CONFERENCE PROCEEDINGS

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Association of Architecture Schools of Australasia
2011 International Conference

18th – 21st September 2011

School of Architecture & Building
Deakin University
Geelong, Australia

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The Organising Committee wishes to thank those people who contributed to the conference who may not be mentioned above.
Conference Introduction

2011 International Conference of the Association of Architecture Schools of Australasia (AASA)

Architecture @ the Edge

Dear Colleague

I would like to welcome you to the School of Architecture and Building. We are very pleased to host this year conference of AASA. The 2011 AASA ‘Architecture @ the Edge’ conference intends to bring people together to bridge the interdisciplinary divide of academia and professionals in architecture, urban design, urban and regional planning, landscape architecture, urban ecology and other relevant disciplines.

The conference aims to propagate key debates about thinking and practice in design, culture, social, landscape, built and managed environments and the peculiarity of architecture @ the Edge. The conference also provides opportunities to discuss how Australasian practice and research engages with and embraces the global changes in practice and research activities, while maintaining its cultural relevance and environmental adaptability.

Hosted by the School of Architecture and Building at Deakin University, Australia, it explores the theme of Architecture @ the Edge encompassing thoughts and actions regarding both the physical and the cultural. The Edge brings to mind the possibilities, potentials, and doubts of ‘being on the edge’, with its attendant bravado, irreverence, misrepresentation, misinterpretation experimentation and uncertainty. The natural tension at the edge of both southern and northern hemispheres is heightened in the global context of climate change and the debates about ‘sustainability’.

The Scientific Committee received a number of high quality publications across a diverse range of themes including: Histories of Architecture, Urban and Regional Development, Permeable Boundaries of Architecture Education and Adapting Traditions. All papers have been double blinded refereed by members of this Committee. The Committee wishes to thank all the authors for their contribution towards making this conference a success.

We hope you enjoy the 2011 AASA ‘Architecture @ the Edge’ conference.

Professor Hisham Elkadi

Head of School of Architecture and Building
Chair in Architecture
Deakin University
Conference Keynote Speakers

Kerstin Thompson
Principal Kerstin Thompson Architects

Kerstin Thompson is Principal of Kerstin Thompson Architects a Melbourne based architecture, landscape and urban design practice with projects in Australia and New Zealand. She is an Adjunct Professor at RMIT University and closely linked with other schools of architecture and professional institutes in Australia and overseas. She is also Professor of Design at the School of Architecture at Victoria University of Wellington. Her work has received numerous awards and local and international recognition. She is a member of the Federal Government’s BEIIC Advisory Committee, was the Creative Director for the highly successful 2005 RAIA National Conference and one of the Creative Directors for Australia’s 2008 Venice Biennale exhibition. KTA undertakes work for private commercial and housing clients as well as public clients including the Victoria Police, Metropolitan Fire Brigade, Royal Botanical Gardens and numerous Universities. Current projects include the Monash University Museum of Art and the Carrum Downs 24 hour police station. The practice focus is on architecture as a civic endeavour with an emphasis on the users experience and enjoyment of place.
**Professor Lorraine Farrelly**

Professor of Architecture and Design, Deputy Head of School Architecture, University of Portsmouth, United Kingdom

BA (Hons) (Portsmouth)
Dip. Arch. (Portsmouth)
RIBA FRSA Architect

Lorraine joined the University of Portsmouth in 1995 and teaches in the areas of Architecture, Interior and Urban Design. She has a postgraduate urban design studio, which has made mixed use and housing proposals for many European sites including Dublin, Paris, Amsterdam, Vienna, Venice, Rotterdam.

As a qualified architect she has completed projects ranging from the interior fit-out of bars and restaurants and retail design through to individual house design, school design and public spaces. Over the past three years Lorraine has been working with the BFL Building for Life awards with CABE to judge and assess housing across the South of England.

Lorraine has extensive publications and research interests in a multi-disciplinary approach to architecture at various scales, through understanding ideas of interior detail to urban concepts.
Sarah Buckeridge and Ann Lau
Hayball

Sarah Buckeridge
DIRECTOR

After gaining architectural experience in Singapore, Sarah joined Hayball in 1998 and became a director of the practice in 2007.

Sarah focuses on the early stages of projects, including feasibility, and design for residential and mixed-use developments. With extensive experience in the negotiation and coordination of town planning processes, Sarah coordinates the urban design projects within Hayball, including the master planning of new communities and strategic urban design projects for both the government and private sector.

Ann Lau
ASSOCIATE DIRECTOR

Ann Lau is an associate director with Hayball, with extensive experience in architecture, interior design and urban design. Her expertise spans a raft of project types, both national and international, including educational and cultural institutions, multiple residential and mixed-use projects, urban design master planning and urban framework planning.

Ann’s strength lies in her all-round skills in the procurement process of an architectural project, from the conceptual phase through to project delivery. In addition to practice, Ann is actively involved with design and architectural education in Melbourne and aboard.
Martha Schwartz is a landscape architect and artist with a major interest in urban projects and the exploration of new design expression in the landscape. Her background is in both fine arts and landscape architecture. As principal of Martha Schwartz Partners in Cambridge, Massachusetts and London, UK, her goal is to find opportunities where landscape design solutions can be raised to a level of fine art. She has over 30 years of experience as a landscape architect and artist on a wide variety of projects with a variety of world-renowned architects.

Ms. Schwartz is registered as a landscape architect in California, Texas, Ohio, Rhode Island, New York, and Illinois. She is the recipient of numerous awards and prizes including the 2009 Honorary Royal Designer for Industry Award from the Royal Society for the Encouragement of Arts, Manufactures and Commerce for her outstanding contribution to UK design; the 2006 Cooper-Hewitt Award for her body of work in landscape architecture; an Honorary Degree of Doctor of Science from the University of Ulster in Belfast, Ireland; a fellowship from the Urban Design Institute; several design awards from the American Society of Landscape Architects; visiting residencies at Radcliffe College and the American Academy in Rome; and a recent Honorary Fellowship from the Royal Institute of British Architects in London.

Ms. Schwartz is also a tenured Professor in Practice of Landscape Architecture at the Harvard University Graduate School of Design. She has lectured both nationally and internationally about the landscape, and her work has been featured widely in publications as well as gallery exhibitions. Recent projects include St. Mary's Churchyard, London, UK; Leamouth Peninsula, London, UK; Qatar Petroleum Headquarters, Doha, Qatar; The Children's Centre, Damascus, Syria; Cosmopolitan Casino, Las Vegas, USA; the Mesa Arts Center in Mesa, Arizona; Master Plan for Lulu Island, UAE; the Swiss Re Headquarters, Munich, Germany; a shopping mall interior and exterior in Frankfurt with MAB GmbH; urban reclamation and development projects with Urban Splash Developers and English Partnerships as well as on various projects located in Austria, Italy, China, and the UK.
Full conference papers

Architecture @ the Edge

Association of Architecture Schools of Australasia 2011 Conference
SESSION 1A - Room to move @ the Edge: Freedom and Relativity

BOUNCING BACK: THE ROLE OF DESIGN IN FACILITATING STUDENTS TO UNDERSTAND AND DEAL WITH ADVERSITY

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ABSTRACT

After state-wide flooding and a category-5 tropical cyclone, three-quarters of the state of Queensland was declared a disaster zone in early 2011. This deluge of adversity had a significant impact on university students, a few weeks prior to the start of the academic semester. The purpose of this paper is to examine the role that design plays in facilitating students to understand and respond to adversity. The participants of this study were second and fourth year architectural design students at a large Australian University, in Queensland. As a part of their core architectural design studies, students were required to provide architectural responses to the recent catastrophic events in Queensland. Qualitative data was obtained through student surveys, work design work submitted by students and a survey of guests who attending an exhibition of the student work.

The results of this research showed that the students produced more than just the required set of architectural drawings, process journals and models, but also recognition of the important role that the affective dimension of the flooding event and the design process played in helping them to both understand and respond to adversity. They held the ‘real world’ experience and practical aspect of the assessment in higher regard than their typical focus on aesthetics and the making of iconic design. Perhaps most importantly, the students recognised that this process allowed them to have a voice, and a means to respond to adversity through the powerful language of design.

Keywords: Architectural Education, Design, Adversity, Flood, ‘Real World’
INTRODUCTION

This paper investigates the role that architectural design played in assisting students to cope with flood events that occurred in Queensland, in early 2011. The Brisbane River broke its banks on 11 January, leading to the evacuation and closure of a large Australian university’s campus, and the inundation of 20,000 homes located in suburbs with a high university student occupation. Many of the students who attend this university were left without homes and belongings, while others helped in the recovery of the disaster by volunteering assistance during the cleanup. Some of the students were away on holidays and could only attempt to comprehend the impact of the flooding from stories they heard from their friends and families, or saw through the TV screen. The interaction people had with the flood was varied, depending on their geographic proximity to, and physical affect by, the destruction.

This research investigates the effect the adverse conditions of the floods had on these students, and more specifically, focuses on how the process of design assisted these students in coming to terms with the disaster. Importantly, the flood was a real event, one which was unpredictable and severe, and one which could happen at any time, anywhere. The main objective of this research is to interrogate the design process and examine its role in assisting students to understand and respond to adversity. The focus of the assessments within the 2nd and 4th year architectural design classes was on flood resilient design. By implementing a real event into the design problem, students found that their designs had a real and practical purpose.

CONTEXT

The research presented in this paper is set within second and fourth year architectural design studios. As a part of their core architectural design studies, students were required to provide architectural design responses to recent catastrophic flooding events, in Queensland. The assessment in the second year class was the third and final assessment that took place from weeks 9-15, of the semester. The assessment required students to design flood proof housing on a site set within a flood plane, near Brisbane city. This assessment was an individual item. The second year class had an enrollment of 165 students. The assessment in the fourth year class was an intense design charrette that took place in weeks 1-3, of the semester. As part of their first assessment students were asked to design a flood responsive unit based on an international competition ‘Facing the Floods,’ hosted by Tesseract. The design intent of the flood responsive unit, was to improve people’s living while facing flooding. The designs ranged from temporary shelters, communication pods, and protective skins. Tesseract is a student group based in Scotland who raises awareness of humanitarian issues, by hosting international design competitions that respond to disasters. The ‘Facing the Floods’
competition focused specifically on the Queensland floods of 2011. The fourth year class had 160 students enrolled.

In both classes, students were given the freedom to develop their own brief, while working within the relative constraints of an actual context. While the scale and scope of assessments differed, the unifying factor was a deliberate focus on resilient design, and more specifically, on a response to the recent Queensland floods. Previous research has shown that when architects are faced with adversity, they focus less on trivial concerns, but more on design responsibility. The design process takes on greater meaning and allows people to cooperate at a higher level (Coleman, 2001; Cuff, 2009).

Climate and natural disasters such as floods or droughts have increased over nine times, earthquakes have quadrupled and biological disasters have increased over 200 times (Fisher, 2010). The natural disasters that continue to occur are beyond society’s control; society cannot predict the extent of their destruction, which is precisely why they must question the role that design plays. Educators are responsible for questioning the role of designers, in the 21st century. It is under conditions of crisis that new forms of architecture emerge. The literature states that through moments of adversity the importance of aesthetics declines and there is a general shift towards design responsibility, where the design process takes on a higher level of meaning requiring cooperation and practicality (Coleman, 2001; Cuff, 2009).
Architects and designers must learn from moments of crisis where the disaster becomes a reminder to shift from aesthetic concerns, and focus on the cultural, functional, technological, environmental and emotional considerations. Design demands a higher level of social responsibility, meaning that the work for architects takes on greater meaning. (Coleman, 2001).

Architect, Denise Scott Brown, acknowledges this shift in priority: ‘the severity of the disaster forces on us an altered logic in our conceptions of the city and of our relationships and roles vis-a-vis each other and society,’ (Art Forum, 12.05). Architectural design directly responds to the needs of society.

Taking into account the affect that adversity has on society and the design profession, it is important to consider this as an opportunity to question old rules (Cuff, 2009). It is in the face of adversity that the role of an architect and designer becomes more complex and necessary. (Bonder, 2009). Designers must recognise the important role that they play in responding to humanitarian issues; one that requires collaboration and innovation (Suarez et al., 2008). The capacity for architectural responses is vast, the space for contributions to social and physical reconstruction is prolific and increases as the number of disasters continue to rise (Charlesworth, 2008). It is here that the design profession can stimulate the availability of resources and institutional support that assists in addressing the affect of disaster relief (Suarez et al., 2008). Charlesworth (2008) notes that:

Re-focusing the design profession upon social and ethical concerns can establish an effective platform from which architectural and planning professionals can contribute to the reconstruction of the increasing number of cities polarized by conflict ...the failure of many design professionals working in post-disaster failed to provide effective and sustainable reconstruction strategies, suggests that aesthetics and architectural heroism alone cannot solve the physical scars of sustained urban violence.

It is not only the physical scars that become visible when we interrogate the relationships between design and disaster relief. A critical element to all of this, is the emotional aspect that affects society. The emotional dimension can be difficult to quantify as it is not physically visible, however it can be felt and heard. It is important to reflect upon the fact that architecture and design will not only assist in rebuilding after disaster strikes, it is the process of rebuilding that can assist in reconstructing our will. As Cuff (2009) asserts, ‘design after disaster is not an autonomous project. In other words, disasters destroy more than buildings, and more than buildings need to be reconstructed in their aftermath’. By examining the affects of adversity we can see that this process can teach us to cope with issues as a result of the disasters, and improve our role to become better designers and citizens (Coleman, 2001).
When examining the creative process within a psychological framework, it has been found that making art can be a way of rehabilitation. ‘Perhaps learning and creating are continuous acts of reparation – a way of keeping sane, of getting well, and in so doing, making art’ (Sagan, 2009). An example of an architectural design that responded to disaster by promising a hopeful glimmer of recovery was the INFO BOX at Potsdammer Plaz, Berlin. The INFO BOX exemplified the resilient power of architecture by creating a space that communicated the tragedy of past events, while providing agency for public reflection and promise of rebirth (Choi, 2009). In this form architecture takes on a monumental role, one which assists in memorialising historical events, while providing hopeful responses for the future (Bonder, 2009). It is a relationship that promotes critical reflection through engagement with past and present, within spatial forms.

Due to the immediate nature of disasters there is little time for reflection or for understanding the scope and scale of destruction, or the change that such disasters evoke. Students struggle with change; they have difficulty responding to change often confused with overwhelming ranges of emotion including sympathy, need, and uncertainty. Robert R. Bell Jr. describes this situation: ‘I found a gap between knowing and understanding. Knowing something has changed, but not understanding what this change means to them personally for their career or for their generation. I sensed that the students especially needed time to figure it out and to understand the changes taking place …I believe it is our duty as educators to allow students to understand their world from an experienced perspective’ (Allen, 2006, pp. 22). The link between real events and the design process is invaluable in raising the importance of the role of design in engaging with students and providing them an opportunity to respond.

METHODOLOGY

Over 300 undergraduate students enrolled in second and fourth year architectural design were required to complete a design assessment, with a specific focus on designing in the event of flooding. The second year students were required to design a multi-residential housing facility located in a flood zone, and the fourth year students were required to propose a humanitarian emergency shelter for flood victims, to be assembled immediately after the event of a flood. Both of these assessments were undertaken in the first semester of 2011, directly after Brisbane’s catastrophic flooding event.

Immediately following the completion of these assessments, nearly 200 students completed a survey about their experiences of the 2011 Brisbane floods, and the role that these played in assisting them to understand and respond to adversity while working on their design.
proposals. Further to this, all students were required to report back on their understanding of resilient design and to reflect on the design process in a reflective journal, which was required to be submitted as a part of the assessment. In addition to this, all students were encouraged to comment on the flood design assessment, when completing the university wide administered end of semester ‘learning experience survey’. Lastly, key guests at an exhibition of the student work completed a survey after the exhibition - these guests included the exhibition keynote speaker, a high profile politician and many local architects and academics.

Using a qualitative grounded theory approach, the data from all four sources were coded and four key themes emerged: the ‘real world’ experience, the affective dimension of the flooding event, the practical aspect of the assessment, and the role of design in responding to adversity.

FINDINGS AND OUTCOMES

Three quarters of students from both design classes stated that they had been affected by the flooding that occurred in Queensland, in January 2011. Three out of 10 students reported that the floods had affected immediate or extended family members, and eight out of every 10 students stated that a friend had been affected. These numbers were higher than what had initially been anticipated at the commencement of the research and helped the researchers to contextualise the heightened emotional state of a high percentage of students, at the commencement of the design assessments.

Just under half of the students participated in or contributed to programs that helped to clean up after the flooding event and about one quarter of were unable to, as they were out of town at the time. Therefore about two thirds of students actively engaged in programs to assist in reinstating Brisbane back to its former state. While contributions varied, most students either joined the ‘mud army’ [a term coined by the media to describe the mass of volunteers who helped to clean up the mud left behind, after the flood waters subsided], or donated physical items or money to those who had been devastated by the event. Several students even teamed up with the Australian Institute of Architects [AIA] and Emergency Architects Australia [EAA], and provided pro-bono professional assessments of flood-affected properties.

An important aspect of the research was an analysis of student’s priorities when designing for floods. Across both design classes, the majority of students cited ‘buildable solutions,’ ‘environment/context’ and ‘social sustainability’ as the three highest priorities, however the order of these priorities differed between the two years. This can be attributed to the focus of
the particular studios; ‘Environment/Context’ was a major focus of the second year studio in addition to the flood proof design focus, while the priority of ‘Buildable Solutions’ reflected the more mature and ‘real world’ focus of the fourth year students. The lowest priorities for both classes were ‘iconic design,’ followed by ‘aesthetics.’ While the data suggested very similar priorities between the two classes, there was one interesting discrepancy; ‘social sustainability’. The fourth year students, whose design focus was more humanitarian, rated this priority 50% higher, than the second year students.

Figure 2: Overall Student Priorities in Response to Flood Design

When questioned about whether the process of developing a flood responsive design assisted students with coming to terms with flood disaster, they were evenly split; about one third believed that it had, one third believed that it had not and about one third were uncertain. Of those students who did believe that the design process had helped them to comprehend the floods, most realised this while working on the assessment, some appreciated this after completing the assessment, and a few recognised that this would happen, prior to starting the assessment. The majority of students stated that their experience in developing a flood responsive design would definitely affect the way that they approach future design projects.

Theme 1: The affective dimension of the flooding event

A key emerging theme was the affective dimension of the flooding event, and the effect that this had on the students: ‘[I] enjoyed learning a few different aspects of the floods and how it affected people …biggest and scariest fact about the floods is the deaths that occurred
design can aid in preventing such things’ [1B], ‘being overseas at the time of the flooding was very stressful and perhaps even hard to believe it was a reality …investing time in [the] facing the floods project was very helpful in believing I could be connected to Brisbane again’ [2B], and ‘I assisted with the floods before the flooding, during the flooding and after the flooding …it was a highly emotional time assisting with rescues as well as picking up the pieces …I put my own feelings aside during all this process and the facing the floods design made me face these and opened up suppressed emotions …it was a good way for me to deal with it and to get over it affecting me’ [6B].

Many exhibition guests agreed that the overwhelming optimism of the design responses helped to underpin the notion that adversity can, indeed, lead to positive change: ‘to me the strongest expression …was in the optimistic and innovative nature of the responses …there was hope and excitement evident in the propositions for addressing a set of challenges that are well outside of norms for most student projects’ [JC].

Theme 2: The role of design in responding to adversity

A second emerging theme was the role that design plays in assisting people to respond to adversity: ‘definitely beneficial …should be implemented into all future designs …crucial for Brisbane’ [3A], ‘Let's hope in the future there will be even more technologies and options for buildings to resist flooding. A flood response design is and should be considered as a benefit to bring designs even further’ [1A], and ‘I had already come to terms with [the flood but] it did make me think of the resilience factor in general in design’ [8B].

This theme was confirmed by exhibition guests: ‘one of the great outcomes of the exhibition [was] that design can provide a positive future full of excitement and optimism …the range and execution of ideas grounded in the particulars of a major event such as the 2011 floods shows tremendous hope and the promise of resilience’ [JC]. An academic commented: ‘interestingly the choice of graphics and images were largely utopian in nature’ [PC]. One of the tutors noted that many of the students had presented a vision outside of the base requirements of the assessment brief, by investigating the applicability of their design proposal to a multitude of adverse conditions, not just a response to flooding.

Theme 3: The ‘real world’ experience

A third emerging theme from the research, was the student’s positive appreciation of designing for a ‘real world’ experience: ‘designing for a natural event like the Brisbane/Queensland floods really brings the practical element of design into focus …how we as designers can provide solutions for real situations’ [7B], ‘I think it was a good idea that provided some real world significance’ [5A], and ‘I loved the assignment …felt like we were doing something real and worthwhile’ [10A].
Guests who attended the exhibition opening, reiterated this theme. A sustainable architect, agreed that the majority of work powerfully responded to the reality of the flood experience: ‘most [work] exhibit[ed] expressed a good depth of analysis and appreciation of the unique circumstances to which their designs responded… the majority of the responses had tangible practical applications, even if only as a conceptual springboard to help inform a range of potential responses for future events’ [JC]. A politician noted that: ‘with tertiary student work one always expects an ‘out-of-the-box’ approach and that's good … certainly some of these projects were not only out of the box, but they were out of this world … I think a mix of reality and dreaming is good’ [DH]. An academic said the projects showed a real world understanding through the technical nature of building solutions which were well explored: ‘as expressed though diagrams of process and systems’ [PC]. Another academic was inspired by the transfer of new ideas to industry professionals, community partners, politicians, family and friends, and the focus of building community around architectural practice: ‘this exhibition exemplifies architectures important contribution to society’ [PS].

Theme 4: The practical aspect of the assessment

The final key emerging theme was the value that students placed on the practical aspect of the assessment: ‘it's more like architectural design …we need to think of a lot of practical solutions’ [4B], and ‘what I found was that form takes a backseat to planning, but at the same time a building that is designed with potential inundation in mind has its own aesthetics and character. I think it is important to let the functional requirements reveal the design intent and its integrity …[we] shouldn't try [to] disguise it and cover it up …in terms of site analysis it gives you an additional element to consider while spatial planning and formulating ideas’ [5B].

Exhibition guests agreed that practicality is not always applicable to student design work, because sometimes practicality and reality stifles innovation, however some designs: ‘were both practically conceived and highly innovative … others may have had some fundamental practical problems that could limit the future of the concept, but nevertheless are worthy of consideration, at least in the expansive [concept] phase of a response’ [JC].

**CONCLUSION**

The results of this research showed that the students produced more than just the required set of architectural drawings, process journals and models, but also recognition of the important
role that the affective dimension of the flooding event and the design process played in helping them to both understand and respond to, adversity. They held the ‘real world’ experience and practical aspect of the assessment in higher regard than their typical focus on aesthetics and the making of iconic design. The ability to respond to disaster through design empowered students, allowing them to take ownership of the events in their state and city, and assisted with their rehabilitation, thus demonstrating the value of design as an important component of the recovery process. There was recognition that ‘disasters destroy more than buildings, and more than buildings need to be reconstructed in their aftermath’ (Cuff, 2009, p. 5). Perhaps most importantly, the students recognised that this process had allowed them to have a voice and a means to respond to adversity through the powerful language of design.

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REFERENCES


‘THE CASTLE’: GET COMMUNITIES WORKING
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ABSTRACT

‘The Castle’ is a collaborative project between The School of Architecture & Design, a youth shelter and a school-alternative workshop. The project aims to assist youth at risk of homelessness by deploying micro-dwellings to households experiencing spatial and emotional distress. The Castle questions common assumptions about housing. The brief requires a dwelling that is small, mobile, autonomous and spatially clever. Four prototypes have been designed and built by architecture students in collaboration with a neighbouring homeless shelter, Youth Futures. One prototype, combining the attributes of an oversized piece of furniture, a caravan, a loft apartment and a backyard studio has proceeded to serial manufacture by long-term unemployed trainees under an Australian federal government program.

Assembly has been tailored for low-skilled labour through the evolution of an innovative digital design/fabrication system called ‘Panitecture’. Borrowing strategies from the kitchen cabinetry, boatbuilding, caravan and mobile home industries panitecture is based on a construction grammar that includes a reliable component jointing regime, a limited material palette, minimal tools (mallet, screwdriver, glue and paintbrush) and a legible communication of assembly instructions.

The Castle proposes a model of long-term community engagement between a school of architecture and progressive community organisations, drawing together a complimentary set of skills and priorities, addresses each of the three pillars of sustainability and contributes to the School of Architecture & Design in terms of teaching, research and consultancy.

INTRODUCTION

The Castle, a long-term collaboration between the School of Architecture & Design and two local community organisations intends to assist youth at risk of homelessness by deploying micro-dwellings to households experiencing spatial and emotional distress. The project was initially inspired by the successful deployment of studios by Melbourne organisation ‘Kids Under Cover’ and Harry Tams, the director of a neighbouring youth shelter, Youth Futures. If a young person’s growing need
for independence is restricted it can become a contributing factor to family tension, relationship break down and ultimately to contemplating leaving home prematurely, often with little or no means of support. Responding to this gap in the housing market, the brief for The Castle, developed in partnership with youth shelter clients, demands a dwelling that is small, mobile, autonomous and spatially clever. Castles are deployed from a ‘housing bank’ on a short to medium term basis. Four prototypes have been designed and built by staff and students at the School of Architecture & Design, as part of the School’s ongoing Learning by Making program (Burnham and Green 2009), with the assistance of staff and clients of Youth Futures and Studentworks, a ‘school alternative’ workshop. One of the early prototypes has been successfully deployed to two properties in regional Tasmania, assisting potential clients of the shelter to remain at home, connected to their social and family networks.

In response to the conference theme The Castle project addresses ‘edges’ in two ways. Firstly, the young people the project sees as its clients may, if they fail to resolve their domestic situation and ultimately end up homeless, and consequently find themselves, due to their precarious position, potentially exposed to violence, mental health problems and ostracism by mainstream society. Secondly, The Castle qualifies as being ‘edgy’, not so much in that it is positions itself at an extremity but that in terms of its social, pedagogical and construction agendas The Castle situates itself in an ‘in-between’ position. More specifically the project addresses the ‘in-between’ in the following ways:

• questions what a home really needs to be, combining the attributes of an oversized piece of furniture, a caravan, a loft apartment and a backyard studio.
• proposes a model of long-term community engagement between a school of architecture and progressive community organisations, drawing together a complimentary set of skills and priorities.

• addresses the three pillars of sustainability; social, environmental and economic.

• utilises digital design to make an innovative building system directly applicable and communicable to a low-skilled workforce.

• borrows elements of a construction grammar from the kitchen cabinetry, boatbuilding, caravan and mobile home industries.

• contributes to the School of Architecture & Design in terms of teaching, research and consultancy.

This paper expands on these points by describing the first serial manufacture of Castles, reflecting on the lessons learned and highlighting the opportunities for future development of the project.

COMMUNITY ENGAGEMENT

In early 2010 The Castle received substantial funding from the Federal Government Department of Employment and Workplace Relations’ (DEEWR) ‘Get Communities Working’ program. The submission was based around the establishment of an employment-training program and the construction of twelve Castles. The School of Architecture & Design has been responsible for design development, Studentworks for component cutting, and Youth Futures for the supervision of the training program and the establishment of the workplace environment. Participants, including clients of the shelter and long term unemployed with learning difficulties, were to gain basic workplace experience as well as an introduction to building construction. The Castles produced would be used by Youth Futures as part of their housing bank or leased to other youth service organisations.

At the inception of the Castle in 2008 the hope was that the three groups of young people - architecture students, Studentworks’ workforce and youth at risk of homelessness – would work together in the development, design, assembly and deployment of Castles. Direct collaboration has always been encouraged but sustained collaboration has been impeded by the academic calendar, the intensity of the Learning by Making format, the need for Studentworks to fulfil core orders and the precarious situation of shelter clients. One of the most satisfying outcomes of the DEEWR program has been the intensification of the relationship between the organisations, at both an organisational and at a personal level. Architecture students involved in the design of the initial Castle prototypes have been regular visitors to the Youth Futures workplace, observing the built outcome of their early thinking. A student has been employed by Studentworks to supervise the use of their C.N.C router (acquired in a joint grant submission) in cutting components and to initiate the organisation’s development of other digital products. Youth Futures staff and trainees have been involved in
reviewing work by architecture students on future Castle designs and DEEWR trainees have supervised architecture students in the construction of a Castle in the School’s workshop.

