim of the project is to create a catalyst for a greener, more pedestrian friendly, mixed use area.

This scheme proposes commercial and community based activities within the existing industrial buildings that border the promenade. The programmes include a food court, art studio and gallery, sports centre, and a community centre.

The green promenade itself will have a cycling lane and a walking path to provide a safer pedestrian and cycling route to and from the CBD. We believe that this design opens up opportunities for a more welcoming, safe, sustainable and human friendly lifestyle within the industrial area in Sydenham.
Light Conversion

Poster 64
REYA PATEL, FLORA KWAN, JEANETTE BUDGETT, DUSHKO BOGUNOVICH

factories into a place of combined live-work. Factories constructed of portal frames and tilt slab concrete are typical structures in Sydenham. They use skylights to drop natural light, deep into the building. Light is the driving design impetus for this project. By preserving the existing skylights and structure, the building retains the traditional industrial appearance but is transformed into a live-work-environment. The preserved skylights allow a maximum amount of natural light into the building space.

The North-East corner of Sydenham is an industrial area operating mainly during the day. It’s location offers opportunities for the area to be developed into a mixed use district, as it is a buffer zone between the residential area in the South and the CBD to the North. Sydenham has the potential to become a sustainable and affordable area where new technologies and arts come together to enliven the area. Future Sydenham can be used to hold events such as Luxcity to encourage people to dwell, as well as bring light back into Sydenham during the night time.
Industrial Housing

Poster 65
BREE MORGAN AND JESSICA HULME, JEANETTE BUDGET, DUSHKO BOGUNOVICH

The project is located on the corner of Byron St. and Brisbane St. in East Sydenham. The brief was to take an industrial site and turn it from an existing ‘big box’ environment, into a mixed-use development that celebrates an innovative entrepreneurial business.

The site has an existing furniture business in a sawtooth roof warehouse. It is proposed to retain and transform the business into an eco-innovative furniture business that refurbishes or uses recycled materials, thus turning the place into a learning centre for green innovation. A public passage way passes through the existing sawtooth building connecting the street to a courtyard on the other side. A cafe and office are located at the front section, providing a place for people to gather.

The pattern of the sawtooth roof was the initial inspiration for the new mixed-use design. In addition, we discovered a tukutuku panel of Ngāi Tahu te iwi o te rohe o Otautahi, which resembled the same sawtooth pattern. We derived the design concept from both of these forms. It was a key aim to retain and strengthen the unique identity as a place of industry, action, and innovation. At the same time it was important to offer attractive places for businesses, residents and the community that seek a different experience to that of the CBD.

The new buildings are composed of three different typologies, derived from a triangular form. The smallest of the three modular designs is 12m x 6m and accommodates retail and office spaces. The medium module is 12m x 9m and is designed for mixed use, such as a light industrial workshop with residential living above. The double module has two different designs: a 12m x 6m backed onto a 18m x 6m module and a 12m x 9m module backed onto a 18m x 9m module. Both are designed for mixed use.

All modules were designed for passive solar energy collection, air ventilation and water collection. Concrete panels are used for thermal mass and a green edible garden is located at the bottom of each module.
The design is based on four identified problems: the lack of residents, the absence of 24-hour activity, the poor use of unbuilt spaces and the high crime rate. The project aims to create a sustainable live, work and play community by creating pockets of density.

The design was inspired by the drastic shift in residential accommodation from the 1920s (full of residents) to 2000s (with no residents). These studies drove the shape and form of the design by stacking and compacting the years one on top of another, starting with the 1920s at the bottom and the 2000s at the top. The program distribution places residents on the upper floors, retail on the ground floor and offices in between. By placing the smaller footprint buildings on the bottom floor, it creates an easy flow of movement throughout the buildings.
A series of devastating earthquakes in Christchurch, in particular, February 22nd 2011, has left the city scarred by its destruction, unrecognizable as the city of modernist architecture it once was. The city’s vibrancy has been replaced by a sense of emptiness, leaving the city once known for its modernist buildings, unrecognizable with very few traces of past memories. Buildings were torn asunder by waves of energy. Retaining old and creating new architecture must not be considered given the opportunity. Buildings express the story of a memory, the progression of change, the transition from the past to the present, which people will respect and remember.