The workplace infrastructure, established at Youth Futures specifically for the DEEWR program, is itself a prototype for long-term community engagement. The workplace has been designed as a mobile assembly unit that, along with Castle component sets, can be deployed to regional centres as a vehicle for similar future employment training scenarios. The space is comprised of a shipping container that supports a proprietary lightweight canopy structure, providing a sheltered and shaded external workspace. Workbenches, designed by colleague Justin Beall and shelter staff, and other assembly equipment pack neatly into the container.

Source: Richard Burnham

Figure 2: Stages in assembly of C5 carcasses

THE LATEST PROTOTYPE - CASTLE 5
The Castle has always had an underlying agenda of questioning what a home needs to be. Castle 5, the design developed for assembly under the DEEWR funding, is a distillation of all that we have learned from previous prototypes. At around 10 square metres C5 is a small fraction of the floor area of the average Australian dwelling and is well below what most local authorities deem as being a minimum standard for a permanent dwelling. However, it does satisfy many of the criteria required by a sense of home; security, a public and a private identity, a defined threshold, space for the exhibition of personal things, and a spatial separation of bathing, cooking, relaxing and sleeping. Sense of home is further reinforced by defining what The Castle is not; a lack of aerodynamics, a solid appearance, a permanent and separate sleeping area, a high ceiling, discretely positioned wheels and a wide on-site berth all suggest that The Castle is not a caravan. The additional width gained on-site through the use of an innovative ‘fold-out’ section detaches C5 from any visual association with caravan and internally encourages a variety of movements to be possible for the human body (as compared with the centre aisle circulation pattern that dominates much caravan planning).

While considerable effort is being made to ensure The Castle looks and feels like ‘home’, a similar amount of effort has been invested in finding ways for The Castle to avoid compliance as a permanent dwelling. With an on-road width of 2499mm The Castle can be registered as a motor vehicle and avoids compliance with the Building Code of Australia, which can be problematic for a micro-dwelling. Several spatial design strategies contribute to the ‘tardis-effect’, whereby a physically small space is perceived to feel much larger. A stepped design section maximises the dimensions at eye-level, while minimising dimensions at foot-level. The diagonal dimensions are prioritised by placing seating and openings close to the corners. Reducing the ceiling height at the threshold contributes to the perception of relative generosity beyond.

SUSTAINABILITY
The Castle, we believe, takes a responsible approach to social, environmental and economic sustainability. Socially, the intended outcomes of the project are most clear; providing access to an accommodation alternative for a precarious demographic, making long-term links between diverse professional organisations and their client groups, creating access to dwelling construction to a low-skill workforce, and for design students. The Castle provides an example of a socially productive role for architecture. It has become an excellent teaching vehicle, particularly in the context of the project as a long-term endeavour, with each subsequent group of students building on the knowledge base of previous groups. There has, with the shift to a digitally based design process, been a significant impact on the social dynamics of the Learning by Making studio. While ‘making’ remains the primary vehicle for sketch design and the design development and documentation phases involve numerous iterations of laser-cut models, the group spends less time building together in the workshop and more time working in pairs in the computer lab. A comparison between the ‘hand-built’ C2 studio and the digital C5 studio suggests that the shift in emphasis, particularly the time invested in applying jointing patterns, has diluted some of the most cherished aspects of the LBM experience and has left the workshop underutilised for much of the studio. Improvements in the digital design process may eventually automate the ‘slobbing’ of components, but it seems that perseverance with the digital process will inevitably be at the expense of the experience of the LBM studio? Apart from the impact on the architecture students enrolled in the studio there is also an impact on the level of direct collaboration possible from outside the School. This is somewhat ironic in the context of striving for an assembly process compatible with a low skilled workforce.

The environmental outcomes are less easy to assess or prove but the intentions are similarly clear. Firstly, building a micro-dwelling has an inevitable reduction on the environmental impact of dwelling construction, both in terms of embodied energy and ongoing emissions. In terms of materials, The Castle prioritises a single renewable resource, plywood, and aims to reduce waste through efficient component ‘nesting’ and eliminating an independent structural frame. C5 is constructed from 67 sheets of 12mm plywood, 1500 screws, 12 tubes of polyethylene glue, weighs approximately 1300kg (including the dual axle trailer base) and is capable of being autonomously serviced with a composting toilet, PV panels, solar hot water and an alcohol stove.

Economic sustainability of the project can be achieved in three ways. The first strategy, cross-subsidisation, involves producing both ‘high end’ and ‘base’ models, with the former incorporating higher quality materials, more sophisticated servicing and more ‘accessories’. Profits from the sale of ‘high-end’ models would be directed towards reduced costs for base-models deployed in the social sector. The second strategy involves the ability to sell Castles in a variety of forms; as a completed dwelling, as a flat-pack, and as a licensed copy of the CAD cutting file, thereby allowing a greater range of income levels to access the project. The file option in particular would enable Castles to be cut and assembled wherever plywood and a C.N.C. router is available. Mass-customisation, through the application of parametric software, will allow Castles to be designed and cut to order – increasing the diversity of the product, transferring production to small centres closer to where they are needed, reducing transport costs and potentially increasing opportunities for local employment.
APPLICATION TO A LOW-SKILLED WORKFORCE

Reflection on the shortcomings of the conventional construction systems used in early prototypes (such as stressed-skin plywood panels) led to the development of ‘panitecture’, a digital mono-coque plywood construction that integrates wall, floor and roof with built-in furniture. Panitecture borrows characteristics from the boatbuilding, caravan and kitchen cabinetry industries, and draws inspiration from the work of Greg Fleishmann (ref) and The Instant House of Lawrence Sass (ref). The DEEWR training program was an opportunity to undertake a rigorous testing of panitecture, the aims of which are to:

- eliminate an independent structural frame, ensuring that every component is either fulfilling a role of spatial enclosure (wall, roof, floor) or contributing to a piece of furniture.
- reduce weight and material wastage through efficient component nesting.
- reduce construction tooling to a rubber mallet, glue and a rechargable driver, aiming at a low-skilled workforce.
- a predictable and reliable process of assembly that mimics, albeit at a larger scale the design methodology of a kitchen cabinetry and other flat-pack furniture.
- build the capacity for mass-customisation through the development of parametric modelling.

Panitecture is based around five ‘slot and tab’ joint patterns, designed for 12mm structural CD plywood (and more recently for other CNC router compatible materials), with a ‘friction fit’ tolerance of 0.2mm. The patterns, now collectively known as ‘slobbing’ (a shortening of slot and tab) have been developed out of a combination of traditional joinery patterns, such as the dovetail, and other patterns used extensively in the C.N.C. industry. The patterns have been extended into a comprehensive construction grammar based on parameters determined by materials, engineering and habitation. The material requires that the maximum component size is 2385 by 1185mm. Engineering determines that the minimum width of a component is 150mm and the maximum unsupported dimension for a component is 1050mm. Habitation requires that ring-beams are located at ‘usable’ heights and are therefore capable of becoming ‘habitable surfaces’ (seating, benches, shelving and mezzanine sleeping loft). Vertical framing components are kept to a minimum because they not useful in terms of basic human occupation patterns.

In pursuing the principles of panitecture there is an underlying intent to make the experience of building a house available to a broader spectrum of people and, in the use of digital technologies, to give the participants an introduction to ideas and processes that may become the future of manufacturing. There was an expectation that while many of the DEEWR participants would have had some experience in basic DIY, all would have had some experience of assembling flat-pack furniture, using a simple tool and a set of instructions. If the assembly of panitecture components
could be made reliable and predictable the DEEWR participants, in the context of their relatively short placement in the program, would be able to focus on developing levels of competence in a few core skills; sanding, using a rubber mallet, applying glue, screw-fixing and painting. Gaining confidence in these tasks would increase the confidence of participants and their enjoyment of the act of building.

Predictability and reliability took considerable effort to achieve. During the design phase, numerous models at various scales were built in order to test the alignment of components and the assembly sequence. While the digital models, built from strawboard and M.D.F. suggested reliable component connections, the move to full-scale production led to a multitude of difficulties. Connections that appeared to work at 1:5 did not always work at full-size. The pliability of the strawboard had allowed numerous small alignment errors to go unnoticed. Other factors impacting on assembly predictability included the dimensional instability of the plywood, pre-painting of components and errors in running the CNC router.

Through the assembly of the first DEEWR Castle participants were forced to adapt the joints in order to make them fit, a habit that proved extremely difficult to break, even when the connections were perfected. Trainees would tend to adapt tabs and slots, rather than persevering with the mallet. The other long-lasting implication of the initial errors was that all components were dry-tested before gluing and screwing, resulting, over an entire carcass in a significant slowing of assembly. In order to narrow down the cause of jointing issues two sets of components were cut from each file. If the same issue occurred in both sets the likely cause was the file itself, while if only one set had an issue the cause could be traced to either material or the sheet moving on the router. Six versions of C5 have been assembled, with each subsequent version getting smoother and faster, with assembly time reducing from nearly a month for C5 Version1 down to a week for C5 Version 6. Major improvements in assembly predictability were achieved by adjusting the ‘slobbing’ tolerances on particular sheets and by including pilot screw-holes in the cutting files. The greatest improvement came from developing a much more rigorous approach to component design relating all slots and tabs, as well as component sizes, to a tartan grid.
Communication of the assembly sequence and the component configuration were initially trialled through two methods. The first was a ‘Lego’ style step-by-step booklet where a sequential 3d image of the growing object is depicted on each page. The newly added components are highlighted through colour, as well as through an adjacent 2d image. The second was through a digital model. The feedback was that the combination worked well. The booklet worked well for assembly sequencing (on several occasions the participants changed the order of the pages to improve the assembly logic), and the model was effective in communicating ‘slobbing’ errors, indicated with a thick red ‘texta’. The assembly of the final two DEEWR Castles will be filmed throughout enabling a DVD to accompany any future assembly flat-pack kit. There is also the opportunity to develop a step-by-step CAD animation of the assembly.

REFLECTIONS

Despite the assembly phase of the project starting four months into the funding period the project has just about delivered in terms of construction, training and employment placement targets. Ten of the twelve required carcases have been assembled. Over the funding period forty-six participants have achieved over 300 Statement of Attainment in ‘Construction Pathways’. Twenty participants have been placed into twelve construction jobs and eight participants have secured employment in other industries. Six trainees are now doing their Cert II Building and Construction. The trainees included a mature-age ex-boatbuilder and a young woman who, prior to this program, had no prior experience with construction.

Most of the trainees seem to have benefitted from the experience, in many cases over and above what was required by the funding objectives. They have had an introduction to an emerging design and fabrication process, experienced the benefits (and initial frustrations) of precision cut componentry, learned to work as a team and, importantly, appear to have experienced considerable satisfaction in building Castles. Several participants brought friends and partners along to the shelter in order to show what they were doing. One of the most positive stories to emerge out of this whole endeavour is of a young trainee (and current resident of the shelter) who had the opportunity to actively and enthusiastically participate in the assembly of The Castle in which he will be living on return to his family home.

The primary motivation for developing the digital design and fabrication process, namely improving accessibility to a low-skilled workforce, has, we believe, been proven. While much of the credit for the achievements of the trainees should be directed to their supervisor, Robert, the ‘ease of making’ embedded in the digital design did encourage participants to develop confidence in their abilities. After assembling twelve C5 carcases Robert and the trainees could now be considered experts. The next step is to test the potential of panitecture as a flat-pack, thereby increasing further the requirement for reliability, predictability and sound communication of instructions. Further research is
currently ongoing into the development of a proprietry ‘slobbing’ software plug-in, specifying and testing a palette of compatible sheet materials, thermal testing of the capabilities of the insulating paint and further refinement of the construction grammar.

REFERENCES


AN INSIDE EDGE: URBAN INFILL POTENTIAL WITHIN THE SUBURBAN FLOOD PLAIN

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ABSTRACT

The South-East Queensland Regional Plan defines an urban growth footprint to limit outward expansion of Brisbane and the SEQ conurbation. Despite this clear intention to limit residential sprawl and promote infill, recent housing development continues to focus on greenfield estates at the periphery of the city. Real progress on transit-oriented development of inner suburbs has proved difficult. The January 2011 floods highlight a second latent boundary to the future growth in Brisbane, an inner edge of flood-prone land that fringes the Brisbane River and its suburban tributary creeks. Beneath the latest defined flood level are thousands of suburban properties that have suffered inundation, lost resale value and are uninsurable in their current form. This paper argues that the zone of land within one storey-height of the new flood level has the potential to provide a much-needed infill redevelopment opportunity of the city – a broad inner ribbon within the urban footprint with the capacity to house thousands of new residents. Up-zoning to allow higher density housing would stimulate market-driven redevelopment of blocks overlooking the suburban creek network. Between flood events, these areas have high residential amenity with potential for recreational open space and walking and cycling networks to local shops, bus and rail. Population increase here would yield an increased rates base to fund green infrastructure and flood mitigation. These suburban flood plains are proposed as the ‘inside edge’ needed to deliver provision of denser affordable housing. This proposition is tested in Brisbane’s Oxley Creek catchment.

keywords: urban growth, housing density, affordability, flood resilience.

REGIONAL PLANNING AND CITY FORM IN SEQ

The South East Queensland conurbation is the classic coastal edge city. From Noosa to Coolangatta the city has grown 240 kilometres along a coastal plain with surf beaches, bay and sand islands to the east and hinterland ranges 50 to 100 kilometres to the west. Early development of Brisbane followed a radial pattern where timber getters’ tracks followed aboriginal pathways on ridges were transformed into timber-getting tracks then a network of roads, train lines and an extensive tram network. With
private vehicles came the outward rippling of low-density suburbs, but also the linear extension to southern and northern beaches as desirable holiday destinations transformed into desirable retirement suburbs and desirable lifestyle cities.

At the millennium, a time when international attention focused on the rapid urbanization of the planet and the climate change consequences of fossil-fueled suburban sprawl, the Queensland Government drafted its first attempt to plan the growth of the SEQ region. (SEQRP 2005-3031). The cost of distributing infrastructure for ballooning low-density peri-urban growth was clearly unsustainable. One alternative was the linear city model premised on a single efficient public transport and infrastructure armature from Noosa to Coolangatta, supporting residential growth in the most salubrious climatic zone nearest the coast.

Instead the SEQ Regional Plan 2005-2026 proposed an urban growth boundary that followed close to the existing city edge but included inter-urban breaks to maintain the separate identities of the capital and the coastal growth areas, and to resist the linear amalgamation of Sunshine Coast townships. Although SEQRP 2009-2031 continued to promote densification within the urban footprint it also approved green-field growth in the western land banks of some major developers. The Regional Plans from 2005 and 2009 were premised on galloping growth based on the high inward migration rates from the beginning of the century. During this decade an inevitable lag in provision of housing and infrastructure in the face of rapid growth placed significant pressure on transport, power and water grids and raised housing costs beyond general levels of affordability.

The Regional Plan’s urban footprint boundary was based on assumptions of a transfer of building activity from green-field housing estates at the periphery of the city to broad-scale urban renewal of undervalued inner suburban industrial land and incremental infill within existing suburbs. The inner city housing options have progressed slowly. This is partly due to the costs of remediating and redeveloping brown-field sites, partly due to suburban resistance to infill developments at increased height and bulk. Sites for infill development were scarce due to conflicts with character- and streetscape-based planning of inner prewar suburbs and owner-resident reactions against housing options that might increase the mix of rental or publically subsidized housing. The biggest obstacle to the provision of affordable infill housing options however was the cost difference between unionized multi-level apartment construction and the detached house building model based on self-employed sub-contractors and minimal site or overhead costs.

In the SEQ Regional Plan, the preferred mode of development at higher density is the Transit Oriented Development model. The TOD model is to relax height and plot ratio constraints within a close radius of public transport nodes to stimulate denser developments that would maximize the number of people living and working within easy walking distance of public transport nodes. The weakness in the TOD model was that long-established stations were surrounded by already relatively expensive land in multiple ownerships. With limited available land, developments needed to be taller and bulkier to achieve residential targets, and some, such as the Milton TOD, became targets of community opposition. The older rail station designs, and even the most recent ones ones, fail
dismally as attractive destinations of daily urban life. Some recent Master Planned Communities designed as TODS (as at Springfield) around proposed train stations become mired in chicken and egg logistics, with residents forced to rely on cars as the rail was still to be built. Where new rail lines and stations have been provided (Robina, Varsity Lakes), they have attracted seas of commuter parking that effectively blight the surrounding developable land. Across the first decade of the millennium it has proved difficult to meet infill housing targets and state government has diluted the effectiveness of the urban footprint by allowing new ‘cities’ on green-field sites at Ripley Vale, Flagstone, Yarrabilba and South Caloundra.

Since the global recession of 2008, the power of the SEQRP to direct and shape urban growth has weakened. Under political pressure to stimulate the housing economy, the government has allowed an outward bulge of the urban footprint. (Fig1.) Even the basic economic motivation for restraint of sprawl has faltered with capped and arguably insufficient head works charges being applied to large green field residential developments. In recent years only the large national housing development companies that have had the capacity to accumulate land banks and lobby for the rezoning of rural land for housing. The single greatest benefit to the developer comes from the political act of planning approval and economic uplift of the land. The development lobby’s argument is that cheap peri-urban land provides a financial edge that enables release of housing and land as an affordable commodity.

This paper investigates whether the impacts of the recent Brisbane River floods may provide an alternate inside edge to affordable housing provision. It proposes an inner zone of low-cost but high amenity land with the potential to be up-zoned for incremental development by small developers (Fig. 2).

Fig. 1. SEQRP 2009 Urban Footprint    Fig. 2. 2011 SEQ Urban Floodplain.
2011 BRISBANE RIVER FLOOD

The recent Brisbane River floods highlighted a second significant boundary to the footprint of urban growth in Brisbane, an inner edge of flood-prone land flanking the Brisbane River and swelling out along its suburban creek plains. From 10 to 13 January 2011, a massive volume of water flowed down the Bremer and Brisbane Rivers and inundated the cities of Brisbane and Ipswich. Unlike the flash floods that devastated Toowoomba, Grantham and the Lockyer Valley in the preceding days of torrential rain, the flood peak approached the capital through two rainless days. While most flooding in Ipswich and much flooding in Brisbane came from waters breaching the banks of the principal rivers; by far the largest inundation in Brisbane came from riverine waters rising back through the suburban creek networks. The floodplains of Oxley Creek, in particular, but also Western Creek, Milton, and Bulimba Creek, were filled by waters flowing upstream through the relatively narrow creek mouths. It has been argued that in this event, floodgates and small, localized levee banks at the mouths of these creeks could have effectively prevented all of this inundation and the subsequent financial distress (Skinner, 2011a; 2011b). Although critics have noted that such a floodgate system would not have prevented damage in floods typical to those of 1974 when the downstream peak coincided with intense precipitation in the creek catchments, the Brisbane City Council has since announced an engineering investigation into the floodgate proposals.

Since the floods, Brisbane City Council has redrawn the design flood height datum based on the greater of the 1974 or 2011 flood heights plus 500mm ‘freeboard’. While homeowners are permitted to repair existing houses below this level, new habitable spaces will need to be built above this datum. Although the total extent of damage from the floods is not yet known, many thousands of inner-suburban sites were flooded, and thousands of houses have suffered serious inundation requiring repair or rebuilding. As a consequence, many properties have lost significant resale value and even if they attract an insurance payout to repair houses on this occasion, many of the houses would be uninsurable if rebuilt in their current form.

THE UPPER EDGE OF THE FLOOD
This study investigates the Oxley Creek catchment. At more than 15 square kilometres this was the biggest area of flood-affected land in Brisbane (Fig. 3, 4). Many property values here were relatively low prior to the floods and will be significantly lower now. While the entire catchment is huge, this study will focus on the northern edge of the catchment, between the Ipswich Motorway and the Brisbane River, encompassing the suburbs of Graceville, Sherwood, Corinda, Oxley, Tennyson, Rocklea and Archerfield (Fig 5). This paper argues that it would be appropriate to build within the flood plain, providing the principle habitable rooms are above the new design flood level, and that robust lower carparking and bulk storage rooms could be located below this height. (Skinner, 2011c; 2011d). Applying this strategy, a zone can be identified ringing the floodplain between the new flood contour and a lower contour, 3 metres (one generous storey) below (Fig. 6). Within this redevelopment zone, it is proposed that housing of two or three stories height should be allowed to be constructed over a robust carparking and utility level (Fig 7, 8).
Given the trauma and losses of the existing residents and house-owners, such robust and resilient reconstruction would be impossible without significant incentives. This paper proposes that a general up-zoning of land that occurs within this zone should be used to stimulate and fund the necessary redevelopment. The normal suburban ‘NIMBY’ resistance to medium density housing should not apply in this situation. The area has been so devastated that any existing of remnant ‘character’ is negligible. The BCC has already allowed existing houses to be raised a metre beyond the normal
low/low-medium height of 8.5 metres, and by virtue of the topography these building are lower than their neighbours in any event. The combination of cheap land, houses in need of demolition in areas with many existing services and infrastructure intact should fulfill the necessary requirements for feasible and affordable redevelopment. Existing tall townhouse and walk-up apartment models are suitable for incremental infill within existing streets, and the stimulus of up-zoning may mean that land-holders who would otherwise be regarded as victims of the floods have an opportunity to continue to live in the neighbourhood in new, resilient dwellings (Skinner, 2011d).

URBAN AMENITY IN THE GREEN CORRIDORS

On the face of it, there is a counter-intuitive premise to this proposal. Rather than retreating behind the flood-line this proposal argues that we should advance, harden and strengthen the suburban edge. Rather than aiming to depopulate the floodplain, this is an argument to increase residential densities to provide more sturdy housing, more resilient infrastructure and more healthy waterways. Although this is possibly some of the most affordable housing land in the middle suburbs of Brisbane, it has great residential amenity.

On many contemporary design criteria these are highly desirable housing locations. The northern Oxley Creek catchment is ringed with rail-lines on three sides, and a significant motorway on the fourth. Some of the sites are within 400m of the eleven existing railway stations and the majority are within 800m of one or more stations. The proposed housing zone sits at a height mid-way between the

Fig 9. Existing low density residential zoning. Fig.10. Proposed new density around parkland.
level of the rail and the river (Fig 9, 10). The terrain is generally flat and ideal for walking and cycling with the potential for safe cycle networks protected from the roadways. Brisbane’s major fresh produce market lies at the centre of this precinct and has the potential to develop as a major community hub. The creek-front housing overlooks and has access to a very significant open space reserve linked into larger landscape networks. In between major floods this has the potential to become a major recreational landscape combining active sporting and recreational activities with natural and productive landscapes.

The significantly increased residential rates base that would flow from the proposed rise in population density could fund a program of resumption, remediation, re-vegetation and maintenance of the creek-front parkland. Development infrastructure contributions could also help fund the construction of floodgates and levees at the creek mouth and other flood mitigation works that would benefit the broader community.

**SUMMARY**

This paper proposes that the disastrous 2011 Brisbane River floods may have contained a silver lining as a possible solution to the difficult urban issue of providing affordable, denser housing in response to continuing growth in South-East Queensland. Without a supply of cheap developable land within the urban footprint it will be difficult to resist the outward expansion of the city limits with associated infrastructure, transportation and energy costs. Where there is available land within the existing inner suburbs, development is too frequently thwarted by established residents with a resistance to change. Transit Oriented Developments have proved difficult to progress because of the limitations on available land and its expense.

This paper suggests that redevelopment of vulnerable land in the flood-affected suburbs that front Brisbane’s creeks offers one possible route forward. The inundated land has reduced in value, much of the housing stock needs repair or replacement, and rebuilt houses in low-lying areas will prove uninsurable. In this context, the neighbouring landowners that frequently object to higher-density residential development, find themselves in the same predicament, and have few grounds to object on the basis of character, streetscape or visual impact.
Fig 11. A new inner green edge uncovered by the 20011 floods. BCC Flood Map, Jan 2011.

As a supplement to the TOD strategy of precincts for living and work centred on major rail or bus stations, the strategy of increasing residential density along the edges of the suburban creek plains has the capacity to yield many more low-cost sites for redevelopment. It is hoped that the availability of this land would lead to the provision of more affordable housing. The simple political act of up-zoning this flood-affected land could stimulate considerable redevelopment without public expense, and that the resultant increased rates base could serve to fund significant upgrading of greener infrastructure within the city’s creek networks.

It is only when we examine the extent of creek-front land across the city with this latent potential for redevelopment that the full implications of this strategy becomes clear (Fig. 11).

As an under-examined alternative to the proliferation of underserviced settlements at the outer limits of the urban footprint, it is possible that the edges of the internal flood plain can provide a valuable inside edge in the planning of our urban form.
REFERENCES


SHARPENING BLUNT INSTRUMENTS: CORRELATING MELBOURNE’S URBAN GROWTH BOUNDARY AND GREEN WEDGES WITH SITE SPECIFICITY.

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ABSTRACT

The horizontal expansion of Greater Melbourne is increasingly seen as a problem to be managed. Emerging as the two most important planning tools, or landscape strategies, for this task are the legislated Urban Growth Boundary (UGB) and the Green Wedge (GW) policy. The GW areas of Melbourne skirt the entire city covering over 640,000 hectares with the UGB, a conceptual city limit, stitching each wedge to the next. As a result of their blanket coverage over a hugely varied terrain and conditions the GW policy and UGB could be regarded as blunt instruments, ones that lack responsiveness and over-simplify the complex and subtle relationships of occupation and transformation at the periphery. Furthermore, the UGB shifts with each formal amendment creating a seemingly unstable urban edge of urban and non-urban land. Ambiguity, conflict and change are intrinsic to the peripheral landscape.

This research considers the Urban Growth Boundary and Green Wedges as, simultaneously, strategies to be conceptually occupied and artefacts in which to be physically located. This dual definition creates a theoretical bridge between planning objectives (blunt) and the specifics of site (sharp). The inquiry asks how can design, commencing with the process of site definition, engage with the urban/rural boundary condition? In what ways can the spatial/material potential of a site, or series of sites, as connective thresholds between urban/non urban and UGB/GW be re-imagined? This paper presents research and preliminary conceptual work that combine to form a framework for a future design inquiry.

INTRODUCTION

The landscape to Melbourne’s periphery is a mixture or gradation from urban to rural. Inner urban density shallows to outer urban space where areas of housing are separated by infrastructure, industrial parks and so on, until slightly unkempt paddocks take over soon stretching either side of the road. This urban/rural transition zone is typical to cities where urban expansion takes place. The expansion is often a controversial issue with much public debate surrounding how to define the potential of the peripheral landscape, whether it is to be conserved or developed and therefore what role it plays as a connective and transitional zone between Melbourne’s urban fabric and the rural hinterlands beyond.

This research considers the Melbourne’s Urban Growth Boundary and Green Wedges, two key planning tools, as, simultaneously, strategies to be conceptually occupied and artefacts in which to be physically located. This dual definition creates a theoretical bridge between planning objectives (blunt) and the specifics of site (sharp). The inquiry asks how can design, commencing with the process of site definition, engage with the urban/rural boundary
condition? In what ways can the spatial/material potential of a site, or series of sites, as connective thresholds between urban/non urban and UGB/GW be re-imagined?

THE UGB AND GW EVOLUTION

In his book *Melbourne’s Green Belt and Green Wedges* Geoff Harris(2005) details the evolution of Melbourne’s green spaces which emerged out of concerns for the preservation of open space in the face of an increasingly urbanising Melbourne. A lineage of influence that feeds into Melbourne’s own planning development and greenbelt discussions includes Ebenezer Howards *Garden Cities of Tomorrow* (1902), the consequent Garden City movement, *Greater London Plan*(1944), and the City of Sydney’s own planning experiments including a declared greenbelt in 1946.

![Image of typical peri-urban conditions in Melbourne](image)

Although at that time, culturally it seemed to be natural to draw from London’s well known greenbelt example, structurally Melbourne was and is more like Copenhagen which established its city planning strategy, the ‘Finger Plan’, in 1947. Here growth corridors along transport routes form the ‘fingers’ to the urban centre ‘palm’. Significantly then, in 1962 a MMBW report, has an early example of where the term ‘wedge’ is used, describing the open land that lay between the denser urban growth corridors. This formal and spatial relationship of ‘corridor’ and ‘wedge’ gradually became formalised in Melbourne’s planning lexicon. The desire to preserve these spaces is recommended in a 1971 MMBW report (Harris, 2005, p. 28) while doubt is expressed for their secure future; a tension still current today.

In the more recent planning report *Melbourne2030 - Planning For Sustainable Growth* (DOI,2002) the term ‘green wedges’ attains permanent planning currency via their own zoning categories and dedicated management and use policy. Their extent is defined by municipal boundaries which renders them as truly vast areas and ultimately joining to form an informal greenbelt. *Melbourne 2030* also defined the UGB with the intention that it would provide “a clear policy mechanism to separate urban and rural areas”((DOI), 2002, p. 4) In 2004 it became a legislated boundary by the State Government of Victoria.

The simultaneous forming of the UGB and GW is revealing. There is a necessary intermingling and their function can be best understood through their inter-relatedness. The placement of UGB defines in part the edges of the Green Wedges. The Green Wedges through their radial arrangement and by extrapolating their basic geometry, suggest areas of
land that might be annexed by the suburbs by way of an adjustment of the UGB. Together
their coverage is large, around 640,000 hectares (Carter-Whitney & Esakin, 2010) and their
basic functions, generic. The UGB divides urban from non-urban land with the intention of
defining existing and declaring future urban growth areas, while the Green Wedges are
intended to remain as open landscape with a range of uses permitted.

This paper focuses on the GW areas that are proximate to the urban condition of northern
metropolitan Melbourne. While they are not strictly wedge shape the term is helpful as a
simple descriptor, ie; as one moves away from a point or vertex there is a visible widening of
open space. In addition, this definition implies a sort of self determination or independence as
if, fulfilling the laws of geometry, they might change in size or scope without regard to the
UGB. In this sense the graphic tension corresponds to the in-situ tensions between limit and
expansion, urban density and open landscape. Naming these open spaces contributes to what
can be regarded as the place-making process that underlies the increasing community
ownership and awareness of them. Creating a meaningful connection between community
and greenbelts, or wedges, is considered highly valuable for their long-term
protection.(Carter-Whitney & Esakin, 2010, p. 3)

It is due to their vastness and generic primary functions the UGB and GW as master planning
elements appear as what Richard Weller might describe as ‘blunt instruments’ without site-
specific responsiveness. Weller writes:

Applying a single planning method...would seem not only to
oversimplify the world but also ignore the temporal flux of all things
and the radical differences and particularities that each project or region
presents(2008, p. 251)

This condition of ‘flux’ underpins the rural/urban periphery; each time the UGB is moved,
somewhere officially non-urban becomes urban. Its appearance might not have changed, but
its potential has dramatically altered. For the inhabitant of or visitor to the area, the boundary,
the wedges and alterations to them are not visible. There are no opportunities to knowingly
engage with them in order to understand them as details of a greater whole.
The intangibility of the UGB conflicts with it being regarded as a ‘hard’ edge as it is legislated and managed. Similarly, the evolving cultural landscape of the Green Wedges as open and ‘green’ contrasts with uses such as airports and quarries. The black and white intentions of a demarcated boundary and planning zones appear limited and disengaged with the potential experience to be had, and meaning to be gleaned, of a site.

Through his series of projects Edge of a City (1986-1990) Steven Holl explores meaning and experience. He proposes a number of schemes that address counteracting the urban sprawl by the defining of urban boundaries. Where form and program are most dense the boundary is clearly demarcated and where it sparse or absent boundaries are inferred by implied projections. In this way urban and landscape forces beyond the boundaries of the conventional architectural site are engaged with suggesting a renewed meaning of the term ‘site’. The potential impersonal scale of these projects is tempered by the representation of subjective qualities of light/shadow, viewpoints and site and indeed, later Holl writes in his book *Urbanisms: Working with Doubt* “the synthesis of the subjective and objective ought to be central to urban design from the outset”(2009, p. 16).

**TRACING THE SITE**

For the speculative design project in Melbourne’s periphery the process of defining the site can be regarded as the first stage of the design process using observation and critical analysis. The range of conditions to Melbourne’s periphery varies to the extent where not one region could be regarded as typical. By selecting a region to the north of Melbourne of about 50 by 35km area a range of edge conditions are ‘captured’. While this area is unique with its own combination of topography, settlement patterns etc, many of the edge conditions such as planned infrastructure, Green Wedge zones, quarries and so on, are shared with other parts of the urban/rural periphery. In addition common to all peripheral areas of Melbourne is a location where the local Green Wedge begins, ie, the tip or vertex.

Narrowing #1: North of Melbourne

While the making of this map emerged out of a practical need to assimilate information it quickly became a curatorial process; scale and content and representation consciously sets a framework for the stages to follow.
Undertaking this low tech task of drawing, tracing and shading offers a chance to ‘wander at a distance’ building up awareness of topography, main transport routes, and contextual adjacencies. The description of ‘trace cartography’ given by Alan Berger is apt where through his own project mining cartographic information is traced. The tracing “reveals subjectivities in how the mining industry and others represent the landscape” (Berger, 2002, p. 85). In this case the subjectivities of government departments are revealed and it is possible to speculate on the decisions made about location, extent, and relatedness of many elements such as the UGB, the future road reserve, airport sound contours, recent amendments to the urban land area, etc.

The act of tracing the UGB is transformative. As a black continuous line it takes a fixed dimension that is measurable, an impossible task on the government website maps. For the urban/rural field density (urban/topographic) is rendered to contrast the openness or sparseness of yellow trace. It has the ‘double-sided characteristics of all maps’ both analogous and abstract (Corner, 1999, p. 215). The map surface is the site where a cognitive occupation is possible. This is particularly helpful when ‘reading’ the path of the UGB which follows mainly roads, watercourses, and title boundaries but occasionally tensions of hierarchy occur and anomalies arise revealing its bluntness. For example, it deviates to follow the centre of the future road reserve: surely the whole reserve intended for a major transport route must be considered urban? Along another section the UGB appears to follow topographic contours creating a highly unusual strip of urban land caught between the current UGB and its superceded path. In the face of the speculative housing market efficiencies this reveals little logic.

Narrowing #2: UGB as Site
The second Narrowing seeks to capture some of these anomalies of the UGB as well as a Green Wedge vertex (fig 4&b). In this narrowing the UGB is the relating element for potential project.
sites along its path. For example, in Wollert the UGB and future road reserve isolate an area of non-urban land. Is it feasible to retain it as non-urban/GW and for what purpose? Is it simply “suburb-in-waiting”? In Mernda the Plenty River parkland stops abruptly – should this public reserve continue? If so, the area of urban land to the east, Doreen, would appear excised from Melbourne’s urban footprint. What are the implications of this?

A common feature of boundaries and boarders in a political or militaristic sense is the existence of a no-man’s land. It is a deliberately neutral zone of neither one nor the other. Perhaps the identified sites along the UGB could be considered as ‘thickenings’ of a sort of no-man’s land where neither urban nor non-urban rule? Instead they collectively form a ‘necklace’ of spaces connected by the thread of the Urban Growth Boundary, where the flux of landscape definitions and potentials can be observed and experienced?. Collectively these spaces might negotiate not the flow of water, as Olmstead did with the series of parks forming Boston’s Emerald Necklace, but the flow and cross-flow of growth and movement out, and open space and movement in.

Narrowing #3: Necklace
This last narrowing prioritises the Green Wedge vertex as the literal and figurative pivot point(fig4b). Either side the ‘necklace’ of UGB and thickenings wraps around the uniting feature of the remnant volcanic topography of what is in part Quarry Hills Park. Reading from west to east the edge conditions of the ‘thickenings’ vary:

a. The Quarry: currently in use, 40 Ha, UGB divides site into urban and non-urban halves.
b. Wedge Vertex: public land, 6Ha, zoned urban, located between Quarry Hills Park main road, and opposite the Whittlesea municipal offices.
c. Wedge Edge North and South: Current use is either privately owned farmland or parkland, approx 100Ha, zoned urban. Annexed as urban land by UGB amendment VC68.

Underpinning and linking these individual sites is the Urban Growth Boundary re-imagined as an accessible strip of land. As a linear park it has the future potential to be read as a ‘growth ring’ of the urban fabric tracing bureaucratic decision onto the landscape. Housing located on the literal boarder of the UGB and GW appears to turns its back on the Green Wedge areas by stretches of unbroken paling fences. This poor connectivity is typical and makes one wonder how the opportunity for meaningful engagement between the local population and their landscape might be better facilitated.

So what is to be done with the sites identified and the meandering strip that links them? Returning to the concepts of density and sparseness allows an alternate reading of non-urban and urban to be made where the basic premise is that ‘urban’ implies more dense eg buildings, walls, structures gardens, etc and non-urban implies less dense eg farmland, airport, parkland etc. The potential of the sites as officially urban(dense) and non-urban(sparse) can be re-imagined to as neither/nor but a cross pollination where the ordering of density and sparseness shapes spatial movement, vegetation, material and even program.
It is intended that the ‘necklace’ complete with ‘charms’ or sites will be the subject of a future design enquiry, beyond the scope of this paper, where a range of edge conditions, (rural/industrial/urban/suburban) are investigated. The following section focuses on one of these sites and preliminary conceptual work undertaken.

Site: Green Wedge Vertex

The site at the tip of the Green Wedge is a slightly angled 600 x 60m area of public land. It includes a creek and pond that link to an adjacent artificial wetland area and is edged by a busy road to the south. Opposite are council offices with housing to the north/east and west. A large substation is to the south-east from which emanate the high power transmission lines. It has a conflicting appearance where details of the grasslands of Quarry Hills park to the north, remaining River Red Gums and fauna is contrasted by the high voltage power lines and busy roads.

It is possible to regard the vertex of the wedge as having a symbolic function signifying the connection between city/culture with country/nature. The French landscape architect Michele Desvigne asks “How can we find a common physical environment between the fields, the farmland, and the future city?” (Desvigne & Tiberghien, 2009, p. 65) In his project for the city of Issoudun Desvigne proposes a series of spaces to be set within the existing urban fabric by drawing upon medieval patterns of land division (p. 67). The density of the city is interwoven with the sparseness of the country enabling a new layered meaning within the urban experience. Similarly at the Green Wedge vertex a strategy of dispersal or arrangement of density aims to provoke connection through implied meaning as well begin to indicate movement and material outcomes. Through a series of diagrams the relationship of density and movement on the site is explored.

Firstly, taking a queue from OMA’s Parc de La Villette competition entry where the strategy of banded program (proposed to overcome change and uncertainty on the La Villette site) is substituted by banded density/sparseness. Vertically or horizontally the banding implies, at a robotic graphic level, a transition from one state to the other. The UGB edge condition of paling fence and housing could be repeated at length, boundaries within the boundary, highlighting its absurd limits and poor site connection. In response the banding is modified and loosened somewhat, (fig 17a). Elements, such as powerlines, pond, adjacent buildings of school and council offices start to inform their location and direction and extent as a kind of stitching in to the context is implied. Here the banding is on the site and begins to take the form of vegetation strips that would, with slightly distorted perspective, suggest avenues through which to move revealing the perceived density of vegetation as relative rather than absolute.

This quality of relativity opens up the reading of density as a gradation, where, transversing the site, more dense transforms into less dense. The southern edge of the site, the (imagined) UGB is sits deepest in the urban field and is therefore represented as most dense,(fig5b). In this diagram from this dense, hard edge heading northwards material and program (built,
vegetation, etc.) thins until it reaches its sparsest distribution at the Green Wedge boundary. How could this dense edge be penetrated – how could connections to context and beyond be made? What relationship would the UGB have to this scheme? In the third diagram the first two approaches are overlayed. Here the density of the edge is split by the banding of vegetation, while the banding of vegetation stitches the site into its context of school, offices, park. This diagram can be seen to be a leading question when returning to consider program. Structure, function, material and occupation could be fitted around this diagram of space. The UGB linear park is lightly defined by a shifting of density as well and is deliberately ‘undone’ from the site it would deliver the user to (Fig 5c).

CONCLUSION

The planning tools of the Urban GB and GW play a significant role in helping to define the potential use and occupation of the peripheral landscape. As occupiable sites they become potentially connective thresholds, yet in-situ they are unmarked thereby excluding the chance for direct engagement with their meaning. The density of architectural form in Holl’s Edge of City projects is layered with a subjective experience, while the dispersal of Desvigne’s Issoudin plan treats the boundary as a condition to be dispersed. Within the range of edge conditions captured by the ‘necklace’, Narrowing #3, qualities of boundary dispersal, definition and the experience of them can be considered. The use of ‘density’ and ‘sparseness’ may provide a way in which to draw these together and a provide a renewed understanding of the Urban Growth Boundary and Green Wedges.

REFERENCES

SESSION 1B - Histories of Architecture @ the Edge
The philosophy and architecture of Rudolf Steiner both aim to give formal expression to his esoteric worldview, however, the means of articulating this worldview fundamentally differ within each discipline. Philosophy and architecture are separated by both process and product, and while an interdisciplinary reading of Steiner’s work does make certain connections between them evident, the incorporeal nature of thinking and the physical reality of building inevitably require different skills of their author, as well as different standards by which to assess them. Although he had no formal training as an architect, Steiner believed that his system of Anthroposophy provided a conceptual framework that would inspire a new style of modern architecture imbued with a spiritual dimension. As such, architecture provided Steiner with a means of visually expressing what words could not, and was therefore a necessary and important part of his philosophical pursuit. This paper explores the tension that exists between Steiner’s philosophy and architecture in its translation from theoretical ideas into built form. Steiner’s approach to architectural design was less concerned with the methods and techniques of the craft than with achieving what he saw as architecture’s true purpose - namely to give voice to the inner spiritual content of the work. However, in order to achieve this ultimate goal, a certain level of architectural competence is required. Therefore, Steiner’s ability as an architect to articulate such lofty ideals will also be assessed. Conceived on the edge of theory and practice, Steiner’s work serves to demonstrate the richness and depth that such an approach has to offer the field of architecture.

INTRODUCTION

The work of Rudolf Steiner is rooted in a strong philosophical foundation. He studied and wrote extensively on Goethe, Kant, Nietzsche, Schopenhauer, Fichte, Shelling and Hegel, among others. Having also trained broadly in mathematics, physics and chemistry, Steiner was a man of considerable erudition. Privileging one area of knowledge over another was entirely foreign to Steiner’s way of perceiving the world and his worldview fostered ‘a consciousness of the common source of art, religion and science’ (Steiner 1964, p.83). Given this holistic outlook, it naturally followed that for Steiner, philosophy and architecture were not separate, individual pursuits, but rather alternative means of demonstrating the organic unity and interconnectedness of all things. Like his other artistic endeavours, architecture provided Steiner with a non-verbal means of conveying the results of his philosophical and spiritual research. Philosophical problems were not compartmentalised from those presented by architecture. Given the complexity of the disciplines of philosophy and architecture though, coupled with Steiner’s own lack of formal architectural training, such an undertaking is sure to present challenges that must be resolved in order to satisfy the requirements of each practice. Nevertheless, architectural success can be measured by a myriad of indicators and, therefore, determining Steiner’s merit as an architect is not a simple or straightforward matter. As Edward Robbins (1994, p.297) argues, ‘as in all processes of creation and its theorisation, there is room for different notions about just what the creation should be and
how one best realises and communicates that creation.’ This paper seeks to give a critical reading of Steiner’s architectural endeavours and determine how successfully his philosophical intentions translated into material reality. By taking into account the importance and influence of Steiner’s interdisciplinary approach, a more complete and inclusive appreciation of his architecture is offered than has been previously been presented by architectural historians.

THE PHILOSOPHICAL AND SPIRITUAL FOUNDATION OF STEINER’S ARCHITECTURE

Steiner’s system of Anthroposophy developed out of his combined interest in philosophy, science and the occult. He aimed to bring to his spiritual investigations the precision and clarity of natural scientific methods combined with the insight and wisdom afforded by philosophical enquiry. When the initiative was undertaken to begin work on a purpose-built facility for Anthroposophy in Dornach, Steiner (1999a, p.xii) asserted that ‘... the artistic forms must proceed on the same principles as those from which Anthroposophical thought itself issues ... ’ He stressed, however, that Anthroposophic principles must not be applied as abstract intellectual concepts. For Steiner, it was essential that his ideas found expression in practical ways in order that they may be understood in a non-theoretical, concrete manner. As such, Steiner placed great importance on the arts and believed that Anthroposophy, properly applied, could inspire new and original artistic forms that were capable of revealing a spiritual content.

Steiner perceived architecture as nothing less than an artistic rendering of the spirit world and he charged architecture with the task of giving physical form to what was otherwise understood conceptually. He was deeply aware however, that such a position laid itself open to misinterpretation, acknowledging that whenever a worldview attempts to step into outer representation, it risks falling into crude symbolism that fails to capture the genuine intent of its philosophical foundation. He referred to such interpretations as non-art or anti-art, considering them to be a mockery of true artistic sensibilities (Steiner 1998, p251-2). Whether Steiner himself managed to avoid such pitfalls though is certainly a matter for further consideration, since the translation of philosophy to architecture invariably presents a host of rather unique concerns that must be carefully negotiated.

THE DISCIPLINARY CONFLICTS OF PHILOSOPHY AND ARCHITECTURE

The connections between philosophy and architecture have the potential to be powerfully compelling or feebly unconvincing. The success of such associations is largely dependent upon the sensitivity with which they are handled. An insightful understanding of the limits and complexities of each discipline offers the possibility for such connections to add richness and depth to both. Links drawn between the two can provide original and creative insights into a problem, facilitating a broader approach that helps draw out the meaning and subtlety of the work, thus adding to its profundity. Such associations can also be used however in a divisive manner to manipulate a particular agenda or make a polemical statement. To what end Steiner employed the dual disciplines of philosophy and architecture, and how effectively he did so, is an important element in achieving a deeper understanding his work.
While the exchange that occurs between philosophy and architecture can work in both directions, this paper is primarily concerned with the way in which philosophy informs and influences architecture rather than vice versa, since Rudolf Steiner was first and foremost a philosopher who used architecture, along with a variety of other practical pursuits, to demonstrate and articulate his philosophical findings. Although many early modern architects regarded themselves as serious thinkers, producing treatises that addressed not only architectural but also social, spiritual and cultural concerns, few modern philosophers, with the notable exception of Wittgenstein whom we shall turn to shortly, tried their hand at architecture (Conrads 1971). This makes Steiner somewhat unique and all the more fascinating in terms of his contribution to early modernist architecture.

Expressing his theoretical ideas through different mediums allowed Steiner to add clarity and emphasis to some of his most difficult concepts, thereby increasing the vocabulary with which he had to work. Steiner often noted that ordinary language was inadequate for explaining spiritual phenomena (Steiner 1994, p.51), therefore architecture provided him with an alternative way of exploring and articulating his meaning. However, as Simon Unwin (2003, p.34) points out in *Analysing Architecture*, ‘knowing all the words in the dictionary would not necessarily make one a great novelist.’ Similarly, the expanded vocabulary offered by the language of architecture may have given Steiner greater choice of expression, but how capably he used the vocabulary is, perhaps, of greater consequence. The real concerns of architecture such as materials, gravity, spatial requirements and so on, complicate architecture in ways that do not apply to philosophy. These concerns present specific challenges for the architect who employs philosophy in their work. How can theoretical concepts be embodied in material form without loss of their ideological purity? Likewise, how does philosophy, as a matter essentially extraneous to the practical concerns of architecture, find its place meaningfully in built form? In order for the marriage of philosophy and architecture to really work, the level of integration between them must be such that neither is harmed by the union, and at best, both are enhanced by their alliance to produce an eloquent statement both architecturally and philosophically.

Such were the concerns faced by Wittgenstein in his Stonborough House (Figure 1), who, like Steiner, had no formal architectural training. Wittgenstein ventured into architecture in 1926, a year after Steiner’s death, when he was engaged by his sister to design a stark, modern house in Vienna. For both Steiner and Wittgenstein, architecture and philosophy were intimately related pursuits that helped define and articulate their particular worldview. Wittgenstein (1980, p.16) stated that ‘[w]orking on philosophy – like working on architecture in many respects – is really more a working on oneself. On one’s own interpretation. On one’s way of seeing things.’ Roger Paden, in his comprehensive study of Stonborough house, *Mysticism and Architecture* (Paden 2007), argues that the connection between the house and Wittgenstein’s philosophy is much deeper than is generally recognised. He believed that ‘the house must have been intended to bring about the same kind of ethical/spiritual transformation that Wittgenstein hoped his philosophical works would bring about’ (Paden 2007, p.157).

Yet, although Wittgenstein shared Steiner’s high aspirations for architecture, he wrote very little directly about the subject. Steiner, on the other hand, delivered over seventy lectures on architecture and was far more prolific in terms of his architectural output, having designed and built seventeen buildings to Wittgenstein’s one. It is interesting to note, however, that Wittgenstein’s singular contribution generally tends to be more widely recognised in architectural circles today than Steiner’s multiple works, which aside from the main building...
of the Goetheanum, still remain relatively obscure. This may be partially due to the fact that as a philosopher, Wittgenstein has enjoyed much greater success and influence than Steiner, whose occult persuasion has tended to alienate many. As a natural consequence, it is understandable that Wittgenstein’s architectural pursuits have been granted more scholarly attention than those of Steiner. The fact that Wittgenstein’s architecture has a distinct stylistic character that borrows heavily from one of modern architecture’s most important pioneers, Adolf Loos, also gives critics a familiar model against which to assess Wittgenstein’s work. By contrast, the idiosyncratic and highly eclectic nature of Steiner’s architecture, makes his work notoriously difficult to classify and interpret (Meissner Reese 1965, p.146; Sharp 1972, p.9; Pehnt 1991, p.35). Paden (2007, p. 67) claims that Wittgenstein’s ‘approach is Loosian from start to finish, and even where he diverges from Loos ... he does so for Loosian reasons.’ As a result though, rather than clearly articulating Wittgenstein’s own philosophical concerns, Stonborough House tends to be a rather non-descript example of an unadorned, rectilinear homogenised modern aesthetic. Robert Harbison (1997, p.106) claims that Wittgenstein’s architecture ‘breeds some disappointment’ in that ‘the house is more like other houses, than his thinking is like other thought.’ During its day, Stonborough House warranted not a single mention in architectural periodicals and Loos himself, although a friend of Wittgenstein’s, considered its architectural merit to be somewhat mediocre (Wijdeveld 1994, p.36).

Unlike Wittgenstein, Steiner did not look to any contemporary architectural style or mentor. He believed that an entirely new architectural language was necessary to articulate his spiritual vision and although his architectural works do display certain Art Nouveau and Expressionist tendencies, they certainly cannot be accused of being a mere adaptation of an existent architectural model. Nevertheless, in many respects Steiner did share the outlook and mind-set of Expressionism, which, as an architectural movement, has tended to be linked more by its attitudes and beliefs than by its formal language. In the New Vision of the German Arts, Scheffauer (1971, p.32) declares that ‘Expressionism denied the need of an artistic training’ since it postulated that the expression of any inner impulse was artistically valid and therefore need not submit to the authority of professional judgement. Hence, Scheffauer (1971, p.32) despairs, this naturally brought about the consequence that inferior work, created by a myriad of imposters was solemnly received as authentic art. Obviously this did not apply to all Expressionist creations, as the technically accomplished works of artists and architects such as Kandinsky and Mendelsohn attest, however such an attitude opened the way for non-professionals to join the quest for new and original forms that would give material expression to their inner aspirations. It was within this atmosphere that Steiner

![Figure 1. South front of Stonborough House, Ludwig Wittgenstein, 1926 (Leitner 2000)](image-url)
began to create his own Anthroposophically inspired architectural style. He stated (1938, p.9):

... anthroposophical spiritual science must form its own style of building apart from all the usual building styles. Naturally, one can criticise this in every possible way; but nothing which makes its first appearance is perfect, and I can give you the assurance that I know precisely all the mistakes, and I am the one who says: if I had to put up this building a second time, it would be out of the same background, out of the same laws, but would be in most details, and perhaps even totally, different. But when something has to be taken in hand, then at some point it must be undertaken as well as one can do just at that time. While carrying out such work one really learns for the first time the actual laws of its being.

It is clear from this statement that Steiner was well aware that in his efforts to strike upon something genuinely new, his endeavours would not be flawless. However he saw these failings as a necessary part of the learning process and given his emphasis on practical work, he believed that the best place for such learning to occur was on the job. Of course few architects can afford such luxuries and it was only through the full backing of the Anthroposophical Society that Steiner was able to indulge these ambitions. The total faith placed in Steiner by Anthroposophists is reflected in their staunch defence of even his least successful architectural attempts, such as his crudely resolved boiler house (Figures 2 & 3), which, even to the untrained eye, appears to be a rather awkward architectural faux pas.

Figure 2. Steiner’s model of the Boiler House (Zimmer 1971, p.66)
Figure 3. Boiler House, Rudolf Steiner, 1915 (Photo: Fiona Gray)

This odd little building, built in 1914, was Steiner’s first attempt to creatively employ the plastic qualities of reinforced concrete, which, at the time, was still a relatively new building material that he believed was not being exploited to its full potential. Steiner attempted to employ concrete in a thoroughly innovative and original way, aiming to give authentic expression to the material’s fluid, sculptural character, as well as to the prosaic function of the building itself. The fact that the final result received scathing criticism from outsiders for its unsophisticated and naturalistic imitation of flames licking out the sides of the chimney was of less concern to Steiner than the fact that at least an attempt had been made to organically express the building’s utilitarian purpose. Anthroposophists were quick to reject any suggestion that Steiner’s lack of formal architectural training could have in any way impacted on his abilities as an architect on the same basis that Expressionism accepted all
arbitrary creative efforts as authentic art. They believed that Steiner’s work, as the expression of an inner impulse received from the spiritual realm, was beyond criticism.

Within the Anthroposophical Society Steiner enjoyed total authority, effectively acting as both client and architect for the entire building program at Dornach. He obstinately asserted that ‘I alone am to be allowed to work on the artistic creation of the Goetheanum. It will not be possible to take much account of even the best intentioned advice or suggestions already offered’ (Steiner 1999a, p. 164-5). Steiner’s control also extended beyond the main public buildings, to private residences (Figures 3 & 4). He argued that in order to preserve the Anthroposophical character of the entire community, external architects should not be employed and he implored landholding Society members to exercise patience until such time as designs could be carried out in accordance with his anthroposophical principles. Although Steiner required this co-operation from the members through ‘their own free will’ (Steiner, 1999a, p.41), it does suggest a certain level of dogmatism. This doctrinaire attitude meant that, the client, who often plays a vital role in drawing out peculiarities of the project that may not necessarily be apparent to the architect, was missing from the design process. Nevertheless, as a result of this authoritarian approach, the Anthroposophical community at Dornach represents a rare example of one man’s holistic vision embodied in architectural form that is largely undiluted by external influences. Although it was necessary for Steiner to employ the expertise of trained architects, engineers and artists, the project remained entirely under his command.

With this level of control though, it necessarily follows that the responsibility for any architectural failings must rest squarely with Steiner himself. Steiner argued, however, that at the present stage of human evolution, human faculties were not yet sufficiently developed to fully realise the spiritual task of architecture, thus effectively absolving himself of any possible blame for his architectural shortcomings. As such Steiner presented himself as an architectural maverick whose pioneering efforts would pave the way for future generations of architects to follow. This belief was shared by architects such as Berlage, Mendelsohn and Taut, who all considered their architectural mission to be far too lofty to ever be fully realised in their own time (Pehnt 1973, p.35).