This research project explored the concept of Post Traumatic Architecture. The term 'post-traumatic' refers to the evidence of the aftermath – “The remains of an event that are missing. The spaces around this blind spot record the impression of the event like a scar.”


This thesis challenged an alternative way of rebuilding a traumatised city, by retaining memories from the past, not creating a shadow of the present, through exposing the history of the site with a platform for a contemporary architectural intervention. This thesis became a compilation of medical metaphors: a city operates as a body and over time, scabs will occur, scars will remain, prosthetics require insertion and post-traumatic stress may result. However, the subsequent response to these developments of the city is crucial to the experience gained. The future must acknowledge what has been lost and what has been gained in order to construct the future.
Rebuilding Christchurch, Rebuilding History

Abstract

This research project, Rebuilding Christchurch – Rebuilding History, addresses the historical pieces of architecture that have survived the devastation of the Christchurch earthquake. What happens to these remaining fragments of history is one that will affect the architectural landscape in Christchurch as we see it now. The earthquake has presented Christchurch with a unique opportunity to build a central city with new and exciting buildings for the residents of Christchurch to enjoy. But what is to become of the surviving fragments of Christchurch's architectural history? These are the buildings which helped to form the identity of the city; they are what people remember from the past. This project tries to find the balance between responding to the past, responding to the Blueprint proposed by CERA, by exploring how a new theatre can revitalize the city from its current damaged state.

The research interprets the physical and metaphysical identity of the city and looks at how we can reuse selected elements in a way that is not scenography but on a deeper level is unmistakable – a building for Christchurch. It aims to create a civic building on a smaller scale that will encourage people back to the city with architecture that connects to their senses and memories. The exterior walls of the auditorium are created from recycled stone from the earthquake rubble. The auditorium has a cone roof which allows light to escape the building during performances, creating a beacon that can be seen from the Port Hills. The pieces from the remaining building on the site are retained and strengthened. They are incorporated into the new building by the use of ramps and structure which contain spaces for bars, foyers and restaurants where people can touch and see the remaining fragments of the site.
The Creative Corner

Poster 70

AKSHAY SHAH, DESMOND LAM, SEAN PATTERSON, VILLA YAN, BUDGET, DUSHKO BOGUNOVICH
Christchurch 2061 –
Seismic Design Studio, 2013

Posters 71–112
A SUMMARY BY ASSOC PROF UWE RIEGER AND JOHN CHAPMAN

The 41 posters give an overview on the outcomes of the Seismic Design Studio, which was a research project at the School of Architecture and Planning at the University of Auckland as part of the interdisciplinary platform Studio[ ]Christchurch. Connecting research and teaching the project analysed latest seismic construction technology, which is structurally applied in the ongoing rebuild, and investigated into their inherent architectural design potential. The project worked in close collaboration with the Engineering Department at the University of Auckland and the Quake Centre at the University of Canterbury. Within a collaborative environment of engineers and architects the aim of the course was to explore design through a performance based approach and to extrapolate latest technology towards experimental visions for Christchurch in the year 2061.

The design research project was led by Uwe Rieger and John Chapman. Participants were: Bennett Hume, Wade Kobus, Alexander Sullivan-Brown, Sindre Johnsen, Paul Yoon, Charlotte Farquharson, Sreeja Basak, Louie Tong, Sulin Wang, Amrita Kaur, Yang Meng, Xinran Chen, Xiaoming Zhang, Linbing Chen, Huicheng Wu, Yumeng Feng, Bill Liu, Erno Chen, Dylan Huang, Samantha Harrison, Kelsey Muir, Xiang Li, Chungsang Oh, Kar Lok Chin, Eleanor Glenton, Thomas Huang, Chaeyoung Lim and Yuk Chi Pang.
Future Christchurch, 2011–2014