This mindset encouraged architects to experiment with new ways of expressing their architectural ideals and through this experimentation, the art of architecture was propelled forward into new and unfamiliar territory. Working in such a climate Steiner enjoyed the freedom to push boundaries and challenge conventions while at the same time, develop his
skill and proficiency as an architect. Steiner’s progress as an architect is most clearly illustrated in the very different design solutions he presented from the First Goetheanum designed in 1913 and its successor some ten years later. Dennis Sharp (1966, p.156) noted in this regard that ‘[t]he experimental nature of the first building and the almost blind groping for the expression of new aesthetic laws gave way to the imposing sculptural mass of the second’ (Figures 5 & 6). Throughout his architectural oeuvre, Steiner continued to strive for more effective ways to bring his philosophical ideas into architectural expression.

Steiner’s profound interest in architecture and its development throughout history, had led him to acquire a significant breadth of knowledge on the subject that he then brought to bear on his practical work. In his Autobiography (Steiner 1999b, p.294) he stated that ‘[b]eing able to observe the development of architecture was especially significant to me. While contemplating the forms of styles, seeds for the forms in the Goetheanum began to grow in my soul.’ During his University days in Vienna, Steiner was introduced to the architecture of Gottfried Semper and he studied Semper’s theories. In Vienna Steiner also kept the company of artists, poets and writers who were all engaged in the artistic and aesthetic debates of the day. Later, in his roles as the leader of the German Theosophical Society and then as founder of the Anthroposophical Society, Steiner’s lecturing activities presented him with the opportunity to travel extensively throughout Europe, thus keeping him abreast of the latest developments in the architectural world. Therefore, although Steiner was not architecturally trained in any formal sense, it is inaccurate to characterise him as an architectural dilettante. Architecture was a subject that he dedicated a considerable amount of time and thought to and as such his greatest challenge appears not to be his ability to understand and appreciate architecture, but rather his ability to effectively translate his philosophical ideas into built reality.

ARCHITECTURAL SUCCESS OR FAILURE?

Steiner believed, rather naively, that if his architectural forms were artistically faithful to his spiritual work, then even without knowing anything about Anthroposophy, people would innately recognise the spiritual content of his buildings and hence, respond favourably. Unfortunately this was not the case. The spiritual meaning behind his highly unusual architectural forms remained totally illegible to many, resulting in widespread misunderstanding of his work. On this basis, his architecture must be deemed unsuccessful, in that it failed to achieve its primary goal of spiritual enlightenment for those who came in contact with it. But perhaps Steiner’s ambitions were simply beyond the capabilities of
‘bricks and mortar’ (or in this case concrete and timber). If so, then his architecture was
doomed to obscurity and ridicule before it even began, without being any reflection on his
own skill as an architect. In effect Steiner may have set himself an impossible architectural
problem. The gap between what he was able to express in language and what can be
expressed by architecture may be unbridgeable. What Steiner did manage to achieve though,
was to lay the ground work for a new way of thinking about architecture that acknowledged
and responded to philosophical and spiritual concerns, at a time when the dominant rationalist
idiom was threatening to turn architecture into a purely mechanical pursuit.

In An Art of Our Own: The Spiritual in Twentieth Century Art, Robert Lipsey (1988, p.461)
advised that ‘[t]he best rule is to judge a tree by its fruit. Another rule ... is not to judge the
tree until it has had time to produce its fruit.’ This is particularly apt in Steiner’s case because
even though his own architectural endeavours were not entirely successful, the philosophical
and spiritual underpinning of his architectural work have since been applied with great
success by later generations of architects who have drawn upon Steiner’s philosophical
design approach as a unique source of inspiration. While his architectural ideas have not
been as widely adopted as Steiner might have hoped, architects such as Imre Makovecz, Greg
Burgess and Ton Alberts have applied his theories to their own work and enjoyed the praise
of the general public as well as considerable critical acclaim from within the architectural
profession itself. Steiner’s efforts to unite architecture and philosophy therefore, are not
negated by his own limitations as an architect, but rather serve to highlight the inherent
difficulty of such an interdisciplinary approach. While they undoubtedly inspire and inform
each other, ultimately philosophy is not architecture, nor is architecture philosophy. As such,
it is reasonable to conclude that while Steiner may have provided a way for the two streams
to draw closer together, his architectural efforts, although genuine and sincere, were devoid
of an architect’s sensibility that might have seen the work find much wider acceptance and
appeal. Steiner’s architecture is a rarefied example of architecture as pure spiritual enquiry.
As such, he was an architect in the same way that he was an educator, economist, social
theorist and scientist, namely, within the framework of his own spiritual research.

REFERENCES

Conrads, U 1971, Programs and Manifestoes on Twentieth Century Architecture, The MIT
Press, Massachusetts.
Harbison, R 1997, Thirteen Ways: Theoretical Investigations in Architecture, The MIT Press,
Massachusetts.
Lipsey, R 1988, An Art of Our Own: The Spiritual in Twentieth Century Art, Shambhala,
Boston.
Meissner Reese, I 1965, ‘Steiner’s Goetheaum at Dornach’, Progressive Architecture,
September, XLVI, pp.146-153
Paden, R 2007, Mysticism and Architecture: Wittgenstein and the Meanings of the Palais
Stonborough, Lexington, Lanham.
London.
PORTLAND STONE: A MATERIAL CONSIDERATION OF PLACE, COLLAPSE AND DISRUPTION

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ABSTRACT

The island of Portland, in Dorset is a site made by the material needs and uses of architecture; it is a landscape constructed by absence and disruption. This almost-island barely tied to the mainland by Chesil beach is an uncertain edge. This paper investigates Portland as place and material inscribed by time through multiple histories and disciplines. My particular focus is on the potential in architecture to retrieve links to absence, disruption and collapse.

This paper starts with the source of the stone; Portland as history, material and place is followed and its significance for pre- and post-Enlightenment architecture is established. The absences left by the process of quarrying create a series of double absences: quarries are constructed absences, the use of stone for building and memorials is a manifestation of absence materialized in the traces of its destruction; this is epitomised in the use of Portland stone for WWI and II memorials. The methodology reaches back to eighteenth century philosophy, theories of the earth, and architectural accounts of Portland alongside contemporary theories of place. The site is viewed as one of perpetual change and the spaces left as the outcome of quarrying are imbued with meaning. This unique site at the edge shows that the complexity of cultural meaning found in Portland offers deeper understandings of the history of architecture.

Key words: Portland stone, geology, architecture, landscape, disruption, collapse
INTRODUCTION

The landscape of Portland has been created by the removal of its stone; it is a built environment made from the voids left by quarrying. On Portland the landscape of the quarries is architectural negative space. Portland’s exhausted landscape, marked by more than three centuries of quarrying, is one of disruption, dislocation and absence. Recurrent landslips of the coastal cliffs exposed the strata of Portland’s fine limestone showing its aesthetic qualities and potential as architectural material. As such coastal collapse started the quarrying industry in the seventeenth century. The long-term result of four centuries of quarrying to the topography of Portland means that much of the island cannot be built on. The space of the quarries implies both construction and collapse.

The eighteenth century development of scientific thinking in which Kant participated, concerned the instability of the matter and material foundation beneath our feet. These cracks in the certainty of the Enlightenment are manifested in the work of the late eighteenth century writer Heinrich von Kleist (1777-1811) whose transition between empirical and critical thinking was tormented. In my research, the moment of recognition of collapse as a concept was reading Kleist’s observation that an arch is only held in place because the stones that construct it want to collapse. Kleist’s formulation raises the unsaid of architecture: that something devised and constructed embeds collapse within its form. At the end of the eighteenth and in the early nineteenth centuries Portland and Dorset’s Jurassic coast were important for early geological mapping. Scientists have studied Portland’s oolitic limestone for more than two hundred years; yet there has been little consideration of Portland in architectural history and theory or in contemporary writing on site and place.
The island of Portland is an intriguing and compelling site: its multiple histories suggest a nexus of departures. I was led to Portland as a site that suggested a tangible image of collapse. Through my creative research, I have looked at the spaces where Portland stone has been taken from the landscape investigating the site as a multifaceted starting point for architectural history and have interrogated absence as architectural formation.

I. PORTLAND: GEOLOGICAL TIME

As a material with a long and complex history of use, little was written about stone as a material for architects in the 20th century. However, the development of stereotomy, the use of geometry to precision-cut stone for architecture, produced a number of treatises, especially in France, between the 16th and 18th centuries. Currently there is considerable interest in writing about concrete as a material, particularly its use by Brutalist architecture; concrete as the dislocated material of non-place is the antithesis of stone. The materiality of concrete is derivative - an amorphous mass that takes shape from the moulds that cast it, whereas stone is already solid form. The most common ingredient of concrete is Portland cement, named because it looked like Portland stone. Portland as a place and a material occupies a significant part in the long and complex history of both geology and architecture in Britain. Portland has been remade by disasters and collapse – both as accident and outcome. This history can be traced to the middle of the eighteenth century when quarrying expanded rapidly on Portland.

A series of disasters above and below the ground gave impetus to the question of how to theorise what is under our feet. The earthquake that devastated Lisbon in 1755 was widely felt throughout Europe and had a significant impact on the certainties of Enlightenment thinking. By early 1756 Kant published three essays that attempted to theorise the cause of earthquake, starting with the observation,

We dwell peacefully on ground the foundations of which are battered from time to time. We build unconcernedly on vaults whose pillars sometimes sway and threaten to collapse. (Reinhardt and Oldroyd 1983:253)

The second, and most substantial essay, acknowledges,

We know pretty completely the surface of the earth, when the ampliation* is concerned. But we have under our feet a world still, with which we at present are but little acquainted. (Kant 1799:96)

In these statements Kant speaks in architectural terms of the precariousness of the foundation on which architecture stands, and the limits of knowledge about what is at a deeper structural and material level. James Hutton (1726–1797), who published his first observations about geology in 1785 as Theory of the Earth, identifying geological time, suggested that layers were incrementally formed over vast periods; his theory, ‘Hutton’s unconformity’, was based on observations that volcanic activity had breached sedimentary layers. In Playfair’s life of Hutton, he wrote,
We felt ourselves carried back to the time when the schistus on which we stood was yet at the bottom of the sea, and when the sandstone before us was only beginning to be deposited…The mind seemed to grow giddy by looking so far into the abyss of time. (Cosgrove ed. 2002:134).

This well-known quote suggests the abyss as a telescopic fissure through which the earth’s layers could be discovered and that geological time is both spatial and conceptual.

The development of geological thinking took a different turn with Georges Cuvier (1769-1832), who proposed the idea of extinction after comparing the anatomy of living and fossilized vertebrates. The cultural context in which Cuvier advanced his hypothesis of ‘catastrophism’ in *Essay on the Theory of the Earth* (1812), lay in the aftermath of the Lisbon earthquake, and the contemporary situation of the turmoil of the French Revolution and Napoleonic wars. For example, Cuvier states,

Life, […] has been often disturbed on this earth by terrible events – calamities which, at their commencement, have perhaps moved and overturned to a great depth the entire outer crust of the globe […] Numberless living beings have been the victims of these catastrophes (Cuvier 1813/2003:16)

These comments have a social, political and historical resonance. With reference to Cuvier’s theories of catastrophe and extinction, Foucault argues that

With spatial discontinuity, the breaking up of the great table, and the fragmentation of the surface upon which all natural beings had taken their ordered places, it became possible to replace natural history with a ‘history’ of nature. (Foucault 2000:275)

Foucault suggests how nature began to be ordered, classified, and archived as an outcome of disaster. An adherent to Cuvier’s theory of catastrophe, William Smith, a West Country surveyor excavating canals, noticed that the layers of fossils contained in them could identify strata, this lead to the first geological map of Britain. The fossil material in Jurassic limestone from the Dorset coast was key to his project. Smith’s 1815 geological map was the first of its kind; by mapping strata, he too looked into the ‘abyss of time’ and charted volume rather than surface; and consequently, he mapped space and time.

Portland stone is an oolitic limestone of the Jurassic period that took place 100 – 170 million years ago. The stone lies in three beds on top of Kimmerage clay - the Basebed and Whitbeds have the finest oolitic material, with the Whitbed, the most favoured for building because of its durability and capacity to retain detailed carving, the top layer; the Roach bed has fossil shell impressions of Portland Screw and bivalves. The Jurassic coast of Dorset is the most researched and written about coastline in Britain (see Coombe 1983). Portland is the subject of numerous studies from the eighteenth century onwards by geologists of every description, as well as biologists and archaeologists, but rarely by cultural or architectural historians. Stone holds time, this attribute of the material is brought to the building; architecture borrows time from the stone from which it is constructed, architecture quarries a geological history along with the material. Stone belongs to a place, it comes from a landscape; it can be mapped. All stone is located; it can be identified and traced to its source. This relationship is temporal: geological time, excavation time, and architectural time.
Most of the limited numbers of texts about the use of stone in British architecture are from the 1950s and 1960s. The likely imperative for writing about stone in this period was the need to repair damaged buildings after WWII. Repair offers a deeper sense of renewal; stone has enduring qualities - it has continuity with the land, it has survived for millions of years. These ideas had particular provenance during and immediately after the Second World War when a poetics of landscape appeared in writing, film, and art. New forms of cultural history about land and landscape appeared. For example, in 1955 W.G. Hoskins wrote *The Making of the English Landscape* an evolutionary and topographical history of human intervention on the landscape, developing the new discipline of local history, and partly laying the ground for the contemporary field of place and site writing, now a critical area in architectural thinking.

At the Festival of Britain in 1951 a pavilion entitled *The Land* was devoted to what made and lay beneath the landscape of Britain; Jacquetta Hawkes’s ‘memoir’, *A Land*, also of 1951, a cultural geology and archaeology of Britain, was written as a poetics of place and location:

> Every layer of the sedimentary rocks that has formed since life began, each layer of rubbish accumulated since man became an artificer, can be distinguished through this extraordinary fact – that existence is never for two moments the same (Hawkes 1980:30)

With reference to architecture she says:

> Portland and other less fine but lovely oolitic building stones form a relationship between the Jurassic Age, the eighteenth century and ourselves, its latest inheritors. English eighteenth century architecture could not have achieved some of its highest felicities without this ideal material. (Hawkes 1980:76)

Hawkes articulates how architecture can reach back in time to the geology of the material from which it is constructed and can then be dressed in its history. The precariousness of immanent disaster links the development of all these theoretical perspectives. Displacement and upheaval of countryside and cities occurs through natural disaster, accident and war. The connections of geological time, and the material of place can be demonstrably traced to architecture made from stone.

## II. PORTLAND: MATERIAL MEMORIAL

Portland Stone was chosen by architects for its durability and for the fine grain of the oolite composing this limestone. Inigo Jones (1573-1652) chose Portland stone to stand in for the whiteness of classicism rather than for its unique qualities, mythically recreating the marble of classical Greece, whereas Christopher Wren used Portland stone for its intrinsic qualities. A series of significant historical disasters accelerated the wholesale requisition for Portland stone as a material: firstly, and best known, the rebuilding of the city after the Great Fire of London, and also the repair and renewal of buildings after the second world war; less acknowledged is the use of Portland stone for memorials following the First and Second World Wars. Christopher Wren rebuilt more than fifty churches as well as St Paul’s Cathedral, choosing Portland stone as the primary material. A large landslide had occurred previously in 1636 on the northeast coast of Portland, making the stone workable from the cliff, and six million tons of stone were taken for the rebuilding of London. In 1697 another
landslip damaged two piers beyond repair and delayed delivery of stone for St Pauls. Wren used mainly the Grove quarries on the cliffs on the north east of the island. At the northern edge of the Grove quarries there is a pillar of stone called Nicodemus Knob; at first glance it seems as though it is a unique geological formation, but it is the remainder of a whole section of cliff, a tangible demonstration of the vast volume of stone quarried away.

A compelling image of a landscape of disruption and a world in a state of collapse is the turmoil of the First World War. The battlefields held innumerable casualties, yet early in the war the dead had barely been considered. The formation of the Imperial War Graves Commission was initiated by Fabian Ware, who had been shocked by the disregard and disorder of the battlefields, and the lack of preparation and provision for the dead. Ware organized burials, and by 1915 his unit had registered 30,000 graves. Ware stopped exhumations and the repatriation of bodies of those whose families could afford to bring them to back to Britain, insisting that all ranks were buried together, equal in death. Equality was taken into consideration in the design of graves: Ware consulted Sir Frederick Kenyon, director of the British Museum, who suggested rows of headstones of uniform design erected above flattened turf. The simple gravestone looks similar to the ancient Egyptian burial stele, a reference Kenyon was undoubtedly aware of, suggesting an intention that these graves should be marked for time immemorial.

Portland stone was the principal material chosen for the headstones because it was reliable, cheap, and – importantly - British. The flat tablet of white limestone was secular, but could be carved with religious symbols, regimental insignia, rank, name, age, date of death, and next of kin could supply a short commemoration. Carving individual stones was expensive, and a machine, based on the pantograph, was invented in Lancashire. The difficult question of how to commemorate the missing with no known grave was onerous, and resolved through memorials naming the absent dead. The main architects for the memorials and cemeteries were Edwin Lutyens, Reginald Blomfield and Herbert Baker. The typographer Macdonald Gill designed a font used uniformly on all graves and memorials: 500,000 names of the missing are carved into Portland stone - text and stone forming a material nexus tracing over absence.

In designing and building the memorials and cemeteries, the provisional architecture of the battleground was replaced and order exerted over the chaos, disruption and collapse brought about by the first industrialised war. Blomfield designed the ‘Cross of Sacrifice’ made from Portland Stone embedded with a bronze broad-sword; it was available in three sizes from 18’ to 32’ for cemeteries of forty or more, juxtaposing a more prosaic standardization reminiscent of nineteenth century industrialization and planning against the classical references in the memorials. The ‘Stone of Remembrance’, for cemeteries of over 1,000 graves, was designed by Lutyens based on proportions from the Parthenon: it was 12’ long and weighed 8 tons, and had an inscription chosen by Rudyard Kipling from Ecclesiastes: ‘Their name liveth evermore’. The altar-like ‘Stone of Remembrance’ made from Portland stone is a weighty piece of the English landmass, a material manifestation of place, of belonging, and redolent of Rupert Brooke’s 1914 poem, The Soldier.

Association of Architecture Schools of Australasia (AASA) Proceedings, Deakin University 2011
‘If I should die, think only this of me:/ That there's some corner of a foreign field /
That is for ever England. There shall be /In that rich earth a richer dust concealed; /
A dust whom England bore, shaped, made aware...’

The ‘dust’ borne and shaped by England became the stone marking the graves of the dead, and like the body beneath the earth, also originated within the shores of England. The stone gives gravitas to grief and endeavours to fill the psychic and material void of absent bodies. An echo of this can be seen in the holes left behind on Portland from quarrying the stone for the headstones and memorials. A poignant paradox, a double absence, is generated: in order to commemorate the absent body, absence is created by the removal of the stone. This double absence further occurs in the property of limestone as the flesh eating stone, a concept based on the chemical effect on the body observed in early limestone sarcophagi. By the completion of the WWII cemeteries, the CWGC had bought approximately 120,000 tons of Portland stone, which works out as 100,000 tons of finished stone (Bezzant 1980:211). Distributed in foreign fields around the world, there are between 700,000 and 800,000 grave markers of Portland stone, the disaster of war redressed and ameliorated through the process of mourning and the construction of memorials.

III. PORTLAND: PLACE

…he sometimes cast his eye across the Thames to the wharves on the south side, and to that particular one whereat his father’s tons of freestone were daily landed from the ketches of the south coast. He could occasionally discern the white blocks lying there, vast cubes so persistently nibbled by his parent from his island rock in the English Channel that it seemed as if in time it would be nibbled all away. (Hardy 1997:41)

So Thomas Hardy describes Portland stone arriving from what he calls the ‘Isle of Slingers’ in The Well-Beloved 1897. Hardy captures the incremental disappearance and shrinkage of the island, as the stone is carted away piece by piece. There is a sense that the island may collapse in on itself, buried under the rubble left behind, becoming its own cenotaph. Portland is characterized as an uncertain place, always changing as another absence is made.

A distinctive feature of Portland’s landscape is the collapsed landslip material from the cliffs, called ‘weares’. Brunsden et al noted that ‘27% of Portland is affected by landslips (c. 317 ha out of a total area of c.1130 ha) this includes most of the coastal fringe’ (Brunsden et al. 1996:214). They add that the earliest record of coastal landslip is 1615; occurring relatively frequently, there have been seventy-two landslips since then. The Portland coast has the most landslides in Britain, causing problems for quarrying, as well as necessitating the demolition and reinstating of many buildings. Distinct horizontal layers of sedimentary rock with vertical joints characterize limestone. This is both advantageous and dangerous for quarrying, as the joints can facilitate the removal of stone, but are also unstable. Brunsden et al outline how the geomorphology of Portland further adds to the propensity for the joints or ‘gullies’ in the limestone to enlarge and weaken causing cliffs to collapse (Brunsden et al. 1996). The geology of these coastal landslips links with Paul Carter’s thoughts on the study of coasts,

The coast was primarily conceived as an arena of intellectual inquiry; in this form it was the line that enabled the scientist to draw other lines. [...] Its very disarray, the
mimic resemblance of its productions to the specimens arranged in a *cabinet de curiosités*, [...] suggested a museum in the making. (Cosgove ed. 2002:132).

Carter creates an evocative picture of the relationship of science to the delineation of coasts as both real and abstract, that coasts, as edges under constant battering by the sea, elude fixity.

Portland as a site is contradictory: an island that is not an island, there is a paradox in the durability of the stone against the instability of the cliffs. A substantial amount of Portland cannot be built on because it is so disrupted by quarrying and landslips, and the arable strip fields, or ‘lawns’ remnants of mediaeval agriculture on the south of the island, are of archaeological significance. The five villages fit in the gaps. The landscape of Portland has de facto become the collateral damage of the stone industry. Portland is a terrain of scars; quarrying has irretrievably changed the topography of the island, it is impossible to return it to an undisturbed state. The term ‘weares’ also applies to layers of debris at the quarries, in the past often dumped over the cliffs, and used as partial infill across the island. The ‘weares’ look as though something has collapsed, or a disaster has happened, like a battlefield; but the ‘weares are also constructed, the abandoned rubble making unintended, random sculptures, abstract arrangements from the piles of stone.

Portland’s strategic location on the English Channel was ideally suited to fortification and maritime use. Portland is an industrial landscape constructed by labour working to extract the blocks. Quarries are industrialised work places, and perhaps too quotidian for architectural historians who prefer the outcome of the material rather than its source. Stone is a commodity bearing the marks of the labour that worked it; the landscape also bears marks of those tools. For many men in the quarries, the time was measured as the hard labour of a prison sentence where working the stone was punishment and rehabilitation. Portland has two prisons, The Verne, and The Grove; the latter built by inmates in 1848 was regarded by reformers as a model because it offered the chance for prisoners to earn a ticket of leave when they were transported to Australia, their past histories ‘annulled’ buried under the rubble of the quarries, lost in gaping holes they worked into the landscape (Carter 2004:2). Quarrying is sometimes called winning, each stone is won. There is no doubt quarrying is hard, dangerous work, but perhaps if the quarryman has won, then the landscape is the loser in a battle for a material.

The landscape of the quarries is a built environment constructed from the voids of absent stone, it is the negative space of architecture, but there are no architects or builders present in their construction. The walls of the quarries - scarred by drills, cutters and saws - show the history of quarrying, and the geological strata exposed evoke the levels of a building. At the abandoned and working quarries space is a remainder: a history, it is both the absent material and the material absence, and as such space becomes something; at the quarries space is made. This is contrary to the view Kant advances:

> One can never represent that there is no space, although one can very well think that that there are no objects to be encountered in it. It is therefore to be regarded as the condition of the possibility of appearances, not as a determination dependent on them (Kant 1998:158)

Kant suggests that space is the outward appearance of possibility, an idea of imminence, of something impending, that in the future something might come into being; this does not necessarily have to be an
actual form, though this is not absolutely ruled out.

The sheer scale of the space left behind compels the viewer of the quarry to re-imagine the stone that has been taken, to re-build the landscape out of the absent blocks of free stone. Carter suggests methods for ‘viewing emptiness’ concluding that ‘in materialising the laughable offspring of dust, it was pleasurable to prove that things as we see them right here generate expectations of things elsewhere and out of sight…’ (Carter 2004:55,58). With reference to the Portland quarries it might be possible to suggest an addition to this, that in looking at these big, dusty voids and debris it is possible to generate images of architecture over the emptiness and to trace in the absent blocks of stone.

CONCLUSION

This inquiry has advanced the idea that the construction of absence, through the spaces left by architecture’s uses, can be regarded as architecture and it history. I am drawn to Portland because its fractured, disrupted landscape suggests an image of collapse. Four centuries of quarrying have left Portland’s landscape scarred by dislocation and absence and the repeated gnawing away of the stone means the island is in a state of perpetual change, this instability is further demonstrated in the geomorphology of the island where the limestone cliffs can break away causing coastal collapse, an edge that is as uncertain as it is unstable.

The exploration of concepts of absence and collapse have traced a thread of disruption and catastrophe through early theories of natural philosophy, geology, history and architecture to contemporary ideas of place and site. By following Portland stone as a material and a place I have found a means of retrieving the history of architecture and re-inserting it into the specific location of Portland, making productive connections between architecture as form and current thoughts from emerging from place, site or situated writing as architectural thinking.

REFERENCES

Kant, E (1799) Essays and Treatises on moral, political, religious and various philosophical subjects Vol II Ch. ‘History and Physiography of the most remarkable cases of the earthquake of 1775 [sic] London, William Richardson


CREATING A DIALOGUE ACROSS TIME IN ATHENS: THE NEW ACROPOLIS MUSEUM AND THE PARTHENON

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ABSTRACT

A visit to the New Acropolis Museum in Athens, Greece, in late June 2010 set in train a number of questions and inspired a research project to begin to unravel something of the complex relationship between ancient and modern architecture on the Athenian Acropolis. Research was guided by the question: how does the contemporary museum, designed by Swiss born architect Bernard Tschumi in collaboration with local Greek architect Michalis Photiades relate to the ancient Acropolis and the fifth century BC Parthenon, whose sculptures it was to house? A critical literature review was augmented by design analysis and field experience. This paper documents the resulting critical thematic investigations of the Parthenon, the Acropolis and the New Museum through siting, materiality and light, alignment, visual connections, through exploitation of the unique Attic light, orchestrated movement and considered juxtapositions. Research has revealed that Tschumi’s deliberate strategy of creating a dialogue between his building and the ancient monuments holds the key to his design intent, to creatively exploring contemporary architecture at the edge of such a physically and culturally dominant ancient plateau.

INTRODUCTION

In June 2010, in the northern hemisphere summer, the author visited the New Acropolis Museum in Athens, designed by Swiss-born architect Bernard Tschumi in collaboration with local Greek architect Michalis Photiades. The experience was memorable. The new museum opened a year earlier, in June 2009, nine years after Tschumi was awarded first prize in the design competition. It uses clean lines, simple materials and bold forms to complement the finely detailed marble sculptures that it was built to house. Through personal experience and research this paper explores the way Tschumi’s contemporary design has created a dialogue with the ancient Acropolis and the fifth century BC Parthenon.
THE PARTHENON: AN INNOVATION IN ITS TIME

The Acropolis, the heart of Athens, rises high above the city. The Parthenon, built at the height of Greek power in 438BC to glorify ancient Athens, crowns this sacred rock. The marble temple dedicated to the goddess Athena was a creation of the architects, Ictinus and Callicrates and the sculptor, Phidias. Vincent Bruno explains that their intent was to reconsider the relationship between architecture and sculpture in the Doric temple (Bruno, 1974:59). At the time of its construction the Parthenon differed radically from the earlier, archaic versions of the Doric temple. To be able to house Phidias’ colossal statue of Athena the interior cella was altered to become the architectural setting for the cult image. Michael Linzey explains that by introducing eight columns on the eastern and western elevations of the temple, rather than the usual six, Ictinus was able to obtain extra width in the interior (Linzey, 2010:225). Another pioneering aspect was the revision of the role of sculpture on the exterior facades. A continuous frieze was added to the Doric temple of the Parthenon, traditionally a feature of the Ionic order and never before seen on a Doric temple. Bruno understands that the ‘collaboration between sculptor and architect had certain unexpected consequences that were to have far reaching effects for the future of classical buildings’ (Bruno, 1974:60). The Parthenon was to become the perfect model for classical architecture. The New Acropolis Museum is designed to celebrate the Parthenon and its setting, the Acropolis.

THE NEW ACROPOLIS MUSEUM

The design and construction of the New Acropolis Museum is not ground breaking nor particularly innovative, as the Parthenon was in the fifth century BC, however, it does experiment with the idea of contemporary museum design. It can be argued that in the case of Frank Lloyd Wright’s Guggenheim Museum, New York, 1959, and Frank Gehry’s Guggenheim Museum, Bilbao, 1997, the architecture is more of an attraction than the art. Tschumi has done the reverse with the New Acropolis Museum. He has created a bland design to sit in the shadows of the Acropolis. Indeed, he believes that the ‘ancient sculpture on display inside will be enough’ to bring people to the museum (Glancey, 2007). Therefore Tschumi has chosen to use a minimalist aesthetic in The New Acropolis Museum that Ellie Stathaki likens to Greek modernist architecture (Stathaki, 2008). Tschumi admits that the minimalist aesthetic of the museum is a sensibility that has been dealt with since the 1970s but suggests that the ‘slight shift of the upper floor’ is something that nobody using a minimalist aesthetic has done before (Tschumi in Stathaki, 2008). This shows that the New Acropolis Museum is connected with history in the sense that buildings and styles evolve...
over time. The New Acropolis Museum has evolved in the present in a similar way to the Parthenon evolving from the generation of temples before it.

DIALOGUE THROUGH SITING

Alexandra Stara explains that ‘The site, at the foot of the Acropolis hill on the south-east side, is … plagued by an extremely difficult shape, wedged between existing buildings of varying architectural merit’ (Stara, 2009:23). Michael Z. Wise has called the exterior of Tschumi’s New Acropolis Museum ‘bulky’ (Wise, 2009:51). Stara has criticised the translation from concept to built form, arguing that ‘The reality of the museum is the relentless banality of its spaces, consistently poor material choices and frightful detailing’. She goes further and states that externally the base, middle and top are totally unrelated, that the top level curtain wall does not complement the concrete cantilevers and steel fins of the middle and bottom levels (Stara, 2009:24). In contrast Stathaki infers that the glass ‘makes it a very discreet building’ despite its massive scale and concrete structure (Stathaki, 2008). Both opinions have merit but as the museum is recessed from the street and partly blocked by the Weiler Building, which has heritage protection, it does seem to ‘melt’ into the background, even though its minimalist aesthetic is so strikingly different from the surrounding Neo-Classical cityscape. While the exterior could be considered bulky or obtrusive, it was driven by Tshumi’s concepts of light and circulation. Tschumi’s belief that ‘concept, not form, is what distinguishes architecture from mere building’ (Tschumi, 2009:59) is exemplified in his design for the New Acropolis Museum: ‘a superimposition of three shifted geometric grids, in a similar vein to his most famous project, the Parc de la Villette in Paris (AR August 1989)’ (Stara, 2009:24). While greater emphasis has been placed on the concept and the interior, the exterior form does relate directly to the Acropolis: the grey concrete recalls the grey Eleusinian limestone of the rocky outcrop itself and the angular shape of the Acropolis has been translated into the New Museum with its off-kilter top gallery and angled projecting porch. The New Acropolis Museum creates a dialogue with the Acropolis by using its defining features: the angular outcrop and the characteristic greyness of the soil; it abstractly translates these into the exterior form of its architecture.

DIALOGUE THROUGH MATERIALITY AND LIGHT
Stara (2009)\(^1\) in her opinion piece for AR, claims that the Museum is ‘banal, sloppy’ and ‘badly detailed sophistry’, implying that Tschumi’s rhetoric has blinded all. Stara has particularly criticised Tschumi’s use of prefabricated concrete on the walls of the ground floor. Holes mathematically punctured into the slabs to absorb the sound of visitors footsteps are deprecatingly described as ‘oversize domino pieces’. While Tschumi’s manipulation of concrete is a ‘far cry from what Callicrates and Ictinus did with marble up the hill’ (Stephens, 2009:76), the interior spaces are far from being banal and the material choices, particularly in the top two floors, are impeccable. According to Tschumi an ‘emphasis has been placed on the purity of the materials’, glass, concrete and marble (Tschumi in Stathaki 2008). The fourth element, light, brings out the ‘purity’ of the materials and enhances the sculptures on display. The galleries are all unique through their different use of light and Tschumi’s manipulation of glass, concrete and marble ensures that ‘banality’ does not exist.

The New Acropolis Museum’s defining feature is its exploitation of natural light. The use of light in the design of Parthenon is exemplified in Phidias’s setting of the cult image of \textit{Athena Parthenos} in the interior cella. Natural sunlight entered through two high windows that were, unusually, constructed on the eastern wall, penetrating the space where Athena stood (Barletta in Neils, 2005:85). Ictinus and Callicrates exploited natural light further by using a water surface on the floor of the interior to reflect and enhance the light enabling the ‘unconcealment of the goddess’ (Linzey, 2010:225). In another room in Athens some 2,500 years later, the aesthetic of natural light has enhanced and revealed the beauty of sculptures in a contemporary way. Tschumi’s New Acropolis Museum in Athens uses light variously (Tschumi does use artificial light where necessary, particularly at night). To relate the use of light in the new museum to the way it was used in the Parthenon, one need only look at the position of the Erechtheion Caryatids. The female figures stand watch over the ascent of the visitors in the entrance gallery; they stand in relation to each other, as they would have if they were still in their original position. Tschumi has placed them directly under the inner core of the overhead Parthenon gallery, whose glass floor filters light to the sculptures. While this poses an annoyance for cleaners, it creates a muted and ambient effect for the sculptures below. Parallels can also be drawn between the reconstructions of the interior of the Parthenon and the space in the New Acropolis Museum where the Caryatids are located. Scholars have conjectured that the ceiling in the cella of the Parthenon was coffered. The geometry of the ceiling has been translated into the skylights in the Archaic Gallery of the New Acropolis Museum and where the Caryatids stand watch over the glass slope. Their position and the way Tschumi has harnessed light can be compared to the celebration of the goddess of Athena in the cella of the original Parthenon. In this new museum, Tschumi has been able to ‘recreate’ something of the quality of the interior space of the Parthenon.

\(^1\) Alexandra Stara wrote her piece for Architectural Review prior to the completion of the New Acropolis Museum. She never experienced the upper levels of the Museum. Hers is an opinion piece rather than an intelligent critique for Architectural Review, a British publication. It must be noted that her opinions may be politically driven, influenced by the issue of the Elgin marbles and the fact that the British Museum does not want to relinquish the Greek treasures.
A dialogue is achieved between the New Acropolis Museum and the Acropolis using the unique Attic light. Tschumi poetically explains that the museum was primarily concerned with the presentation of the sculptural objects and ‘its central idea is to allow Attic light to shine on the exhibits, as it did from the time of their creation’ (Lending, 2009:580). By harnessing the Athenian light that once shone down on the sculptures when they were in their original position, atop the Acropolis, enables a dialogue that spans centuries. The texture and shadows of the sculptures change with the time of day and the seasons, so by Tschumi’s use of natural light it allows visitors to experience them analogously in situ.

Tschumi uses light in diverse ways throughout the museum. In the double height Archaic Gallery, windows span the floor to ceiling space and natural light pours in through the fritted glass, in between the concrete fins, touching the marble floor and fading into the sandblasted concrete columns. This ‘temple-like’ space, which is a delight to walk through, enhances the sculptures and presents them as the main focus. In an interview, Tschumi explained that his material choice of concrete ‘is really soft, so it absorbs the light’ making the marble exhibits stand out, ‘bring[ing] out the sculptures’ detailing, making them look alive’ (Tschumi in Stathaki, 2008). The Archaic gallery also includes some fifty skylights to bring in more diffused natural light (http://www.newacropolismuseum.gr). By using Attic light so overtly, the New Museum creates a dialogue with the ancient Acropolis by using the only element across time that has changed very little.

The clearness of Athenian light is exploited even further in the top Parthenon gallery where the sculptures are positioned in exact alignment and direction as they originally would have been. Because the upper floor is designed like a ‘glass-box’, the sculptures are exposed to the changes of light throughout the day as if they had never been removed from their origin. It is from this glass enclosure that light penetrates through the glass floor to touch the Caryatids beneath, filtering through to the entrance gallery and finally touching the archaeological excavations below. This sequencing of light binds all the parts of the museum together in an aesthetically beautiful way. The use of natural light creates a dialogue with the Parthenon by giving visitors an opportunity to re-experience the materiality of the temple. Another experience comes at night when one can look up and see the Parthenon illuminated on top of the Acropolis; from there one can look toward the New Acropolis Museum where the

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2 Fritted: glass with ceramic dots fused onto the glass to diffuse the natural light.
imposing exterior fades into the background and the top floor of the museum is alight and
the entire sculptural assemblage can be seen from outside.

DIALOGUE THROUGH ALIGNMENT

The Parthenon Gallery has many aspects that relate it to the monument that it celebrates. It is
skewed from the rest of the structure by 23 degrees to achieve the exact alignment of the fifth
century BC temple (http://www.newacropolismuseum.gr); this enables the replication of the
lighting conditions that the original Parthenon experienced. While the glass box is slightly
larger than the actual Parthenon to create a glass encased colonnade for visitors to walk along
while viewing the famous frieze, Tschumi has recreated the dimensions of the Parthenon’s
elevations and repeated the forty-six columns that are characteristic of the monument, within
this box. Tschumi has represented the original carved marble Doric columns in contemporary
brushed chrome. The sculptural arrangement of the friezes, metopes and pediments are
arranged so that visitors can walk around them and follow their sequence and stories as
originally intended. The frieze is set into the concrete core, which has the exact dimensions of
the cella; the metopes are suspended in between the chrome columns, slightly higher than the
frieze so they can be viewed together in their original format, while the pediments are
mounted on metal rods at the east and west ends. Wise (2009:57) has described the frieze
embedded into the concrete as ‘inelegant’ but it could also be seen as inconspicuous. The
concrete is ignored as the sculptures take centre stage. So arranged, the sculptural elements
recreate their original arrangement in a fresh and modern way, bridging the temporal and
spatial gap to create a dialogue across history.

DIALOGUE THROUGH VISUAL CONNECTION

The predominance of glazing in the New Acropolis Museum not only allows light in, it
allows spectacular views out. The most remarkable are from the top floor of the glass
enclosed Parthenon Gallery. While Tschumi has created space to house all of the Parthenon’s
sculptures, it must be noted that some have been destroyed or lost to antiquity, some were
plundered and some are still being held ‘hostage’ (Stara, 2009:24; Tschumi, 2004:440). The
monument itself is now only a skeleton of its original self; it has withstood the test of Mother
Nature, the gruesome wars of humanity and the attack of looters, so it would only be right
that some of the sculptures are also not completely intact. Arguably the most damage
inflicted upon the Parthenon was that of Thomas Bruce, the 7th Lord Elgin, in 1801 (Lending,
2009:568). In a contract that has been fraught with controversy since its transaction, Bruce was given access to the Acropolis for documenting the site, as well as permission to remove certain loose objects (Lending, 2009:568). Bruce, however, cut fragments of the Parthenon frieze and shipped them back to England (one ship even sank before it reached its destination, ensuring some precious parts have been lost forever). Bruce removed more than half the frieze from the Parthenon and one of the Caryatids from the Erechtheion, among other pieces (Ouroussoff, 2007). The Elgin marbles, as they have come to be known, were purchased by the British Museum for £35,000 (Hodson, 2008) from Bruce in 1816 and are still being held ‘hostage’ in London (Tschumi, 2004:440), where another partial installation can be seen at the British Museum. The cultural issue of the re-contextualisation of the Parthenon marbles is perhaps an underlying reason for the construction of the New Museum. As outlined in the competition brief, the Museum was to house ‘all’ the Parthenon marbles and therefore become a tool for persuasion for the return of the marbles from the British Museum (http://www.newacropolismuseum.gr).

While the issue of culture and politics involved with the Elgin marbles is not the purpose of this paper, it is relevant to understanding the importance of the Parthenon Gallery and how it is designed to display the entire collection. The parts of the frieze that have been lost to antiquity have been left blank, while those still being displayed at the British Museum have been recreated and appear like ‘ghosts’ in between the weathered originals (Glancey, 2007). When one stands in the Parthenon Gallery viewing the east-side sculptures, the ancient temple hovers through the transparent wall and the two unite in one’s imagination allowing a vision of the temple as it was in the Periclean age. So whether the marbles are returned or not, Tschumi has been able to speak to the ancient temple and create an extemporaneous reunification in the imagination of the viewers.

DIALOGUE THROUGH MOVEMENT

The crowning achievement of the Acropolis is the Parthenon, and the Parthenon Gallery is the crowning glory the New Acropolis Museum. To reach these destinations, one must ascend. The journey up the Acropolis hill, stopping at points along the way to take in the history of other marble monuments and admire the view, creating a sense of intrigue, is replicated in the New Acropolis Museum. At the ground floor you begin by taking in the archaeological excavations below, then you turn around and a great, wide ramp is set before you. You proceed on the incline and stop to take in all the vases and pottery that have been recovered from the Acropolis hill, at the top you find yourself admiring the beautifully lit space and its forest of columns that enhance the marble of the Archaic period. The final ascent is up an escalator to the Parthenon Gallery. Whether you reach the top of the Acropolis
to find the wondrous sight of the Parthenon above the chalked topped city of Athens or you reach the ‘glass-box’ of the Parthenon Gallery, the sense of arrival at the end of a journey is paramount. Tschumi created circulation paths that are both imaginative and logical, the movement around the museum, though filled with tourists, seems to flow freely as you ascend in the three dimensional loop. By re-enacting the physical ascent Tschumi has linked his New Museum psychologically with the Acropolis.

DIALOGUE THROUGH CONTRAST

This paper has so far only examined similarities between the Parthenon and Tschumi’s New Acropolis Museum to identify a dialogue, it will now look at juxtapositions. Tschumi’s building of ‘no architectural distractions’ is in stark contrast to the Parthenon whose sculptural decoration has been admired by generations. The marble frieze became the innovative feature of the Doric edifice and these sculptures have been studied locally and abroad over centuries. The clean lines and pure materials in the New Acropolis Museum act as a foil to the exhibits. By creating a quiet building, Tschumi ensures that one is focused on the creation and origin of the sculptures themselves and is able to relate the sculptures to the Parthenon and the Acropolis.

On approaching the entrance of The New Acropolis Museum one notices that the groups of columns, placed in groups of three, are located apparently at random. Yet each is strategically placed to avoid touching the fabric of the ancient city below. It is the antithesis of the rhythmic spacing of the Parthenon’s columns. Difference does not mean that this is a negative feature, for as Jonathon Glancey points out, the columns can be read as ‘perform[ing] an unlikely engineering waltz’ (Glancey, 2007). Indeed it encourages visitors to search the archaeological excavations further as they question the unusual placement of the columns.

Geometry is a key feature of the Parthenon. While Tschumi also uses geometry, he does so in an entirely different way. The exterior form of the Parthenon is ‘perfect’: perfectly proportioned, crafted and self-contained with ‘no wings [and] no projections’ (Glancey, 2007). The Parthenon is a whole, one cannot separate the columns from the base or the pediments from the columns. The exterior of Tschumi’s Museum can be read in four parts: the entry of the projecting concrete porch, the base made of concrete columns and glass, the middle made of concrete fins and glass, and the top, made entirely of glass. Suzanne Stephens suggests the base, middle and top could abstractly relate to the parts of a column, with its base shaft and capital, yet when put together they form an unresolved ensemble (Stephens,
2009), which is in opposition to the harmonious proportions of the Parthenon. While Stephens and Stara (2009:24) have criticised the disjointed exterior, one can read the building from the exterior and understand the interior. Once inside the museum and enveloped by the ethereal interior spaces the exterior facades are largely forgotten.

Tschumi’s work sits in juxtaposition to the ancient monument. While contemporary building techniques cannot compare with the ancient monument, Stara claims building construction is sloppy and the New Acropolis Museum fails dismally as a tectonic structure (Stara, 2009:25). Yet building techniques aside, the lack of decoration, and apparent random placement of columns and abstracted geometric features of the New Acropolis Museum are all used to celebrate the Parthenon and bestow even more importance on the ancient masterpiece. The main intention of the museum is to house the sculptures of the Parthenon in a beautiful subtle and unimposing space. Tschumi pushes the boundaries of the brief to create an eloquent shrine through contrasts with the Greek peoples’ most prized possession. Rather than compete architecturally with the Parthenon, Tschumi decided to make the museum as minimal as possible and describes the finished product as having an ‘orchestrated simplicity’ (Stathaki, 2008). Tschumi’s intended juxtaposition of old and new narrates a dialogue between ancient and modern, between two buildings across time.

CONCLUSION

This research investigation began with a memorable experience. This paper has explored the New Acropolis Museum through personal insights, Tschumi’s own rhetoric, and contemporary writing and criticism. Bernard Tschumi and his Athenian collaborator, Michalis Photiadis, have bridged the 2,500 years between the Acropolis and the New Museum by creating a dialogue. Whether through likeness or contrast the New Acropolis Museum does celebrate the Acropolis, whose shadow looms over it. Light, scale, dimension, orientation and movement are all elements that are common to both the original and the contemporary context and these shared elements are the most successful in establishing a dialogue between the New Acropolis Museum and the ancient monument.

While the minimalist form serves to highlight the sculptural decoration of the Parthenon, ensuring the sculptures are the main focus in the interior of the museum, light is the dominant aesthetic. The entire museum is bathed in the unique, natural Athenian light. Its orientation and Tschumi’s use of glass enhance the ethereal qualities. Glass allows a visual connection with the Parthenon and the Acropolis encouraging visitors to interact with the sculptures on a deeper level. The transparency of glass enables visitors to visually relocate the sculptures to their place of origin on the Acropolis while still being in the protected environment of the Museum.
The ascent to the Parthenon Gallery through the New Acropolis Museum parallels the ascent of the actual Acropolis to the Parthenon. By following the gradually increasing intensity of light, one winds ones way up the glass ramp past the ancient ruins below, to the Archaic gallery where light is modulated through a forest of concrete columns, to the top Parthenon Gallery where the light reaches its maximum intensity.

The Parthenon has been a place of worship for many different religions throughout its long history and the New Acropolis Museum has been able to relate to this aspect by creating large temple-like spaces within its modern glass and concrete structure, particularly in the double-height Archaic gallery. While the Parthenon was used to worship different gods throughout time, the New Acropolis Museum worships the Parthenon itself.

Tschumi’s New Acropolis Museum has created a connection with the Acropolis and the classical Parthenon temple through the timeless element of light, the effect of visual connections and the physical and psychological replication of ascending; while not all correspondences may work as well as Tschumi intended, he has nonetheless engaged with the ancient monument and orchestrated a dialogue that spans centuries.

REFERENCES


STUDY ON THE VISUAL PERFORMANCE OF A TRADITIONAL RESIDENTIAL NEIGHBORHOOD IN OLD CAIRO

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ABSTRACT

Traditional dwellings located in the hot arid zones of the Arabian regions are well known for their sensitive architectural response to the region’s climatic conditions and socio-cultural norms. The majority of these dwellings are well recognized for their courtyard arrangement and perforated fenestration system that evolved to control the harsh solar, climatic conditions without compromising the aesthetic quality of space and occupants’ wellbeing. However, the unique visual characteristics of these structures cannot be fully appreciated by assessing the visual performance of buildings in isolation from their urban context. Given the fact that much of the character of the traditional settlements of this region came from the collective visual perception of their architectural components as well as urban patterns. This paper presents a methodology that can be used to assess daylight behaviour at an architectural level as well as at an urban scale. The work examines the daylight behaviour of a well-known historic alleyway and of a courtyard house in the old city of Cairo. The variability in the visual perception and comfort for a typical pedestrian street and the occupants of the house was predicted using Radiance IES simulation modelling tool and a scaled model under an artificial sky dome. A comparative analysis between simulated results and measured values at target points was conducted and the results reveal a reasonable agreement with the simulation results. Preliminary results from the first phase of modelling were presented that give an insight into the overall visual experience in the traditional settlements in the Old City of Cairo where daylight has contributed to the place unique sense of identity.

INTRODUCTION

The influence of climate in shaping the uniqueness of the traditional architecture of the Arabian region is widely recognized (e.g. Salama, 2006; Al-Shareef, 2001; Warren and Fethi, 1982). Many scholars have discussed the environmental performance of traditional buildings and settlements in the Arabian region, which were formed under the influence of the physical, technological and socio-cultural structure of a society and in harmony with its climatic
conditions. Hassan Fathy’s pioneering writings in the early 1970s and mid 1980s provided detailed descriptions of the environmental aspect of traditional dwellings of the region in general and of Egypt in particular. The majority of these dwelling units are well recognized for their courtyard arrangement and perforated fenestration system that evolved to control the harsh solar radiation without compromising the aesthetic quality of space and occupants’ wellbeing. However, the unique visual characteristics of these dwellings or structures cannot be fully appreciated by assessing the visual performance of buildings in isolation from their urban context. Given the fact that much of the character of the traditional settlements of this region came from the collective visual perception of their architecture components as well as urban patterns, this paper presents a methodology that can be used to assess daylight behaviour at architectural level as well as at an urban scale. One of the well known traditional residential neighborhoods in the old city of Cairo was used as a core for investigation. The paper gives an insight into the overall visual experience, and daylight microclimate in the traditional buildings and settlements in the old City of Cairo where daylight has contributed to the place unique sense of identity.

The paper is structured into three main sections. It starts by providing a brief description of the study area and the main architectural features and urban components that shaped its microclimate. The second section provides a detailed description of the methodology and the validation work, while the final part includes preliminary results of the first phase of analysis that dealt mainly with assessing the intensity and diversity of illuminance in two distinct forms: an alleyway and a courtyard house.

THE STUDY AREA: OLD CAIRO

The historical significance of the Old City of Cairo is globally well recognised. Sir Fletcher (1996), for example, put Cairo high on the list of cities of outstanding historic value with an immense legacy of buildings dating back to the Middle Ages. Grabar (1984) raised the same point, yet ascribed the city’s character and sense of place to the way in which historical monuments and towers have shaped the physical fabric of the city, forming a network of visual signs that helps passers-by to navigate the city. In Tung’s view, it is the “adaptivity” of the metropolis to its climate that most accounted for Cairo’s unique appearance. In “Preserving the world’s greatest cities” (2001) he wrote “in a part of the world where the sun was intense and nearly vertical, one of the few forms of relief was shade. Thus as the density, height and population of the city increased, the streets were not widened, since deep, narrow canyons resulted in an environment of cool shadow”.

Cairo is the capital of Egypt and has served as the capital of numerous Egyptian civilizations. It lies between latitude 30° north and longitude 31°east where a high intensity of solar
irradiation predominates for a large part of the year. The average annual global radiation can reach 2600 kwh/m²/year in the southern parts of Egypt, and the direct normal solar radiation varies between 1970 and 3200 kwh/m²/year with low levels of cloudiness. The annual sunshine duration hours vary between 3200 and 3600. In such a geographical context, the hot arid climate was vital to the development of certain architectural features and urban patterns. In addition to the compact configuration of the medieval urban fabric that shaped the local microclimate at the street level, traditional Cairene architecture exploited different masonry devices to promote thermal and visual comfort including the use of courtyards, mashrabiyya (perforated screens), malqaf (wind-catcher), internal gardens and many others. A brief description of some of these traditional motifs that can be traced in the medieval residential neighborhood examined in this work is given below.

Urban layout

In hot arid climatic regions, protecting the building blocks from intense solar radiation was one of the main problems facing local builders. For that reason, enclosed, compactly planned urban forms, such as internal narrow alleyways, were among the most suitable urban forms developed in this type of climate to reduce the heat problem caused by excessive direct radiation. By placing buildings close to each other, surfaces exposed to the sun were often reduced with a large amount of shade and coolness that decrease the heat gains on external walls (Koenigsberger et al, 1974). Like many other cities in the Arabian region, tight busy streets and narrow winding alleyways are the most recognizable urban components that form the urban fabric of old Cairo. Among the outstanding examples of these indigenous urban components are those alleyways that lie in the heart of the historic spine or “heritage corridor” where nine clusters of monuments worthy for conservation were identified by the UNDP plan in the late 1990s. The selected alleyway, El Darb el Asfar (Figure 1), is one of these alleyways that occupy the area located between the main historical thoroughfares leading from the north gates of the old Fatimid wall towards the south: al-Mu’iss Street and al-Gamaliya Street. It is part of al-Gamaliyya district, which itself has gained special historic value, including the highest density of historic monuments in the area. The alleyway was renovated in the mid 1990s and today it is part of the tourist centre of the old city, close to many Islamic monuments and Cairo’s principle historic bazaar, Khan el-Kalili.

Building form: The courtyard house arrangement

The courtyard house type is another well known architectural arrangement that characterises the traditional architecture of Cairo. The main feature that differentiates this house style from other types of houses is the outdoor space that is enclosed within the interior volume to act as the heart of its morphology and spatial organization. Among the few surviving traditional courtyard houses in the region are those located in the heart of the old City. The significance of the house selected in this study lies in its historical value. Located on the northern side of the examined alleyway, El Suhaymi House presents a complete example of the traditional
Cairene residential buildings of the 17th and 18th centuries (Figure 1). It has all the traditional components of the house of the period and according to the Egyptian Ministry of Culture (2002) it is the only remaining complete example of private houses of that period. Excavations in the courts of the house also indicate that the site on which it was erected had been populated and built on since the Fatimids founded Cairo in the 10th Century. The house covers an area of over 2000 square metres, with a total of 115 spaces distributed on five levels surrounding a main internal court with an area of more than 200 square metres. Its structure suffered primarily from various natural and man-made deterioration factors for several decades. In 1931, ownership of the house went to the Egyptian government and around five dates later it was added to the list of historical monuments, recorded as number 399. Whereas some of its vulnerable sections underwent various phases of restoration, the full restoration of the house was only completed in 2000 and it subsequently became a museum.

Figure 1: Views of the examined alleyway (right) and the selected courtyard house (left) in old Cairo

Shading Strategies

In addition to the narrow winding streets and central opening courtyard house types that dominate the old city urban fabric, covering the streets is another strategy that complements the traditional architecture of Cairo. In residential areas, shading the facades of buildings is often achieved as result of the cantilevered volumes of the projecting latticework or mashrabiyya. Shade is also brought to the commercial streets and tight alleyways by means of various types of urban roofing, including temporary shading devices. For a single building or courtyard arrangement, shade is often obtained by architectural elements such as projecting roofs, covered loggias, open galleries and supplementary plants or by introducing special devices such as the mashrabiyya that shields the openings.

Orientation

The orientation of street and internal courtyard plays an important role in the levels of shading and daylighting (e.g. Koster, 2004; Littlefair et al, 2000). The long axis of each form
can be directed to the N-S, E-W, NW-ES or NE-SW, all of which have varying impact on the produced shading or exposure patterns in both spaces and hence on their visual behaviour. In a study on the influence of different street orientations located in Southern Europe over the solar gain (Littlefair et al, 2000), the findings suggested that the NE-SW/SE-NW typical grid pattern of the streets has significantly less sun penetration than an E-W/N-S grid. This is the result of the changes of the angle of the sun, which varies widely with the time of the day and time of the year. Although the same amount of direct solar radiation enters the top of each alley, with the E-W alleyway more solar radiation reaches the ground, while with the N-S alleyway the direct radiation is more likely to strike the east-and west-facing buildings at an oblique angle, resulting in less solar gain. It is also evident that in hot regions courtyard forms with an orientation between the NE-SW, NW-SE and the N-S can provide extra shade as they stop the access of direct solar radiation at ground level for most of day (Littlefair et al, 2000; Muhaisen, 2006). As illustrated in the ground floor plan (Figure 3), the orientation of the examined house is within 15 degrees of North, thus representing one of the most preferable orientations of a courtyard building form in a hot arid climate. By contrast, the alleyway shows one of less successful streets orientations in terms of blocking direct solar radiation in this type of climate. The impact of orientation on the intensity and diversity of illuminance in both forms is discussed below.