Poster 113–123

A REVIEW BY ASSOC. PROF. UWE RIEGER

The 10 Future Christchurch posters give an overview of the intentions, principles, strategies and outcomes of a research and design project which ran from 2011 to 2014 as part of the Studio Christchurch platform. The Future Christchurch studio was conceived and led by Camia Young at the School of Architecture and Planning at the University of Auckland. It was established to provoke conversation and thinking related to the rebuild of the city following the earthquakes. Each student started with an investigation into a chosen topic, through which they developed critical understandings and derived related design concepts to govern their decisions. This method of design relies on having a clear purpose – a raison d’etre – and results in unique design solutions informed by insights, which can be varied and complex. Over one-hundred students participated in seven design courses and three master thesis units. The work produced and summarized in 28 book publications was an essential part of Studio Christchurch in that it brought with it substantial background knowledge through its research driven approach.
Introduction to Future Christchurch

Poster 113

V1: Future Christchurch

Poster 114

Tutors: Camia Young, Derek Kawiti
Students: Alexander Milojevic, Seth Munn, Mikhail Rodricks, Zhi Jian David Wong, Che Wei Jacky Lee, Praveen Karunasinghe, David Ma, Tina Martin, Thomas Denhardt, Jeremy Yoo, Sam O’Connor, Thomas Ward, Gong Rickey Wang, Gang Henry Feng, Logan Suhrer, Johnathan James Guest, Scott Alexander Riley Thorp, Duy Khang Phuong, Justin Baatjes, Yvonne Mak, Eric Nakijima, Jason Barnes, Richard Jones, Charlotte Laus, Jordon Tomas Saunders, Yun Kong Sung, Adrian Vincent Kumar

V2: MATERIALS AND RESOURCES

Poster 115

Tutor: Camia Young
Teaching Assistant: Jordon Saunders
Students: Mona Ibrahim, Farah Saad, Jae Tommy Shin, Justin Baatjes, Timothy de Beer, Melissa Harrison, Elizabeth Campbell, Lucy Hayes-Stevenson, Fritha Hobbs, Cynthia Yuan, Sophia (Whoi-Seung) Kim, Natalie Tan, Daniel Yang, Angela Yoo, WooMin Lee, Hannah Steenson, Qianzi Chen, Vivian (Weian) Chen, Tessa (Yichen) Song, Jeffrey Jiang, Young Hun Kim, Lily Pan, Dalia Al-Timimi, Amanda Nakarmi, Jeremy Wymer, Chun Qin Zhang, Nan Wu, Owen Xing, Pei Wang

V3: ECONOMIES

Poster 116

Advisors: Camia Young, Chris Barton
Thesis Students: Alexander Haryowiseno, Che Wei (Jacky) Lee, Zhi Jian (David) Wong, Praveen Karunasinghe, Biran He, Erica Austin
V4: EMERGING IDENTITIES

*Poster 117*

**Advisors:** Camia Young, Chris Barton  
**Thesis Students:** Sarah Al-anbuky, Rex Braganza, Mona Ibrahim, Joo Kim, Jin Kyung Janice Lee, Yin Wah Yvonne Mak, Wenzuo Zody Yi

---

V5: FORM FOLLOWS PHYSICS

*Poster 118*

**Advisor:** Camia Young  
**Thesis Student:** Khang Phuong

---

V5: THE BLUEPRINT?

*Poster 119*

**Tutor:** Camia Young  
**Teaching Assistants:** Erica Austin, Melissa Harrison  
**Students:** Han Chen, Hew Kenn Chew, Samuel Wong, Adam Chin, Shirin Heidari, Hanin Rajeh, Sam Peters, Maddie Clarke, Yining Tan, April Broderick, Laurielle Shannon, Charlotte Farquharson, Taylor Chan, Louie Tong, Damien He, Amanda Nakarmi, Darryl Jacobson, Janina (Nina) Massee, Gemma Cookson, Chunqin Zhang, Tessa (Yichen) Song, Qianzi Chen, Jianxiang (Mickey) Ma, Matthew Ryu, Ziyi (Bill) Liu