ASSESSING DAYLIGHT PERFORMANCE OF A TRADITIONAL SETTLEMENT OF CAIRO

The Building Research Energy Conservation Support Unit (BRECSU, 1997) classified the design parameters that have an impact on daylight levels in buildings, urban spaces and settlements into three levels. These are the “micro scale”, where the interest is concentrated upon the geometry of fenestration elements; the “meso scale”, deals with the significance of openings within the external fabric of the building and the effect of building depth; and the “macro scale” where the considerations are at the level of urban planning. The main design parameters related to the urban space configuration and affecting daylight levels at this scale (the macro scale) are the orientation of space, compactness ratio (enclosure ratio), reflection properties of the surrounding surfaces and the geometry of the sectional profile of space (Al-Maiyah and Elkadi,2007). Besides the influence of these spatial parameters, the daylight levels in buildings also depends upon a set of design parameters related to their geometry (the meso scale). Among these parameters, the form, the size, the orientation of building and the size and location of light openings in the building envelop are the most influential (e.g. Baker et al, 1993). As this paper aims to provide an understanding of the overall visual experience found in traditional urban settlements by assessing daylight levels in a typical dense narrow street and courtyard house in Cairo, a similar framework is adopted by this study in which two main phases of daylight analysis are conducted. Whilst in the first phase of analysis, parameters related to the macro scale were considered, the second phase of analysis focused on the elements of the meso scale though assessing daylight performance of a selected number of internal spaces of the house. However, in this article, which is part of a research project, only the preliminary results related to the first phase of analysis are presented as the work on the second phase of modelling is ongoing.
Methodology:

The study went through several stages: firstly, due to the absence of the required architectural drawings of the target buildings a photo survey was conducted as a part of the site visit to identify the geometry of the case study. Around 100 digital photographs of the alleyway and the house were recorded to outline the geometry of their facades. Simple tape measurements were also conducted to determine the scale of the digital model and assess its accuracy at a later stage. This approach is referred to as photogrammetric approach. It was previously introduced by Mantzouratos et al (2004) as part of an illumination study of one of the 19th century neo-classical buildings in Athens and also adapted by the authors in previous study (Al-Maiyah and Elkadi, 2007). Historic maps and two-dimensional drawings that were collected during the site visit were also used in building up the digital model.

In the second stage, the three-dimensional model of the examined configuration was created using Model IT, (the building modeller) in IES virtual environment and a preliminary phase of daylight simulation was conducted. Daylight illuminance values at target points along the alleyway and inside the courtyard were predicted using Radiance IES simulation tool. Radiance is a powerful highly accurate simulation tool which is increasingly being used to simulate complex lighting environments. Although the accuracy of Radiance in simulating light behaviour in a complicated internal environment has been rigorously validated (e.g. Mardaljevic and Lomas, 1995) its capability in providing accurate calculation at the urban scale is yet to be tested. Therefore, a validation experiment that is based on a physical model and an artificial sky dome was conducted in the third stage of the work to provide more confidence in the simulation modelling. Similar to the digital model created in stage 2, a 1:50 physical model of the alleyway and the house was carefully constructed using light plastic materials. The actual alleyway measures 7.5 m in width at its western end, 3.2 m at the central section, around 5.8 to 3.8 m at the east and is 166 m long. However, due to the limitations set by the size of the sky dome simulator and the practical difficulties associated with building up a 1:50 model of such a long street, only the central part of the alleyway where the house is located was constructed and tested. It measures 46 m in length and presents the most compact sectional profiles found in the alleyway with a height to width ratio of 3.2:1. The model was then tested using the artificial sky dome at the Bartlett, University College London (UCL) (Figure 2). This large scale facility comprises a 5.2m diameter hemispherical dome, covered with an array of 270 compact fluorescent luminaires which are individually controlled to adjust the luminance distribution; thus allows modelling various sky conditions.

Four main phases of measurements were carried out in which a system of reference points was used to assess daylight illuminance values at target points on the model. A total of 18 points that were assembled on three main axes were used to measure illuminance values in the courtyard and another 9 points that were assembled along the main axis of the alleyway were selected to measure the values at the street level. The distribution of the measurement points along the alleyway is shown in Figure 2. Illuminance data at the targets areas were recorded respectively using a Megatron lightmeter which can measure illuminance levels at 12 different points simultaneously. The illuminance data at each target point was recorded four times in two measurement sessions over two days on May and June 21st and the average illuminance value at each reference point was then calculated. A Konica Minolta LS-110 luminance meter was used to measure the reflectance value of the physical model and the
data logger and controlling PC were programmed to take measurements at the two sessions. At the same time simulations using overcast sky conditions similar to those assigned to the sky simulator were made and comparative analysis between measured and predicted data was conducted to validate the simulation exercise. The agreement between simulated and measured values was quite acceptable. The experiment concludes that the absolute relative difference between simulated and measured illuminance values along the alleyway and in the middle of the courtyard lay in the range of -0.14 to 0.36% and -0.11 and 0.22%, respectively (Figure 3). The digital model of the alleyway was then adjusted to include the other sections of the original setting and simulations were carried out to predict the illuminance values on the summer solstice and winter solstice at three time intervals (9.00 am, 12.00 pm and 3.00 pm). The summer simulation was carried out under clear sky conditions and the winter scenario under the CIE overcast sky.
Daylight performance of the courtyard and the alleyway: preliminary results

As stated before, a total of 18 points that were assembled on three main axes were used to predict the illuminance values in the courtyard. Whereas axis 1 was arranged to assess the illuminance levels on the eastern side of the courtyard, the other two axes (2 and 3) were arranged along its central and western side. The analysis of the early morning scenario on the summer solstice clearly showed the impact of the courtyard’s north-south orientation on its daylight behaviour. The internal envelope of the courtyard blocked the low angle of the sun in the early morning to reach the points located at the eastern side of the courtyard (axis 3) while allowing direct sunlight to reach the other two axes. The average daylight illuminance values received by the courtyard at 9.00am on the summer solstice were about 1269 lux at the eastern side, 1770 lux in the central part and about 2004 lux at the western part. These figures suggested a variation of around 37 - 40% in illuminance values between the shaded eastern side of the courtyard and its exposed parts. However, despite this variation in the intensity of illuminance across the courtyard, the 9.00 am simulation results showed that overall there was a smooth transition of daylight distribution across the courtyard, which in turn had a direct impact on the visual experience and the use of the courtyard before midday.

The quartile deviation is strong indicator of variability within a population of data; the lower the value, the less variation about the mean or the average. This metric is used here to assess the diversity of illuminance in both forms before and at midday on the summer solstice. Whereas a large spatial variation in illuminance is predicted along the alleyway, the courtyard showed less variation among its illuminance values. At 9.00 am, the upper and lower quartiles of the mean were around 12% of the mean in the case of the courtyard and more than 40% in the alleyway. The large variations of illuminance along the alleyway before midday are the results of the partial obstruction of the low sun by the alleyway’s internal envelope leading to a wide range of light and shades spots along its main access. As a result, the pedestrians of the alleyway tend to experience different ambient daylight conditions to those of the users of the courtyard with sharp changes in illuminance values moving from dark to lighter daylight areas (Figure 4). At a point in time when the average illuminance...
value in the courtyard is about 1700 lux, the intensity of daylight in the alleyway varies between 4200 lux in the exposed/sunny spots and as low as 1300 lux in the shaded areas.

Unlike the 9.00 am case, when the obstruction of the low angle of the sun by the courtyard’s internal envelope has helped in reducing the intensity of its illuminance, the noon sun angle has led to a significant increase in the intensity of illuminance in both the alleyway and the courtyard. The average intensity of illuminance received by the alleyway and the courtyard at noon on the summer solstice was 6068 lux and 5190 lux, respectively. This is the result of the high solar angle at noon that allowed more intense sunlight to reach most of the target points in both forms. It is however, important to point out the role of the temporary covers that are usually used (and still in use in the original settings) during the summer time in areas with lower aspect ratios. Such temporary shading elements would play a major role to reduce the intensity of solar radiation and thus improve the uniformity of illuminance at the street level. Courtyards were also often planted to further improve the visual experience by providing a pleasant transition between shades and shadows particularly during midday. However the impact of these supplementary shading elements on the intensity of illuminance in both spaces has not been considered in the simulation modelling. After midday, the change in the shading conditions as the sun moves to the west allows the overall values of illuminance in both the courtyard and the alleyway to fall by around 50 % from midday values. However, despite this identical reduction value in the two spaces, the intensity of illuminance remains more uniform in the courtyard than in the alleyway.

Unlike the summer solstice, when the constant change in the shading conditions over the course of the day led to a wide range of illuminance values between the alleyway and the courtyard, a slight difference of less than 20 % in the average illuminance is observed between the two spaces on the winter solstice. This is the result of the high contribution of the diffused skylight component to the total energy of daylight during winter period. In urban open spaces the intensity of illuminance relates to a combination of direct sunlight, diffused skylight and the reflector of daylight from the surroundings. Previous research by Al-Maiyah and Elkadi (2007) on daylight behavior in selected traditional urban forms in Cairo demonstrated that the diffused component accounts for around 70% of the total energy of daylight during winter. The predominance of the diffused component also led to a more homogenous distribution of illuminance along the alleyway on the winter solstice than on the summer solstice, particularly before midday.
Figure 4. Illuminance levels (lux) in the courtyard at 9.00 am (left) and along the alleyway at the three examined times on the summer solstice

SUMMARY

This paper is part of an ongoing research project designed to assess daylight behaviour in the traditional settlements of old Cairo. The unique visual experience characteristic of these settlements is well documented and often described as part of the overall identity of the city. However, assessing the characteristics of these settlements in terms of their daylight behaviour is a rather difficult task that requires an understanding of the diversity of illuminance at various architectural scales as well as urban patterns. Accurate simulation modelling tools, on the other, such as Radiance that is increasingly being used for illumination studies in internal spaces can assist in standardizing the diversity of illuminance at various scales and across different spatial typologies. Accordingly, a simple methodology for the study of the daylight behaviour of traditional settlements in old Cairo was proposed and tested using a combination of simulation and physical–based measurements. The proposed methodology proved capable of predicting illuminance values quite acceptably. The predicted results such as those presented in the above section can be used by town planners or support local decision-makers by assessing, for example, the implications of intervention schemes on daylight conditions in a dense urban fabric.

REFERENCES


Egyptian Ministry of Culture, Supreme Council of Antiquities, Historic Cairo: Preserving the Architecture Heritage of Historic Cairo (Cairo: Egyptian Ministry of Culture Press, 2002).


SESSION 2A - @ the Edge of Urban and Regional Development
ABSTRACT
The design and planning of settlements in arid Australia has long been wrought with difficulties because they are positioned in the extremes of environmental and social contexts. Historically many mining-related settlements in Western Australia (WA), South Australia (SA), Northern Territory (NT) and Queensland have struggled or failed in realising a quality design and plan, but also to sustain a robust and vibrant community who do not wish to escape to mainstream suburbia or simply operate as a fly-in fly-out employer commuter from this suburbia. Places like Mt Isa, Theodore, Moranbah, Broken Hill, Radium Hill, Leigh Creek, Roxby Downs, Paraburdoo, Shay Gap, Karratha are typical of these circumstances. This paper reviews the design and planning origins of the villages at Olympic Dam, and critiques the future designs embedded in the Olympic Dam Expansion Environmental Impact Statement [EIS] (2009). These villages consist of Olympic dam village (a fly-in fly-out dong-go containerised community accommodating some 500 workers) and Roxby Downs (a mixed Adelaide-template suburb with temporary village and caravan park insertions accommodation some 4,500 ‘permanent’ residents and some 200 fly-in fly-out ‘workers’). The scenario presented in the EIS is to demolish the former and establish a new village for some 10,000 workers, and expand Roxby Downs from 4,500 to near 20,000 although whether this later figure will occur is unclear but certainly the infrastructure and facilities have to be increased as well as increasing residential accommodation units).

INTRODUCTION
With the recent release of the Olympic Dam Expansion Supplementary Environmental Impact Statement (SEIS) (2011) by BHP Billiton, following the earlier Olympic Dam Expansion Environmental Impact Statement (EIS) (2009), both the largest documents of their type in the world, it is not long before the Olympic Dam expansion – euphemistically called within BHP Billiton as simply ‘ODX’ – under the management of BHP Billiton and ARUP will commence. Hidden in both the voluminous EIS (2009), and associated SEIS (2011), is a small essay about the future of the extant Roxby Downs town. The town presently comprises approximately 4,000 residents together with the Camp 1 construction camp at Olympic Dam that caters for an additional 800 people. As part of the overall development it is envisaged that the town will expand to 10,000-15,000 residents with a projected 10,000 construction camp workers at the nearby new Hiltaba village and with Camp 1 being closed due to its incorporation within the mine expansion (Anon 2009: 49; Jones 2006: 231-244; Wordley 2005: 16).
Mining projections are to increase gold production “from 80,000 ounces a year to 500,000 ounces, making it the one of the largest gold mines in Australia.” Mining would also increase uranium production from “4,500 tonnes … to 15,000 tonnes per year,” copper from 220,000 to 500,000 tonnes per annum of ore, silver from 800,000 to 2,900,000 ounces, and also increase the life of the overall mine from 70 years to 100 years (Wordley 2005: 16).

Situated in the arid zone of northern SA, Roxby Downs was originally developed by Western Mining Corporation (WMC) to accommodate their workers and their families involved in the Olympic Dam uranium mining project. The mine and town – comprising Mark 1 – were established through the Roxby Downs (Indenture Ratification) Act 1982, with subsequent amendments in 1996 – comprising Mark 2 – by the South Australian state government, and Kinhill-Stearns Roger undertook the preparation of the Olympic Dam Project Draft Environmental Impact Statement (Kinhill-Stearns Roger 1982) on behalf of Roxby Management Services Pty Ltd for the overall project. Since 1982 all new Australian mining ventures have been predicated on the basis of a fly-in-fly-out lifestyle as typified in the Pilbara and Kimberley regions of WA in places like Paraburdoo and Argyle mines. So the decision to proceed with a new town was both a challenge as also a philosophical commitment by WMC in providing a quality and efficient working environment for its employees and their families (Roxby Downs Act 1982; Kinhill-Stearns Roger 1982).

By 1997 the re-named WMC Resources had decided to double the mining operations and commissioned a feasibility study and EIS as prepared by Kinhill Engineers (KBR 1997). This EIS validated the existence and role of Roxby Downs as servicing the mining operations but also proposed extensions to the town to the south and east that enabled a different town character to evolve. This was an important shift in the urban design philosophy of the town resulting in what can be termed the Mark 2 expansion of the town. Mark 1 town was seen as rotating from a central lineal core, with relatively standard typical Adelaide allotment sizes, curvilinear road patterns, conservation of significant Western Myall (Acacia papyrocarpa) trees, overall road and house construction and planting by WMC in a co-ordinated manner, and a single storey environment set within a parkland setting. Mark 2 in contrast sought a much lower density, a set of subdivision estates that were further from the central core, varied allotment sizes, varied and more sweeping road patterns and introduced roundabouts, varied the logic of the parkland setting to one of a much more open landscape setting, and enabled individual builder developments in an estate that was constructed by WMC. Thus, the philosophical character of Mark 2 developments were much different than Mark 1 and today are also very different aesthetically and in terms of the appearance of density and housing form (Kinhill Engineers 1997).
On 1 September 2005 WMC Resources was officially acquired by BHP Billiton, and BHP Billiton has been proceeding to enable the expansion of the Olympic Dam and has determined that the fly-in-fly-out strategy is inappropriate wishing to create a quality residential environment adjacent to the mine for its employees and service contractors (Roxby Downs Act; Wilson 2005: 9).

The terms of reference and scope of the present Olympic Dam expansion are set out in the Draft Guidelines / Issues Paper (2005) prepared by Planning SA, and BHP Billiton has responded with Olympic Dam Expansion Environmental Impact Statement (EIS) (BHP Billiton 2009) and thereupon following a public consultation phase a Olympic Dam Expansion Supplementary Environmental Impact Statement (SEIS) (BHP Billiton 2011).

The re-development of Roxby Downs has come at an interesting time in enabling a re-consideration of arid zone planning and design in SA. With the proposed Olympic Dam expansion, the town will double in population, a new set of planning and design issues will now arise many of which are linked to the original ideas behind the siting, layout, planning and form of Roxby Downs town.

THE LANDSCAPE OF ROXBY DOWNS

Situated in the middle of northern SA, the landscape of Roxby Downs and Olympic Dam is arid. The town has an annual rainfall of 150mm and is located in a series of low dunal swales. Soils are mostly deep red sands varying from pH 7 to 8 with some clayey soils in the bottom of the swales with pH 8 to 9.5. On these dunes and swales grow a mixed open low woodland and tall shrubland vegetation community dominated by Native Pine (Callitris glaucophylla) on sand dunes, Western Myall (Acacia papyrocarpa) in swales and Mulga (Acacia aneura) in intermediate areas. Ground cover and shrub species include Native Apricot (Pittosporum phyliraeoides), Bullock Bush (Alectryon oleaeolium), various Eremophila species, Horse Mulga (Acacia ramulosa), Sandhill Wattle (Acacia ligulata), Narrow-leaved Hop Bush (Dodonaea viscosa ssp angustissima) and Quondong (Santalum acuminatum). Chenopods cover much of the heavier soils together with perennial grasses on the sands (Zwar 2004: 653-654).

Water supply for the mine operations and town is at present piped from bores at the Great Artesian Basin around Lake Eyre, and all other services are drawn in from the south via Pimba.

HISTORY OF PLANNING FOR TOWNS IN SOUTH AUSTRALIA:
THEORY AND CONTEXT

The theoretical position of the majority of towns in SA has been heavily influenced by the principles of a park land town model as devised by Surveyor General George Goyder in the 1860s. This model epitomised the systematic rationale settlement planning model upon which SA was envisaged by the SA Colonisation Commissioners, and that Goyder expressed in plan and word through instructions to his surveying teams in how to plan for the expansion of the colony’s settlement. But it also draws from Light’s now famous Adelaide city model which is deeply woven within and inspired this template.

Surveyed by Light, the template of Adelaide was apparently considered by Goyder an efficient model to transpose across the SA landscape. Goyder’s tenure as Surveyor-General from 1861 to 1894 enabled the fruition of this agenda. This template underpins nearly every country town in SA. The essence of the template is a semi-rectangular town survey, positioned on a watercourse or reliable water source, with a surrounding park land or common, and the town was positioned somewhat centrally within the Hundred to enable ease of access.

With the appointment of Charles Reade as SA Government Town Planner in 1916, by the Labor administration, Reade sought to translate Ebenezer Howard’s Garden City principles into SA situations, and in particular at Colonel Light Gardens and in the Riverland. Reade’s presence re-awakened the Adelaide template, the theoretical model of Goyder, and the archetypal systematic settlement principles that underpin the spatial existence of South Australia (Garnaut 2002: 502-503; Bunker 1986: 21-33; Jones 2002: 269-270).

With a revival in strategic town planning allied to economic expansion following World War II these principles were re-visited in the design of Elizabeth. Elizabeth, modelled upon the garden city ideas of examples developed in England in particular Welwyn City, epitomises the rationalist systematic settlement model as expressed by the Liberal administration under Playford. Thus, the park land model was deconstructed but its theoretical agenda had still been ensured by its direct incorporation within the town or settlement (Ramsay 1956: 5-14; Hutchings 1986: 61-83).

To the casual observer, Roxby Downs does not express this model. It reads visually as outer suburban Adelaide transposed upon the desert landscape. This is a visual myth as the town exists with a central park land and recreational node and surrounding the commercial precinct each residential area has been draped over an east-west orientated low lying dunal system leaving the crests and vales of the dunes for park lands and drainage purposes. The term
‘park land’ has even been transposed upon the original *Mark 1* master plan for these open space areas which is linked by a pedestrian circulation system.

### ARID DESIGN & PLANNING IN AUSTRALIA: PRACTICE AND CONTEXT

Arid Design & Planning is a little researched and considered topic worldwide. The development of new communities in arid environments has often involved the imposition of garden city town principles to create something that is not conducive, relevant nor responsive to the arid landscape. In addition services, infrastructure, and building forms commissurate to non-arid environments are introduced. This strategy disregards historical precedents and was compounded with the advent of mining in arid Australia that sought to apply non-arid logic in town, house and landscape design in the 1950s-70s resulting in the transposition of a Canberra suburban model in the Pilbara (including Paraburdoo, Kambalda, Leinster), northern Queensland (Moranbah) and Northern Territory (NT) (Ranger).

In SA, the only deviation from this approach was the development of Woomera. Woomera was designed by the Commonwealth Government Department of Works & Housing in mid 1947 to accommodate a population of 6,500. The design is characterised by a series of interconnecting loop roads, the division of the town into quarters, clear zones for functions, and a central service and facility core shaped in an arc with an eastern outlook positioned on a 250ha site that is relatively flat and treeless.

A further precedent was the design for Monarto, in a semi-arid environment that was envisaged as new city to accommodate the growth of Adelaide. While such thought, designs and plans were not released, architect Philip Cox appropriated the knowledge and drew together several members of the Monarto planning and design research teams to devise the successful design for Yulara in arid NT adjacent to the Uluru-Kata Tjuta National Park (Jones 1998: 71-88).

Such knowledge was also applied in the design of Leigh Creek in 1979-82 for ETSA to accommodate staff and families working on the Leigh Creek coal mines. Completed in 1985, the town was proposed to accommodate 2,000 residents but has dropped to 600 recently. Following completion the town attracted design awards as being “an excellent example of arid zone town planning, incorporating effective water conservation techniques, whilst maintaining a high standard of public landscaping” (Wren 1987: 286-292). The model also informed the rationale of the *Development Guide for Arid Areas in South Australia* (de Ouden & Chandler 1983), around which water sensitive landscape design treatments were identified as essential. This rationale was more extensively detailed by Zwar & Jones (2003: 1-15) in ‘Water Conservation and Arid Landscape Design’ (2003).
Interestingly the design and planning agendas for Leigh Creek and Roxby Downs were very much the same but little communication occurred between the two teams that devised these towns. It is known that the Leigh Creek consultants together with staff from the SA Department of Environment & Planning provided report copies to WMC and visited the construction site of Roxby Downs, but they were not directly consulted on the design and planning of Roxby Downs. Despite this there were both similarities and dissimilarities in thought and approach applied in Leigh Creek and Roxby Downs (Mackay pers. comm.. 2005; Chandler pers. comm.. 2005; Harris pers comm. 2005).

DESIGN OF ROXBY DOWNS: MARK 1

In preparing the brief for a new settlement to service Olympic Dam, WMC consciously determined to vary from the traditional fly-in fly-out mining settlement model to adopt a permanent settlement model. Their aim was to service a perceived production capacity of 150,000 tonnes per annum of copper, a permanent on-site workforce of 2,400 with an additional 700 supporting services and government staff. This scenario gave rise to a proposed town of 8,000-9,000 residents supporting 3 pre-schools, 3 primary schools, 1 high school together with associated library, hospital, government services, commercial facilities, recreational facilities resulting in a 30,000” (BHP Billiton 2009: 11-2)

With this scenario in mind, WMC commenced planning evaluation studies to identify a feasible town site. Interestingly, at this feasibility stage, WMC consciously expressed a “conceptual design” that paid attention “to the effects of climate, and to the preservation of vegetation and sand dunes at the town site” (Kinhill Stearns 1982: 2-54; BHP Billiton 2009: 11-2). Innovatively the EIS proposed a unique green habitat initiative that was later applied in the nearby Arid Recovery (http://www.aridrecovery.org.au/) initiative:

The town will be fenced within a buffer zone to prevent access by rabbits and other herbivores. Particular attention will be given to structural and other land use control measures to ensure the preservation of an adequate green belt. Harmful land uses such as trail bike riding will be directed to suitable locations outside the town to prevent nuisance problems such as vegetation destruction and dust generation (Kinhill Stearns 1982: 2-54).

This second statement highlights a concept to establish “green belt” or park land surrounding the town; thereby embracing the distinct South Australian systematic planning model of park
lands. The 16km long fence was erected, and is now in a semi-derelict condition. Within the town was established a series of internal park land segments that are interconnected by a system of pedestrian and cycle trails.

An assessment of alternative town sites, in an ethically true environmental evaluation methodological approach, was employed, that also had regard to the concerns of nearby Andamooka residents as well as the construction of their own eccentric vernacular. The criteria used in this evaluation makes interesting reading when compared against the criteria used by the Hassell team in formulating their Mark 3 master plan.

In evaluating sites for a new settlement, WMC also included Woomera and Andamooka as scenarios but quickly determined the inappropriateness of these existing settlements principally on the basis of distance – 80km and 30km respectively – to the Olympic Dam mine site as being unacceptable safe travelling distances for mine employees working a normal mine time regime. A second aspect was their visually poor and challenging environmental contexts – windswept open chenopod scrubland devoid of any trees, and an eroded, gullied gibber-covered terrain, respectively – that presented unattractive siting and difficult environments to host major infrastructure intrusions. Thus, distance – 8km to 16km – and quality environmental setting – predominated tree-vegetated ecosystem – became key determinants in a larger assessment of 6 sites examined (Kinhill Stearns 1982: 2-61). These sites, and their variables are summarised in Table 1.

Table 1

Mark 1 Town Site Selection Performance Evaluation: (Site 4 highlighted was the selected town site)

<table>
<thead>
<tr>
<th>Site</th>
<th>Amount of Land Amenable to Urban Development</th>
<th>Impact of Town Location on Land Sevance of Adjoining Pastoral Properties</th>
<th>Proximity to Existing Services Corridor</th>
<th>Ease of Construction of Urban Facilities</th>
<th>Flood-prone Areas</th>
<th>General amenity</th>
<th>Horticultural aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lake Blanche</td>
<td>1,600ha</td>
<td>Severance problems</td>
<td>Poor location</td>
<td>Reasonable ease of construction</td>
<td>Least disadvantaged</td>
<td>Abundant treed dune landscape; grazing damage</td>
<td>Better placed for horticultural activities</td>
</tr>
<tr>
<td>Site</td>
<td>Size (ha)</td>
<td>Severance Problems</td>
<td>Location</td>
<td>Ease of Construction</td>
<td>Disadvantages</td>
<td>Landscape</td>
<td>Notes</td>
</tr>
<tr>
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<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>2 Myall Dam West</td>
<td>@1,600ha</td>
<td>Poor location</td>
<td>Reasonable ease of construction</td>
<td>Minimal Saltbush chenopod landscape</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Myall Dam East</td>
<td>@2,000ha</td>
<td>Poor location</td>
<td>Reasonable ease of construction</td>
<td>Minimal Saltbush chenopod landscape</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Axehead Dam</td>
<td>@2,000ha</td>
<td>Least impact</td>
<td>Best location</td>
<td>Reasonable ease of construction</td>
<td>Least disadvantaged</td>
<td>Abundant treed dune landscape</td>
<td>Better placed for horticultural activities</td>
</tr>
<tr>
<td>5 Phillips Ridge</td>
<td>@700ha</td>
<td>Least impact</td>
<td>Best location</td>
<td>Steepness of dunes</td>
<td>Excessive areas of depressed land</td>
<td>Abundant treed dune landscape; grazing damage evident</td>
<td></td>
</tr>
<tr>
<td>6 12 Mile Dam</td>
<td>@2,000ha</td>
<td>Severance problems</td>
<td>Poor location</td>
<td>High rock horizon</td>
<td>Least disadvantaged</td>
<td>Gibber plain landscape</td>
<td></td>
</tr>
</tbody>
</table>

Source: abstracted from Kinhill-Stearns Roger (1982: 2-61 to 2-63)

In investigating sites for a town associated with the Olympic Dam venture, 6 sites were considered adjacent to the mine together with Woomera and Andamooka. Woomera was rejected due to distance and its stark landscape character. Andamooka was rejected due to distance, its existing community character, and its extant mining assemblage. The six other sites were evaluated in terms of amount of developable land, impact on adjacent pastoral leases, proximity to the existing infrastructure corridor, ease of construction, risk of occasional inundation by flash-flooding, general amenity, and horticultural aspects. Two sites, 1 (Lake Blanche) and 4 (Axehead Dam), were the most ideal with the latter providing the largest developable land tract as well as significantly achieving the last two factors. Thus, amenity and character in the first instance determined the actual siting of Roxby Downs which was to be developed on site 4 (Kinhill Stearns 1982: 2-62 to 2-63).