---

V7: POLYCENTRIC CITY

*Poster 120*

**Tutor:** Camia Young  
**Teaching Assistant:** Kelvin Fung  
**Students:** Nan Wu, Owen (Wei wei) Xing, Huizi Suki Jiang, Xiaoming Zhang, Lesley Lu Chen, Emma Suzanne Farmer, Ting-Hin (Desmond) Lam, Villa (Huilin) Yan, Zara (Cheng) Huang, Ying Yan Zhou, Lydia Ai-Un Liu, Roberto Onat Wallace, Dimitar Borislavov Penchev, Rod Ziqian Tian, Timothy James Hogarth
V8: CHRISTCHURCH THE RESILIENT CITY

Poster 121
ADVISORS: Camia Young, Associate Professor Uwe Rieger
THESIS STUDENTS: Thomas Huang, Tessa (Yichen) Song, Xinwei Gu, Jeffrey Chow,
Lesley Lu Chen, Tao Shen, Qianzi Che, Villa Yan

Thesis Project: ECONOMIES

Poster 123
ADVISORS: Camia Young, Chris Barton
THESIS STUDENTS: Alexander Haryowiseno, Che Wei (Jacky) Lee, Zhi Jian (David) Wong,
Praveen Karunasinghe, Biran He, Erica Austin
Reclamations and Rebirth: an Inventory-driven Design Opportunity for Christchurch

Poster 124-125
JANE BAKER, JACQUELINE MCINTOSH, DIANE BRAND

Urban Trauma: The Contemporary Square and the New Urbanist City – Reintegrating Christchurch Cathedral Square

Poster 126-127
BENJAMIN CHALMERS, CHRIS MCDONALD
Lost Property

Poster 128-129

EMMA CLEAVER SHAW, DANIEL K. BROWN

Red Zone as Green Corridor:
Opportunities for Suburban Intensification:
a Christchurch Case Study

Poster 130-131

SACHA CONSTABLE, CHRIS MCDONALD
Constructing a Community

Poster 132-133
KATIE DICKENS, FABRICIO CHICCA

Wharf Dwellers

Poster 134-135
TOM DOBINSO, SIMON TWOSE, JAN SMITHERAM
Re-thinking the Kiwi Dream

Poster 136-137
LIBBY ELMORE, SAM KEBBELL

Drawn in: The Intimacy of the Hand Drawn Image & Design for the Robert McDougall Drawing Institute

Poster 138-139
JASPER KELLY, PETER WOOD
Re Christchurch Cathedral: an Investigation
Towards a New Christchurch Cathedral

Poster 140-141
ED KILKENNY-BROWN, PETER WOOD

Intensifying Christchurch.

Poster 142-143
J. HAMISH MCLACHLAN, KERSTIN THOMPSON
[a] Project for the Sub-Centre

Poster 144-145

GRACE MILLS, SAM KEBBELL

Design for Smart Transport:
An Integrated Multi-Modal Transport Interchange in Central Christchurch

Poster 146-147

JOEY (UNG YU) MOH, DIANE BRAND, JACQUELINE MCINTOSH.
Dwelling Narrow: Affordable Home Ownership in the City

*Poster 148-149*

**ANGELA PENNINGTON, MARK SOUTHCOMBE, TANE MOLETA**

---

The Wrong Side of the Tracks

*Poster 150-151*

**JORLE WIESEN, SAM KEBBELL**
The New Eastside: Re-populating East Christchurch Through Diverse, Contextualised, Medium Density Housing

Poster 152-153
BRETT WINES, MARK SOUTHCOMBE

Shaky Studio 2011

Poster 154-155
ESIKIA FAIGA, MELISSA THOMPSON, GRACE MILLS, JAYDEN CAINCROSS
Shaky Studio 2011