Town planning for the town of Roxby Downs was largely passed to staff at Kinhill by WMC to prepare under the principle direction of engineer Brian Mackay. The requisite given by WMC to Kinhill was to create “a typical South Australian country town or a suburb of Adelaide” in character, image, services and quality of lifestyle “to encourage people to stay” but which was “relevant and responsive to the arid environment” it was to be situated within. Mackay saw the planning in three threads – social planning, engineering, and economic – and correctly perceived engineering as the most important in determining a successfully structure for the town and informing the road and drainage networks (Mackay pers. comm.. 2005).
The main precedents used by Kinhill were Shay Gap, and Kambalda and Leinster in the Pilbara. The latter two were towns that had been developed by WMC so they very much informed the corporate premise of what Roxby Downs should be in the eyes of WMC. Lifestyle outcomes of these three towns were also informed by research by the CSIRO’s Remote Communities Environment Unit and Division of Building Research (Kinhill Stearns 1982: 11-2 to 11-3; Mackay pers. comm.. 2005).

Leigh Creek was relevant but seen as a benchmark, and the Development Guide for Arid Areas in South Australia (1983) had not been published when planning was undertaken (den Ouden, Chandler & Dixon, 1983).

**ROXBURY MARK 2:**

**RETHINKING WITH CHANGES IN LIFESTYLE AND EXPECTATIONS**

Arising from a WMC decision in the mid 1990s it was proposed to expand the Olympic Dam mine operation thus necessitating an expansion of the town. Immediately WMC fell back upon the now flawed assumptions as to town spread and form contained in the first EIS and commissioned Kinhill to prepare a further EIS that grappled with these flaws but did not come to a clear planning and design answer. Kinhill instead recommended a lower density allotment style development to enable choice to residents, a road pattern that was more curvilinear in form than previously applied echoing low-density contemporary suburbs in Adelaide, and expansion to the south. The difficulty with the latter decision was that the land opened up further with the swales getting wider, the greater propensity of coming across archaeological sites, there were less clumps and patches of Native Pines, and that any development to the south started inappropriately stretching the town and distancing residents and car movements further from the centre of the town.

These conclusions were not recognised at the time of the EIS preparation, did not draw upon the knowledge of Mackay and Harris who had shifted to the practice BC Tonkin and retired respectively. In Mackay’s mind, the expansion southwards meant “roads carved in hollows resulted in an inefficient subdivision; very spread out; [with] no care for open space” (Mackay pers. comm., 2005; Harris pers. comm 2005; Boehm pers. comm.. 2005).

**ROXBURY MARK 3: RE-ENVISING AND RE-DESIGNING A NEW TOWN**

As part of the EIS process for the Olympic Dam Expansion project, BHP Billiton contracted ARUP to co-ordinate the overall EIS preparation and formulation, including the preparation of a Master Plan or ‘framework’ for Roxby Downs township. This Master Plan, drawing upon the existing structure and footprint of the *Mark 1* and *Mark 2* versions of Roxby. Was
discised by a project team led by Andy Marks at ARUP and Alun Chapman at Hassell as Principal Urban Designer, and David Jones and Brian Tonkin as peer referees (BHP Billiton 2009: Appendix F4: 8).

Table 1

Mark 1 x Mark 3 Town Design Performance Criteria

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Cost efficient lot provision</td>
<td>Provision of usable allotments, at an acceptable cost, upon which it is possible to locate suitably oriented facilities</td>
<td>Lot consolidation to reduce infrastructure costs</td>
</tr>
<tr>
<td>Provision of social facilities</td>
<td>Provision for the social facilities outlined in Section 11.5</td>
<td>Provision of social facilities principally in the Town Core</td>
</tr>
<tr>
<td>Permeable road ‘lattice’ system</td>
<td>Provision of a hierarchical road layout, which enables ready access to all facilities, facilitates the flow of vehicles, minimizes vehicle/pedestrian conflict and eliminates through-traffic from residential areas</td>
<td>Provision of an overall permeable road ‘lattice’ system that can be incrementally developed</td>
</tr>
<tr>
<td>Cost efficient infrastructure provision</td>
<td>Economic provision of services</td>
<td>Cost efficient infrastructure provision</td>
</tr>
<tr>
<td>Town development threshold</td>
<td>Location of residential area within 2 km of the town centre</td>
<td>Location of residential area within 2 km of the town centre</td>
</tr>
<tr>
<td>Environmental responsiveness</td>
<td>Creation of an aesthetically pleasing physical environment</td>
<td>Creation of an aesthetically pleasing physical environment</td>
</tr>
<tr>
<td>Core node establishment</td>
<td>Establishment of the town centre as the commercial, social and cultural focus</td>
<td>Establishment of the town centre as the commercial, social and cultural focus</td>
</tr>
<tr>
<td>Residential neighbourhood locations</td>
<td>Siting of development on swale areas as a general rule</td>
<td>Siting of development on swale areas as a general rule</td>
</tr>
<tr>
<td>Environmental responsiveness</td>
<td>Minimization of development on sand ridges, in particular the avoidance of development of dune ridges sensitive to disturbance or likely to present sand drift problems</td>
<td>Minimization of development on sand ridges, in particular the avoidance of development of dune ridges sensitive to disturbance or likely to present sand drift problems</td>
</tr>
<tr>
<td>Flood minimization</td>
<td>Avoidance of development on drainage depressions</td>
<td>Avoidance of development on drainage depressions</td>
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</table>
The brief to Hassell was to devise a framework to facilitate and accommodate growth for Roxby Downs up to approximately 10,000 people. This increase was aside from the design and development of a new fly-in fly-out workers village, Hiltaba, that was proposed to be located adjacent to the proposed relocated Olympic Dam Airport on the Roxby–Andamooka Road.

The purpose of the Master Plan brief was to provide the “Vision for this Town of the Future” together with suitable strategies and guidelines to enable the creation of this Vision “on the ground”. Thus, the purpose of the Master Plan was “to be a design-based document” that articulated and provided for a suite of design principles and development guidelines (BHP Billiton 2009: Appendix F4: 6). Underpinning the preparation of the master plan was a community consultation process. A second facet was the desire for the plan to meet and satisfy BHP Billiton’s environmental sustainable development aspirations which is largely encapsulated in its policy:

*We aspire to Zero Harm to people, our host communities and the environment and strive to achieve leading industry practice. Sound principles to govern safety, business conduct, social, environmental and economic activities are integral to the way we do business* (BHP Billiton 2009: Appendix F4: 9).

While this is a generic statement by BHP Billiton, it does imply “intelligent siting and locating” and a suite of energy, environmental and design performance expectations (BHP Billiton 2009: Appendix F4: 9).

Performance parameters expected by ARUP included that the town expansion was predicated upon the continuation of the existing town demographic character and profile; to cater for some 10,000 residents; a town lifespan of 70 years; an assumed permanent mine workforce of

<table>
<thead>
<tr>
<th>Environmental responsiveness</th>
<th>Maintenance of existing vegetation, particularly myall groves, mulga, and Canegress swamps and ensuring that significant vegetation has an adequate water supply</th>
<th>Maintenance of existing vegetation, particularly myall groves, mulga, and Canegress swamps and ensuring that significant vegetation has an adequate water supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood minimization</td>
<td>Prevention of flood damage</td>
<td>Prevention of flood damage</td>
</tr>
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</table>

Source: abstracted from Kinhill-Stearns Roger (1982: 11-24)
4,500 in the town; an assumed permanent employee 50% residency rate and Long Distance Commute of 50% residency.

Further, BHP Billiton’s instructions to ARUP were to “acknowledge the significance and influence of the arid location,” to “design for longevity and liveability” and to “design to respect the environment.” Explicit cultural aspirations in this brief were to craft town pride, identity, permanency, opportunities, and a safe and diverse town culture comparable to that expected and occurred in Adelaide. Such included aspirations about upgrading “the overall design quality”, introducing “good architectural design into the Town Core”, and creating “useable and attractive public open space” while enhancing movement permeability and ensuring equitable car, cyclist and pedestrian use (BHP Billiton 2009: Appendix F4: 10).

In response, the master plan proposed a framework of urban neighbourhoods nestled within the east-west dunal ‘drift’ system within a larger concentric urban system. The design strategies included continuation of a single service/commercial core, a growth threshold of 2km radius, a road system that extended outwards enabling incremental neighbourhood expansion, a scatter of special single and couple unit accommodation groups, enabling residential expansion to the west of Olympic Way (the main north-south axis road on the western flank of the existing settlement), and to “design the open space structure ... to echo the ‘drifts’ of the dunal landscape” (BHP Billiton 2009: Appendix F4: 10).

Thus Hassell perceived the need to craft a settlement expansion strategy that engaged with the undulating dunal landscape embracing its ecological and microclimatic qualities and patterns rather than imposing a design upon the landscape. This inspiration drew exemplar lessons from the Mark 1 and Mark 2 versions of Roxby Downs, whereby Mark 1 partially respected the dunal system and enabled a compact settlement whilst in part destroying this system but also lacked the commercial infrastructure to realise a quality town social and physical environment as envisaged in the 1982 EIS. From Mark 2, Hassell learnt not to permit broadscale expansion that little respected the dunal system, which supported a fragmented low density spatial pattern to pacify unique recreational vehicle requisites of this community, and to enable a more robust permeability strategy.

Chapman (BHP Billiton 2009: Appendix F4: 41) expressed the urban design strategy in terms of:

• *Improving the existing structure of the Town:* enabling westward town expansion, in contrast to the present “eccentric and unwieldy” south and south-east expansion, to enable “a manageable concentric urban framework”;
• *Enhancing the permeability throughout the Town both for pedestrian and vehicles traffic*: recognising that ease of movement through a settlement was essential, the design strategy has sought to maximise permeability having regard to the existing Town morphology and the dunal system;

• *Actively Using the Streets of Roxby Downs*: allied with town permeability is a design desire to consciously encourage residents to use their streets rather than their cars;

• *Improving the Facilities within the Town Core*: recognising community antipathy to the 1980s period contemporary architecture and facility provision that manifests itself in the Town, the design strategy sought to encourage facility renovation and enhancement focused upon the central lineal core including its westward expansion;

• *Upgrading its overall design quality*: recognising the dearth of quality public and private architectural and landscape design exemplars in the Town, the design agenda recommended major “improvements” in these realms “especially within the Town Core” (BHP Billiton 2009: Appendix F4: 41);

• *Utilizing the ‘Good Residential Design’ and ‘Designing in an Arid Climate Guide’ published by PlanningSA as the basis for residential design*: the design agenda gave weight to the applicability to these key design performance guideline documents prepared specially for arid zone use but largely historically overlooked by past Planning SA regimes.

• *Embracing new technologies*: the design agenda sought to embrace the digital age by arguing for technological adaptability but also a comprehensive free public access wireless system for the Town.

With these design agendas in mind, the following spatial strategies were employed and recommended:

• the adoption of a concentric expansion strategy to enable progressive and a more sustainable incremental residential expansion in 5,000, 10,000 and 15,000 increments focused upon the Town Core and a cessation of the eastern expansion “eccentricity from Olympic Way” (BHP Billiton 2009: Appendix F4: 42);

• the imposition of a co-ordinated shared pedestrian and bicycle network focused upon the Town Core;

• the formulation of a road ‘lattice’ system to enable “easy and efficient movements back to the Town Core” (BHP Billiton 2009: Appendix F4: 43);

• the provision of pre-designated clusters of medium design and single person’s accommodation, and local commercial centres, having regard to the above concentric expansion strategy, with the former being with 1.5km walking distance of the Town Core; and, that

• the “urban structure of the Town will be designed to echo the ‘drifts’ of the arid landscape” thereby determining that the extant east-west aligned dunal system “strongly influences” neighbourhood creation and that the dunes “should not be viewed as barriers or ‘left over spaces’ seeking instead public open space connectivity” (BHP Billiton 2009: Appendix F4: 44-45).

This spatial strategy re-interprets the underlying parkland town model of Goyder by, instead of surrounding a settlement in a park land ring as epitomised by the National Heritage listed Adelaide Park Lands model, but threading the park land through the settlement as an
environmental lattice as employed in the design of Monarto and as physically executed at Leigh Creek. This theoretical translation was not comprehended by the Hassell consultant team at the time of their deliberations, but was well understood by Mackay in the Mark 1 prognostications and brought to bear by Mackay and Jones in the peer review process for the Master Plan.

Chapman re-translated this theoretical enlightenment as, the Master Plan embodies “a concentric expansion with a central commercial and recreational core [,] radiating roads and pathways and an open space system drifting across the Town” thereby crafting a “unique character as a ‘Town of the Desert’” (BHP Billiton 2009: Appendix F4: 48, 49). Implicit in this vision was a robust family environmental, efficiency of movement and services provision, physical expansion of the Town westward, the crafting of a more formal lineal ‘town centre’ roadscape, upgrading and quality treatment of public domain architecture and landscape design, 75% majority street and lot solar and vista alignment and orientation, high standard revegetation works, enhanced treated wastewater treatment use and recycling, robust water sensitive urban design use, renovation of the existing waste water system, wirelessing the town, and an upgrade of engineering standards.

Thus, the renovation of an ‘oasis’ in the desert as was originally envisaged by Mackay and the WMC environment team in the original EIS document in line with contemporary innovations and built environmental design performance standards. Thus, Mackay and his team were correct in their arguments as to the original town design. This foresight has also been validated in their correct integrated road-engineering–drainage design, cohesive town footprint, and their dunal framework embraced in the Mark 1 design but substantially disregarded in the Mark 2 design by KBR

**DIRECTIONS**

This discourse has reviewed the planning and design approach employed at Roxby Downs over the last 20 years. Demonstrably the design hypothesis employed by Mackay and the WMC environment team in the early 1980s in *Mark 1* has repeatedly proven its worth and foresightedness. Such hypothesis was lost when KBR, without continued engagement of and consultation to Mackay, sought to design *Mark 2*. But, it has been re-awakened in the Hassell proposal for *Mark 3* albeit influenced by the peer review roles of Mackay and Jones that directly influenced the overarching design strategy. Mackay’s ‘desert oasis’ strategy, directly responsive to the east-west dunal ecology, captures the essence of Ian McHarg’s ecological determinism theory embodied in *Design for Nature* (McHarg 1965) that was expressed in the conceptual design for Monarto in 1972. Monarto Development Corporation (MDC) staff and consultants consciously applied McHarg’s thesis in the formulation of their conceptual design for Monarto, a future semi-arid settlement to host some 500,000 residents,
and a unique architectural ethos was also devised by the MDC for which architect Philip Cox latter successfully appropriated in his acclaimed Yulara village design and building assemblage. Such was also carried forth in the Leigh Creek and Golden Grove exemplars for which the original Roxby town design was benchmarked against in terms of its environmental setting and social-physical design.

Hassell’s Mark 3 master plan therefore is environmentally relevant and has validated in part extant exemplars at Roxby Downs. Notwithstanding this design and planning conclusion, it has been state government political, commitment and inadequacy of financial resources to drive and achieve these philosophical and built environmental expectations that have thwarted the quality realisation of the original concept for Roxby Downs.

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REFERENCES

Anon (2005), Proposed Expansion of the Olympic Dam Operations at Roxby Downs, The Weekend Australian November 19, p.49;
BHP Billiton (2009), Olympic Dam Expansion Environmental Impact Statement, BHP Billiton, Melbourne.


Ramsay, A (1956), Factors affecting the siting and design of Elizabeth’, in *Proceedings of the Royal Geographical Society of Australasia (South Australian Branch)*, no 57, pp.5-14.


South Australia (1993), *South Australian Development Act 1993*, p. 49.


Wordley, B (2005), Think big’, *The Independent Weekly*, 14-20 August, p.16.


MAPPING LANDSCAPE FEATURES & VALUES
IN COASTAL AUSTRALIA

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ABSTRACT

Places encompass the physical setting, as well as human experience and interpretation. Although sense of place definition nominally includes the physical environment, most research has emphasized the social construction of sense of place and neglect the important contribution of the physical environment to place meanings and attachment. On the other side, theoretical and technological developments during the past decades resulted in significant sophistication and power of analysis, display, and interpretation of spatial information applied in landscape analysis. This development, however, remains disconnected from the socio-political realities of the communities and regions which are the subject of these studies. There is a research need to integrate public perceptions and attitudes with the type of information typically found in a landscape assessment. A challenge of GIS is whether or not Cartesian space can be adapted to incorporate a more humanistic sense and understanding of distance, direction, and position.

Using the Greater Geelong Region and the data from peoplemap project, we address in this paper the following question: Can we map landscape features and landscape values in an integrated manner into a GIS to achieve a better understanding of resident’s perceptions on their geographies? This paper presents the preliminary findings of the research on mapping into a GIS platform different landscape values/perceptions associated to the same landscape feature “the ocean”. Although being very specific and still limited in terms of its application to planning purposes, the exercise developed here demonstrated the potential of GIS to represent not only cartographic space, but also the sense of place of a region.

KEY WORDS: GIS, Space, Place, peoplemap

INTRODUCTION: THE ROLE OF GIS CONNECTING SPACE AND PLACE

Community has been conceptualized in the literature as a place, as relationships, and as collective political power (Chavis and Wandersman, 1990). These aspects of community cannot be fully separated; places encompass the physical setting, as well as human experience and interpretation. In this context, place attachment is a positive emotional bond that develops between people and their environment (Shumaker and Taylor, 1983). Sense of place is therefore conceived of as encompassing meanings, attachment and satisfaction.
Understanding the role of physical environment in contributing to each of these domains is essential for planning purposes, which normally affect and change landscapes (Steadman, 2003). According to Ryan (2011), planners need to know as much about the social landscape as they do the physical landscape before embarking on planning actions.

Although sense of place definition nominally includes the physical environment, most research has emphasized the social construction of sense of place and neglect the important contribution of the physical environment to place meanings and attachment. As emphasized by Steadman (2003), however, if the physical environment matters little as source of attachment, therefore serious environmental degradation may occur, while leaving attachment intact. Nonetheless, the physical landscape may change to a degree that preferred meanings become untenable. This is an important issue to be addressed by planning, especially in areas where sensitive natural or cultural elements are the objects of identity, attachment, satisfaction and engagement.

Rather than being seen only as a physical backdrop, container, or stage to human life, space is more insightfully viewed as a complex social formation, part of a dynamic process (Ayres, 2010).

There is a research need to integrate public perceptions and attitudes with the type of information typically found in a landscape assessment. Theoretical and technological developments during the past decades resulted in significant sophistication and power of analysis, display, and interpretation of spatial information applied in landscape analysis. Most of the work on Geographical Information Systems (GIS) has focused on the physical landscape through models able to describe, assess, and predict the implications of future planning issues. This development in landscape modeling, however, remains disconnected from the socio-political realities of the communities and regions which are the subject of these studies (Ryan, 2011).

GIS is a powerful technology that uses location to integrate and visualize information. Within GIS, users can discover relationships that make a complex world more understandable by visually detecting spatial patterns that remain hidden in texts and tables. Pattern recognition is the primary form of human perception and in this sense, mapping is not only cartographic, but conceptual.

Ayres (2010) suggests that geography, unlike other sciences, is not the study of any particular kind of thing, but a particular way of studying almost anything. Geography is a point of view, a way of looking at things. What is important about assigning a geographic reference to data is that it then becomes possible to compare that characteristic, event, or phenomenon with others that exist or have existed in the same geographic space (Kemp, 2010). What were previously seemingly unrelated facts become integrated and correlated.
Geography is a fertile ground for crossing the traditional boundaries of science, social theory, technology, and the humanities. Geography is the discipline most concerned with studying the relationships between the human and physical phenomena (Ayres, 2010). New thinking in geographic theory, combined with new technology and techniques, suggests that we may be able to represent the intersection of space and place (Steinberg and Steinberg, 2006).

Humanists defend that evidences about the world depend upon the perspective of the observer (Bodenhamer, 2010). Two people who view the same object may interpret it quite differently because of their different assumptions and experiences. This is a distinction that GIS obscures. Defenders of conventional GIS respond that this difference does not matter because, regardless the name, the object remains the same. It assumes that objects exist independently of the observer.

While GIS heavily rely on quantitative accurate coordinate systems to represent space, people work on qualitative relationships based on topological relationships to interpret space. The importance of these “maps” in understanding places is based on the notion of local distinctiveness and of what is important to people who live there and encounter aspects in their daily lives that are important to them. A challenge of GIS is whether or not Cartesian space can be adapted to incorporate a more humanistic sense and understanding of distance, direction, and position (Lock, 2010).

Recognising the spatial nature of social identity and relations, Jorgensen (2010) argues that individuals may share significant spatial objects identified with their subjective neighbourhoods, such as a park, a shopping centre, a beach, etc. Founded in attitude theory, those spatial objects are defined by Jorgensen as spatial attitude objects, since their meaning for individuals or groups imply attitudes towards the object. In this context, meaning and satisfaction concerned to an object/place can be related to engagement and participation in processes affecting the object/place. In attitude theory, strong attitudes affect information processing, are resistant to change, persist over time, and help to predict behavior.

According to Jorgensen (2010), having defined a spatial object in this way, evaluative mapping involves attaining a description of the object in a manner that engages the affective, cognitive and behavioural components of the individuals’ attitude towards that spatial object. Perception of the community environment involves judgment about the environment, such as perceived qualities of the environment, satisfaction with the environment, identification of problems, etc (Chavis and Wandersman, 1990). Positive perceptions can be related to pride and engagement of individuals towards their communities. Negative perceptions can cause stress, but they can also serve as a motivator to engagement and action in the community.

Articulating such an approach with a GIS representation, means that a unique spatial object, landscape feature, may have different meanings for different individuals or groups, landscape values (Brown and Raymond, 2007). These different meanings should potentially result in breaking a single landscape feature into more than one feature.
According to Yuan (2010), mapping text is a field of research which attempts to explore the possibilities of projecting text to produce maps and enabling maps to tell stories. This is a new concept in GIS. Text has not been an important source for GIS data. In order to use text as a GIS data source, new models and tools are needed to extract values from narratives or stories and to populate a database.

The process of spatialization is one possible method for mapping text. The use of spatialization for text-map transformation assumes that spatial locations and extents are available for entities identified from the text. Spatialization is an effective means to visualize text and invite exploration, analysis, and interpretation when reading text alone cannot lead to a complete grasp of connections and correlations among documents (Yuan, 2010). Once place in text can be georeferenced and connected geographically, it is possible to examine these places in semantic space based on their attributes and in geographical space based on their locations. Such comparison can suggest potential factors and drivers that make a location a place.

CONTEXT: GROWTH OF REGIONAL AUSTRALIA AND PLACE ATTACHMENT

Australia is a highly urbanized nation, with 60% of its population concentrated in five State capital cities, along the coast. Over the past 30 years, and more intensely in the last decade, there has been a distinct movement from inland centers and capital cities to attractive non-metropolitan coastal areas, mainly for lifestyle reasons (ABS, 2006). Gurran et al. (2007) coined that process as amenity migration.

Geelong, and its surrounding coastal and rural regions, the Bellarine Peninsula and the Surf Coast, were study areas involved in Gurran’s research. Indeed, Geelong is the second largest city in Victoria, which went through significant transformation, from a former port and industrial city to a lifestyle and knowledge based economy. Currently, Geelong region is one of the areas identified by the Federal and State governments to accommodate intensive population growth forecast for the next decades. Its existing infrastructure and proximity to the State capital, Melbourne, are important drivers in this process. In a cascade effect, the growth of Geelong may potentially cause growth and changes in the surrounding coastal towns, which are highly polarized by Geelong in terms of access to jobs and large facilities (Leao and Elkadi, 2011).

Rapid population increases, in general, affect the physical character of a community, as the core settlement expands, as sites are re-developed and new services and facilities are introduced. In the specific context of coastal growth, development occurs in extremely fragile environmental and cultural landscapes. In response to these changes, many coastal communities in a study involving 55 coastal cities and towns in Australia (Gurran et al, 2007), reported a loss of sense of place. Residents of high growth coastal areas also reported the experience of loss of sense of community or connection to social networks, because of the influx of new residents or visitors.
In practice, often the focus in community development and planning is on economic and political factors, with little or no regard to particular preferences, perceptions, and emotional connections to place. Academic research deals with both aspects, but mostly in separate. Literature on place attachment has been focused on individual feelings and experiences and has not placed these bonds in the larger, socio-political context in which planners operate. On the other hand, the community planning literature emphasizes participation and empowerment, but overlooks emotional connections to place.

Proposed development projects can be perceived by some community members as a threat to place attachments because they will change the physical fabric of the neighbourhood. Those who feel their relationships to their community places are threatened by redevelopment may consequently resist a proposal regardless of its potential value.

Investigating NIMBY (Not In My Back Yard) response to locally unwanted land uses, such as waste landfills, prisons, or wind turbine farms, Devine-Wright (2003) argues that policy makers typically depict people as inflexible and irrationally opposed to change, while assuming self-interested and egoistic motives for behaviour.

To adequately understand and respond to such reactions, from both community and policy makers, it is critical to uncover and address these latent place attachments, and review the criteria and the processes for planning and decision making in urban and regional contexts.

The United Nations Centre for Human Settlements emphasizes that **good urban governance** is characterized by sustainability, decentralization, equity, efficiency, transparency and accountability, civic engagement and citizenship (UNCHS, 2000).

According to Gurran et al. (2007), many local authorities in the sea change contexts in Australia, have been unprepared for the sudden increases for demand for new housing and tourist developments in their localities and have inadequate controls in place. As impacts on biodiversity, habitat and landscape values are most significant during the early stages of development, it is important to support smaller local authorities in setting up planning controls and assessment procedures.

**OBJECTIVE: CAN GIS HELP TO UNDERSTAND PEOPLE’S PERCEPTION OF PLACE?**

Geelong is one the main regions in Australia for accommodating population growth in the next decades. G21 forecasts more than 110,000 new inhabitants in the region by 2031, a change of almost 40% above current population level. In this context, an essential question that has to be made is “Is it possible to plan and manage the growth of Geelong region without losing community character and environmental values?”. 
Peoplemap is an initiative sponsored by Deakin University, Geelong Performing Arts Centre and Barwon Water. As a first step in addressing the question posed above, peoplemap project is focused specifically on understanding people’s perceptions and preferences toward Geelong Region, providing individuals with opportunity to broadcast their voice and possibly influence their future. The focus of the research is on the following questions: (1) What are the preferences of people in the region? What do they like and what do they need? (2) How much engagement do people have in the region? (3) How much willingness do people have to contribute to the region?

In this paper we address an additional question to peoplemap research: Can we map landscape features and landscape values in an integrated manner into a GIS to achieve a better understanding of resident’s perceptions on their geographies?