Poster 156-157
OLIVER BOOTH, LIBBY ELMORE, JOSEPHINE DEGUZMAN, CAMERON HURRELL

Shaky Studio 2011

Poster 158
NICOLA BOWMAN, RENEE NANKIVELL
Design for Disassembly 2012

Poster 159-160

EMMA LUSTY, LU CHENG, GRANT DAVIS AND DECLAN BURN

Convention Centre Feb 2013

Poster 161-162

AMANDA PRIDE, CATHERINE HALL, CATHERINE MOONEY, VI HUYNH, CONNIE LING, DAWID WOJASZ, HELEN ZOU, JAMES SCHOLLUM, ZOE REDWOOD
Convention Centre Feb 2013

Poster 163
AARON MILLER, CHARLES COLLINS, CHARLOTTE STEPHENS, DECLAN BURN, DAISY CHENG

The Theatre District Feb 2014

Poster 164-165
ANN-KATHRIN KUEPPER, MATTY NUKU, PATRICK LI, LUKE BRYANT, WILL HOPE
The Theatre District Feb 2014

Poster 166-167
OLLY SYME, MILLA SARIS, DIVYESH BHAVEN, VANESSA COXHEAD, BEN WEBBER, JANICE CHAN

The Theatre District Feb 2014

Poster 168
AMELIA HOULT, CHRIS YOUNG
Cityhood 2015

Poster 169-170

EUNICE SISON, MARIA MCMANUS, TYLER HARLEN, BEN LAURENSON, STEPHEN YIAVASIS, ELISE PROBY-CAUTLEY

Cityhood 2015

Poster 171-172

JESSIE EWART, SATCEY MOUNTFORD, CLAIRE FORD, RYAN MCCULLY, MIKAYLA ROADHOUSE, JAYMAYNE MIDDLETON
Cityhood 2015

Poster 173-174

MEGAN HUNTER-WILSON, JORDAN AUGUST, HANNAH BRIDGER, JOSHUA ROBERTS, ROSIE EVANS, VAN KRISADAWAT
Christchurch Aquatic Centre – 3rd year final project – EXIT Exhibition 2014

Poster 175
MICHAEL CARTER

Narrative Scars – 3rd year final project – EXIT Exhibition 2014

Poster 176
TOM JOHNSON
New Christchurch Library – 3rd year final project – EXIT Exhibition 2014

Poster 177-179

SEAN VAN SCOUTEN
Small Businesses Hub – 3rd year 1st term project | Taylors Mistake Surf Club – 3rd year final project – EXIT Exhibition 2014

Poster 180

JACKSON MILLS
Colombo Start-up Hub –
3rd year 1st term project 2014

Poster 181
MICHAEL CARTER
Glenafric Farm Homestead – 3rd year final project – EXIT Exhibition 2013

Poster 182

RYAN BRENT
Residential Reinterpretation; a proposal derived from analyzing the ideas of Christopher Alexander – 3rd year final project – EXIT Exhibition 2013

Poster 183-184

ALEXANDRA SMITH
Eden Project New Zealand: Reimagining the Christchurch Red Zone as a waterscape/landscape with Ki Uta Ki Tai Mountains to Sea Trust and Sir Tim Smit, Eden Project Cornwall

Poster 185-187

MICK ABBOTT, KATE BLACKBURNE, JACKY BOWRING, CHARLOTTE MURPHY
Aririra Wetland, Te Waihora restoration project:
with Living Water, Department
of Conservation, Fonterra,
and Waihora Ellesmere Trust

Poster 188-189
MICK ABBOTT, KATE BLACKBURNE, JACKY BOWRING,
NICK DICKINSON, CHARLOTTE MURPHY
Banks Peninsula Mosaic: Design Possibilities for a Landscape Synergy of Melded Values

Poster 190-195

KATE BLACKBURN. SUPERVISORS MICK ABBOTT, JACKY BOWRING
Uncertain Landscapes, Avonside Christchurch: Encouraging a Community’s Ability to Adapt through the Design of Landscape Infrastructural Spaces

Poster 196-201

NICKY COLEY. SUPERVISORS JACKY BOWRING, MICK ABBOTT
Equilibrium: Inhabiting a Changing Coast, New Brighton, Christchurch

Poster 202-203

JUSTINE CAREY