**METHODOLOGY: MAPPING LANDSCAPE FEATURES & VALUES IN GIS**

Peoplemap methodology involved the following steps: (1) based on the “Vox Populi” technique (Schlozman, 2003), interviews were audio/video recorded with answers for the three questions described in the objective session of this paper; (2) interviews were transcribed and de-identified; (3) transcripts were explored through thematic analysis method, which provides a platform for qualitative interpretation of the concepts and for structuring a coding frame (Fereday and Muir-Cochrane, 2006); (4) tabular statistical analysis were developed, quantifying surveys of the results of thematic analysis, which involves indicating frequencies in individual codes and themes. This stage has been described in the report entitled “The voice of the people: The peoplemap pilot.” (Asher et al., 2011). Three areas were compared, Ocean Grove, Bannockburn, and Corio, as representing a coastal, a rural, and an industrial area, respectively. In this approach, the coding frame was grouped by locality in a tabular manner and analysed by simple statistical frequencies. Important to notice that this way of grouping answers heavily rely on administrative defined boundaries, which not necessarily relates to people perceptions of space. The result is that each locality has been related to one main code for each interview question. For example, the coastal town identified the ocean or the beach as its best characteristic. The industrial area, on the other hand, found the proximity to everything (high accessibility) as its best asset.

The GIS approach proposed in the present paper changes this setting. The coding frame is mapped, geographically tagged to the locations where the respondents live. The subsequent grouping of answers, therefore, is not based on the name of the suburb, which is mainly an administrative defined boundary. The grouping results from geographical clustering analysis, based on spatial similarities/differences, relative proximity/distance, etc. In this case, spatial boundaries are derived from the analysis of the answers and their locations, which is the opposite of the previous approach adopted in peoplemap (tabular statistical analysis).

To test such an approach, we focused on the first and second questions of the interviews: (1) where do you live, which provides the georeference of the respondent; and (2) What do you like most about the place you live, which provides description of landscape features and values. 61 out of 165 interviews of peoplemap, are related to respondents that stated landscape elements, such as ocean, rivers, parks, scenery and open space as the best assets in their place of residence. 32 out of 61 were specifically related to the ocean. In this paper we are focused on different perceptions of the ocean by residents of the region.

**RESULTS AND CONCLUSIONS**
Conversion from unstructured text to structured tables and maps in GIS is a non-trivial task. In this paper we assessed the use of GIS to map landscape values related to landscape features and their different locations. In conventional GIS, the coastline is usually represented by a homogeneous border line; and distance from the coast is conventionally obtained by a function which creates a homogeneous buffer around and along the coastline. However, results from mapping peoplemap study showed that the relation of communities towards the ocean, and the feelings of proximity to the ocean significantly change along the coast in the Greater Geelong Region.

(a) Greater Geelong: Geographical clusters and buffer related to the ocean
The ocean has been characterized as “the beach” or as “the bay” by respondents of the peoplemap research, and these two classes are clearly separated/clustered geographically (Figure 1.a). Important to note that the two classes imply different uses of the ocean. The first perception of the ocean – the beach – is related to the ocean in the small towns of the regions, with bathing, water sports, natural reserves, unpaved tracks, etc (Figure 1.b). The second perception of the ocean – the bay – is related to the waterfront in the centre of Geelong, with a more urbanized use of the coast, such as paved paths, restaurants, urban parks, etc (Figure 1.c). Most of the respondents who indicated proximity to the ocean as one of the main positive aspects of their place of residence live within a distance of 2,500 meters from the coastline. However, there are some important exceptions to this rule. First, some suburbs located inland, significantly away from the coast, still identified proximity to the ocean as an important aspect of their place of residence, such as Belmont and Leopold. This can be a consequence of the perception of “far” or “close” in a country of immense dimensions, and also an affluent population who heavily rely on the use of private transportation. Also, this can be the result of the iconic image of the coast for the Australians. Armstrong Creek, for example, is a new development extending from the current urban border on the south part of Geelong. It is an inland development, around 15 to 20 km from the ocean. Advertisements for real estate sales in the new development use images of “beach life style”. Second exception to the homogeneous buffer from the coastline, is the fact that residents from Corio suburb have not identified the ocean as an important and positive aspect in their neighbourhood, although most of them are within the buffer zone “close” to the coast. A look at other geographical features in the suburb shows that there is a barrier separating the community from the ocean, composed by a main highway and an industrial zone (Figure 1.d).

The present paper presents the preliminary findings of the research on mapping into a GIS platform different landscape values associated to the same landscape feature “the ocean”. Although being very specific and still limited in terms of its application to planning purposes, the exercise developed here demonstrated the potential of GIS to represent not only cartographic space, but also the sense of place of a region. The simple, homogeneous and geographically accurate line representing the coastline of the Greater Geelong region assumed a complex embodiment when different meanings and different spatial relations were attached to it, representing not only a geographical delineation but also people’s perception. Such understanding of people’s sense of place and attachment should be used in future
plans and projects in the region, including community participation and stimulating community development.

Policy priorities for coastal management including environmentally and culturally sensitive areas should develop appropriate urban design controls to protect and promote aspects of place important to local residents and other stakeholders, and also implement specific mechanisms to engage local stakeholders in coastal decisions. Understanding and trust among community, government and other organizations can be built from this.

Further step in this research will address the mapping of different landscape features and their associated landscape values, completing the approach of question 2 of peoplemap project. Moreover, it will work on mapping responses from questions 3 and 4, which are related to problems in the region identified by residents (negative perceptions) and willingness of residents to engage in solving problems or improving current situation. From the complete research, place attachment and place engagement can be investigated from a spatial perspective, potentially uncovering important patterns to assist the planning in the region.

REFERENCES


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CARTOGRAPHIC NARRATIVES OF LAUNCESTON: AN INVESTIGATION INTO THE BOUNDARIES OF MAPPING IN ARCHITECTURE

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ABSTRACT

Maps mark out boundaries and act as mechanisms to orientate ourselves spatially and conceptually. Traditionally maps were understood to provide a faithful, neutral and universal representation of the world; however contemporary cartographical theories challenge this view of maps maintaining that they are neither fixed nor objective. Moving beyond the familiar codifications of maps within the field of architecture, this paper explores mapping practice as propositional, provisional, situated and performative.

The city of Launceston forms the catalytic testing ground for explorations conducted by final year architecture students at the University of Tasmania. Emphasising multiple unfolding experiences of place rather than fixed representations of space, their maps attempt to negotiate between the invisible and the visible, memory and experience, self and ‘other’. The design research inquiries employ a broad range of techniques and approaches including textual layering, collage, maquettes, walking and photographic narrative.

Weaving the threads of these investigations together the paper concludes by speculating on the value of expanding the boundaries of map-making within architectural practice and more specifically within architectural education. What is a ‘map’? What are our embedded codifications and can or should these be challenged? What shifts emerge when we emphasise mapping as practice rather than maps as artefacts? What is the relationship between mapping and the products of our architectural imagination? The speculations are open-ended but lead to propositions for future research and pedagogical initiatives.

INTRODUCTION

Maps mark out boundaries and act as mechanisms to orientate ourselves within the world spatially, psychologically, politically, socially and ethically (Ljungberg 2009). They are not merely abstractions of ‘reality’, but are also instrumental in its creation. We map the world in order to ‘see’ the world and through this vision we then re-construct the world.
Within architecture maps and mapping have particular potency. Conventional cartographic representations are a familiar component of the architect’s toolkit. They are typically one of the first devices through which we seek to understand the physical characteristics of the ‘site’ and the broader terrain. Architects are similarly conversant with mapping as practice, distilling these projections through further abstraction to reveal ‘hidden’ qualities. From Giambattista Nolli’s familiar abstractions of public space highlighting figure and ground to the seminal work of Kevin Lynch on mental maps, or the more peculiar mathematical orientations of Hillier and Hanson’s spatial syntax, numerous mapping practices have become part of the lexicon of architecture as a means to explore the texture of the urban landscape.

In this paper, however, our interest shifts from a focus on mapping as a means to interrogate the physical terrain to its role in framing the conceptual terrain. Recognising architecture’s position as a ‘mediated practice’ (Cairns 2005) and the relationship between idea and artefact through the medium of drawing (Pedersen 2008), we ask how does mapping inform, extend or limit our imagination? What is a ‘map’? What are our embedded codifications and can or should these be challenged? What shifts emerge when we emphasise mapping as practice rather than maps as artefacts?

We start with a review of the field of critical cartography before illustrating a series of cartographic narratives of Launceston undertaken by final year Master of Architecture students at the University of Tasmania. The paper concludes by speculating on the value of expanding the repertoire of mapping practices within architectural education.

CRITICAL CARTOGRAPHY

Conventional maps mark out spatial relationships between objects and places at a single point in time and from a single (largely anonymous) point of view. They are generally assumed to provide a faithful, neutral and universal representation of the world. Critical cartography theories challenge this view of maps as neutral, abstract artefacts, re-presenting maps instead as propositional, provisional and situated way-finding devices (Cosgrove 2006, Crampton 2009). Contemporary critique of maps and the mapping process is underpinned by theory from a variety of disciplinary influences - from geography, philosophy and the social sciences to psycholinguistics, politics and community activism.

Recent challenges to the hegemony of normative cartography have focused on mapping as a performative act, drawing on the work of the Situationist International movement, led by Guy Debord in the 1950s and 60s, and the practice of walking as a means to expose the extraordinary through the ordinary (Vaughan 2009, Bassett 2004, Wiley 2010). Walking also introduces a single (but constantly moving) point of view to the mapping process, responding to de Certeau’s criticism of the ‘voyeur-god’ perspective of conventional urban mapping practices and representations (Mitchell 2008).
Critical cartography also aims to make explicit the contexts within which maps are produced and consumed, and to interrogate the processes of mapping itself. Influenced by Foucault and Derrida’s interrogation of maps as sites of power and knowledge, and Deleuze and Guattari’s contention that maps have multiple entry-ways, contemporary critique contends that rather than singular, fixed representations of space, maps are “… a set of winding and contested journeys through philosophical and practical terrains…” (Kitchin, Perkins and Dodge 2009, p.23).

Key to this critical theory is a view of cartography as not just the production of an artefact (the map) but as a process in itself (the mapping). Seminal work in the 1980s and 90s by theorists such as geographer JB Harley introduced new ideas to the discipline of cartography, situating maps as social documents that need to be understood in context, and arguing that power and ideology are intrinsic to both mapping practices and the map itself (Harley 1989). A hegemonic relationship between mapmaker and map-reader is reinforced throughout the mapping process. Drawing upon cognitive linguistics and Barthes earlier work in semiotics, Krygier and Wood (2009) assert that maps are propositions and, as such, are ideologically loaded (intentionally or otherwise) to convey particular messages. Traditional cartography uses systems of symbols and codes to convey information. The mapmaker decides what information is to be included and how it is to be presented, and the subsequent interpretation of the map, as in the reading of a written text, depends upon the reader’s knowledge of the symbols and conventions. As a result, maps are inherently invested with a relationship of power. Critical cartography reveals and challenges these embedded codifications and power relations, proposing alternative modes of practice based on contemporary understandings of maps and the mapping process.

Post-representational theories of critical cartography go further, moving beyond the accepted premise of maps as both epistemological and ontological, and challenging the fundamental binary distinctions which frame our (Western) understanding of the world (Del Casino and Hanna 2006, Crampton and Kygier 2006, Krygier and Wood 2009, Kitchin et al 2009). In doing so, investigations in critical cartography theory have moved ‘…from what the map represents to how it is produced and how it produces work in the world…’ (Perkins 2006, quoted in Kitchin et al 2009, p.16).

If, as Hurni and Sell (2009, p.324) argue, the ‘starting point’ for a map is a definition of its aim and audience, then how does this translate to the architectural context? Architects have always used maps – to locate projects and as the basis for site analysis - and have also produced their own forms of map – such as diagrams, plans and elevations - to help make sense of their schemes and to represent them to others. However, the influence of temporal and phenomenological aspects, although widely recognised as fundamental to the architectural experience, is not adequately represented through such conventional forms of mapping. There have been numerous efforts challenging normative methods of representation within architecture to address the temporal dimension, from Bernard Tschumi’s notational devices in the Manhattan Transcripts in the mid 90s to more recent investigations into mapping spaces of movement, such as the journey between places (Kamvasinou 2010, Mitchel 2008), or the shifting, unstable ground of the Asian megacity (Cairns 2005). This
research draws inspiration from such projects as well as the numerous initiatives within the fields of geography and contemporary art that explore the “… geographies of human experience and place …” (Wickens Pearce 2008, p.17; see also Harmon 2004, 2009).

MAPPING LAUNCESTON

This paper presents a selection of mapping practices undertaken by final year Master of Architecture students at the University of Tasmania in semester 1 2011. The project entitled “Mapping an-other place: cartographic narratives of Launceston” encouraged students to explore mapping as a creative, political and participatory practice. Although students were provided with an initial reading list covering key texts in the field of critical cartography, the research parameters of the project were open ended. The students were tasked with identifying particular themes of interest that they wished to ‘map’ and developing appropriate methodologies informed by alternative cartographic mapping practices. Launceston, as a familiar context, forms a catalytic testing ground for these research explorations in the field of critical cartography; however, these maps are not generated through place, but situated in place. Place is a complex, subjective, multifaceted concept, and these maps attempt to capture some of what Launceston as a place means in the eyes of these students.

The Thickened Landscape

Memory is a popular theme in the field of cartography. The conventional map seems to convey knowledge and authority about the place that it documents, but as anyone can attest, maps barely scratch the surface of the intimacy and richness of personal history that a place can hold. The map is made textual and performative in Wendy Robert’s work, as she attempts to search for the hidden layers of the participants’ engagement with Cataract Gorge - a popular and historically significant nature recreation area in the heart of Launceston. The act of questioning and leafing through memories for accounts of the Gorge are as much a part of the map as the physical map itself. Drawing on published historical accounts, contemporary travel blogs and narratives elicited from friends and family, an alternative form of topographical map is constructed representing a ‘thickened landscape’ of memory (Fig 1). Employing the familiar cartographic devices of the ‘layer’ and the ‘contour’ to locate the selected narratives in time and space, the map reveals the variety in locational intensity of responses over time and the spatial characteristics of these narratives, from the intense activity around the lower Gorge of the 1880s to the linear movement paths of tourists.
Nevertheless, the location in space and time comes to dominate to the exclusion of other possible ‘cuts’ through the data, privileging objective over subjective interpretations of the narratives. Constrained by the “inherent biases of map-making” and the pervasive quest for neutrality, there is a fear of exerting any form of ‘control’, leading the author to question the possibility of creating “a collective representation of individual, affective responses to place through cartography.” The ‘affective’ response is somewhat obscured in the final artefact; however, this is arguably a condition of financial, technical and time limitations in realising the performative aspirations of the map as an interactive and dynamic topographic narrative, rather than a condition of cartographic practices themselves.

Beautiful Lies, Discordant Space and the Unease of Being

In direct contrast, Alisdair McPhee deliberately pursued an interest in mapping experience through the insertion of personal bias in a series of experiments conducted in the Quadrant Mall in central Launceston. The research focused on two-dimensional modes of
representation, specifically the architectural section, and the relationship to three-dimensional space. Inspired by cubist theory and the work of David Hockney, early investigations explored the use of photographic collage as a means of deconstructing and re-codifying space through multiple continuous perspective (Fig 2 part). Challenging the neutrality of conventional maps with a view from ‘nowhere and everywhere’, these collages are simultaneously embodied and disembodied with a view from ‘somewhere and everywhere’. Since these collages are constructed from memory, they are as much about the perception of reality as its representation.

In subsequent artefacts, an interesting shift emerged with a focus on the discontinuity between representation and perception, between the two-dimensional ‘sectioning’ of space and the experience of place. The sectioning was created through a series of photographs taken from a single spot and pivoting through 360 degrees. Following a series of experiments in distorting and folding the images to create a continuous perspective, attention turned to the ‘voids’ between the images (Fig 2 part). These voids display “the inherent subjectivity and erosion of truth that lies between representation and reality”. More importantly, however, they offer the possibility of an ‘interactive decoding’ or the cognitive performance of the
map, through creating ambiguity when the reader engages in ‘closing the narrative’ (Wickens Pearce 2008, p.29-30).

An Absent Threshold between Maps and Place

Guy Edwards pursues a similar interest in the manifestation of the invisible. It forms both the subject of his investigation into ‘absent space’ within the city, as well as the foundation for his methodological inquiry in his critique of the ‘absence of experience’ associated with traditional map-making techniques. Here, experience is mapped along two dimensions – the cognitive, informed by the ‘mental maps’ of Kevin Lynch, and the perceptual, focusing on the performative act of walking as a dialogue between physical movement and the associated meanings of place. Participants were asked to complete a self-directed photography task recording their perceptual, experiential narrative of a designated area before describing their cognitive representation of ‘absent space’ through text and diagram.

Two ‘patterns’ emerged from the analysis distinguished by the relative influence of the pre-conceived image over the embodied perception of place. Arguably the distinction between ‘open’ and ‘closed’ patterns reduces the complexity of the experiences. This is further complicated by the conflation of the notion of ‘absence’ to the physical ground of the laneway. The evocative series of individually coded, inverted images from the self-directed photography task (Figure 3) are visually suggestive of the notion of absence, but again risk slipping into prefigured categorisations. Is this a map of absence, or experience, or even more problematically the experience of absence? The project reveals the difficulty of looking directly at a concept that, by definition, remains beyond focus. More generally, however, the project again illustrates the persistence of the quest for neutrality through the self-imposed positioning of the researcher (or more specifically map-maker) ‘outside the frame’ in attempting to map the experience of ‘others’.
SUMMARY

The research outlined in this paper has explored the boundaries of mapmaking informed by contemporary theory in the field of critical cartography and innovative mapping practices in geography and contemporary art. Mapping location and spatial relationships is the generally accepted province of conventional cartography, but many reports conclude that alternate cartographic methods can create far more complex representations of relationships to place. What opportunity does this present for the field of architecture?

In particular, we are interested in the relationship between mapping and the products of our architectural imagination. This requires a shift from thinking about the map as artefact to mapping as practice, and framed the intent of the studio “Mapping an-other place: cartographic narratives of Launceston” with final year architecture students at the University of Tasmania. Students were encouraged to resist formulating a vision for a final ‘map’ for the majority of the semester. Nevertheless, the constraints of the studio in conforming to the norms of assessment tasks tended to shift the emphasis towards the production of something tangible. In most cases the final artefacts were not intended to be the culmination of the cartographic process, considering the ‘performance’ of the map with each new interaction.
between artefact and viewer/user. Again, however, the complexities of ‘capturing’ the performative dimension of the maps within the structure of the assignment task tended to limit innovations in this area.

Identifying a meaningful definition of a map also proved elusive. Although agreement tended to converge around a loose definition of ‘a graphic representation of a proposition located in space’, the lively debates around this topic provided more complex and nuanced understandings. Reviewing the students’ journals for the studio, it is evident that the project has resulted in a shift in thinking about maps from fixed and objective constructs to fluid, mutable representations dependent upon the personal knowledge and experience of both mapmaker and map-reader. Despite this, it is interesting to note the difficulty of resisting the pervasive quest for neutrality, particularly in the desire to represent the unique experience of ‘others’ free from the inherent bias of the ‘mapmaker’.

Arguably the most successful projects were those that focused on mapping as a self-reflexive practice to broaden understanding of place, both spatially and temporally, and to explore the complexities and ambiguities of the relationship between experience and representation. Building on this premise, future studios will focus more explicitly on this aspect, as well as more directly investigating the role of mapping as practice and maps as artefacts in the development and communication of architectural design propositions within the context of a design studio.

REFERENCES


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THE WATER HARVESTING LANDSCAPE OF BUDJ BIM AND LAKE CONDAH: 
WHITHER WORLD HERITAGE RECOGNITION

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ABSTRACT
In July 2004 the Budj Bim National Heritage Landscape was inscribed onto the National Heritage List. The place accorded with the criterion of A. Events, Processes (in demonstrating a place of Indigenous-European colonization conflict), B. Rarity (in demonstrating the context, historical and philosophy of benevolence of Governments to Indigenous people), F. Creative or technical achievement (in demonstrating technical accomplishment in construction the system), and, I. Indigenous tradition (in demonstrating longevity and continuity of cultural practices). Such affords Budj Bim, that hosts a unique Indigenous water harvesting and aquaculture infrastructure system dating some 7,000-10,000 years within a country that the Gunditjmara have managed for some 20,000-50,000 years, national standing. Within the lands gazetted is a complex and multi-faceted system that would today be categorised as a major integrated landscape planning and catchment management scheme that includes demonstrable major site engineering, hydraulic engineering, and aquaculture and water management scientific evidence and process knowledge and application.

Now listed, continuing objectives of the Gunditjmara, the custodians of the Budj Bim country, and a majority land owner of most of the Lake Condah complex, is to restore and heal this landscape, bring back its pre-colonial destroyed water systems and cultural landscape, but also progressively move towards a world heritage nomination for the landscape.

This paper considers the position of the Budj Bim National Heritage Landscape within National Heritage List and World Heritage List criterion, proposing a debate about merit and continuity of Indigenous science, technologies, and process. In doing so, it also reviews World Heritage places that are Indigenous-rich in their essence and values to better appreciate the position of both Budj Bim and recognised Indigenous water technologies and knowledge systems within these listings to better appreciate and inform this debate.

KEYWORDS
Lake Condah, environmental planning, world heritage, Indigenous systems, Gunditjmara, Budj Bim

INTRODUCTION
In 2004, under the new Australian heritage regime that replaced the former Australian Heritage Commission and its registrar, Minister Kemp inscribed the Budj Bim National Heritage Landscape (BBNHL) into the new National Heritage Register. The BBNHL became the first Indigenous
landscape included in this Register and it remains today the foremost Australian Indigenous landscape because of its unique assemblage of tangible and intangible evidence and values.

The only additional Indigenous landscapes inscribed have been the Brewarrina Aboriginal Fish Traps (Baiames Ngunnhu) inscribed in June 2005, Kakadu National Park inscribed in May 2007 [noting that Kakadu National Park has been previously inscribed on the World Heritage List in three stages - 1981 (Stage 1), 1987 (Stages 1 and 2) and 1992 (Stages 1, 2 and 3)], the Uluru-Kata Tjuta National Park that was inscribed in May 2007 [noting that the Park was inscribed on the World Heritage List in two stages, initially for its outstanding universal natural values in 1987 and then for its outstanding universal cultural values in 1994], and Ngarrabullgan [Mount Mulligan] in Queensland inscribed in May 2011.

To the Gunditjmara, the traditional people and custodians of a ‘country’ that stretched across most of the lower south-west of the Western District of Victoria, embracing the localities of Portland, Hamilton, and Lake Condah today, this progressional discourse is about healing their ancestral responsibilities within the constructs of contemporary scenic and significance value systems. To appreciate this context it is important to comprehend the new Commonwealth heritage regime and the listing, then to comprehend the tangible and intangible values extant at the place, before understanding why, how and under what basis this progressional discourse is occurring.

This paper charts the National Heritage listing and deliberations in train as to a possible World Heritage nomination.

**NATIONAL HERITAGE AND THE BUDJ BIM HERITAGE NATIONAL HERITAGE LANDSCAPE**

The Australian National Heritage regime was introduced in 1993 with an intention to rationalise the huge inventory of registered heritage places that had been accumulated under the previous Australian Heritage Commission. To both the Commission, and the present Australian Heritage Council, established under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, heritage comprises all the components that constitute Australia's identity - our spirit and ingenuity, our buildings, and our unique, living landscapes. Such is derived from our past, our living systems and aspirations, our patterns of lifestyle, and the narratives and artefacts that we are divesting to our future generations.

To assist in the identification and quantification of these components, heritage criteria, thresholds, and statutory listings were assembled to inform the identification and protection of places we, as an Australian community, wish to keep and pass to future generations. Such criteria, thresholds and listings are now the primary vehicles through which the heritage values of listed places are articulated, and guided in the formulation of their management policies. The criteria is set out in Table 1.

Table 1
Australian National Heritage Criteria

a. the place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history
b. the place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history
c. the place has outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history
d. the place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of:
   i. a class of Australia's natural or cultural places; or
   ii. a class of Australia's natural or cultural environments;
e. the place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group
f. the place has outstanding heritage value to the nation because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period
g. the place has outstanding heritage value to the nation because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
h. the place has outstanding heritage value to the nation because of the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history
   i. the place has outstanding heritage value to the nation because of the place's importance as part of Indigenous tradition.

The cultural aspect of a criterion means the Indigenous cultural aspect, the non-Indigenous cultural aspect, or both.


The National Heritage List comprises a list of places with outstanding natural, Indigenous or historic heritage value to Australia. The Council assesses if a nominated place possesses one or more of the nine National Heritage List criteria heritage values and advises the Minister for the Environment, Heritage and the Arts if it satisfies their assessment.

In terms of Budj Bim, the landscape and its nomination are geographically broken into two portions – the Mount Eccles portion and the Tyrendarra portion – but both are integral within the Gunditjmara perspective as being their Budj Bim landscape albeit possessing different successful criteria applicability. These two portions are depicted in the map associated with the National Heritage list gazettal documents.

The Mount Eccles portion was deemed as satisfying criteria a, b, f and i and the Tyrendarra portion satisfied criteria a and f. The Minister for the Environment and Heritage, David Alistair Kemp, on 20 July 2004, concluded that he was satisfied that Budj Bim possessed National Heritage value or values and pursuant to section 324J of the Environment Protection and Biodiversity Conservation Act 1999 instructed the places to be listed in the Schedule in the National Heritage List. Such occurred on the same day as the inclusion of the Royal Exhibition Building National Historic Place in Melbourne and the Dinosaur Stampede National Monument near Winton in Queensland.

In the case of Budj Bim the landscape was considered as possessing “outstanding heritage value ... because of the place's importance in the course, or pattern, of Australia's ... cultural history” (criteria a). Such conclusion was drawn from the physical evidence of the aquaculture systems and their
associated construction, use, continuing maintenance together with the place being a focus of cultural gatherings, Indigenous eel and fish cultivation practices, and the permanent society that sustained these systems resulting in stone architecture, aquaculture systems, and during colonisation period a landscape to launch attacks and seek refuges from the armed insurgence of European settlers and militia (http://www.environment.gov.au/heritage/laws/publicdocuments/pubs/105673.pdf. accessed 1st August 2011).

Second, the Budj Bim landscape was deemed as possessing evidence of “outstanding heritage value ... because of the place's possession of ... rare ... cultural history” (See Table 2, criteria b). This opinion was drawn the Commonwealth uniquely used its constitutional powers to vest land to an Aboriginal community through the instrument of the 1967 referendum that enabled the Commonwealth to enact the Aboriginal Land (Lake Condah and Framlingham Forest) Act 1987 because the Victorian Government was unable to pass the same enabling legislation through its Upper House.

Third, the Budj Bim landscape was deemed as possessing evidence of “outstanding heritage value ... because of the place's importance in demonstrating a high degree of ... technical achievement at a particular period” involving the construction, maintenance and management of a “system of ponds, wetlands, channels, weirs and fish traps in the Mt Eccles/Lake Condah area” (See Table 2, criteria f).

Fourth, the Budj Bim landscape was deemed as possessing evidence of “outstanding heritage value ... because of the place's importance as part of Indigenous tradition” directly linked to the place and vulcanism as directly contained in Indigenous revelation narratives (See Table 2, criteria i).

In terms of the Mount Eccles portion and the Tyrendarra portion the above justifications hold application where the former was listed under criteria a, b, f and i and the latter was listed only under criteria a and f.

The most comparable Indigenous landscape in Australia that possesses pre-contact aquaculture systems is the Baiame’s Ngunghu being the Brewarrina Fish Traps on the Darling River in north-western New South Wales. This place also demonstrates advanced knowledge of engineering, physics, water ecology and animal migration to catch large numbers of fish in traps and is also steeped in legend. The fish traps, known as Ngunghu to the local Ngemba people, demonstrates how an ancestral being designed and created an important fishing venture that supported many Aboriginal communities in the Brewarrina region.

The Brewarrina fish traps continue to be visible in the Darling River today and were included in the National Heritage List on 3 June 2005 as satisfying criteria b, f, g and i (http://www.environment.gov.au/heritage/publications/about/pubs/national-heritage-brewarrina.pdf, accessed 1st August 2011).
The rationale of Brewarrina’s inclusion is that it meets criteria b, f, g and h demonstrating the same criteria for both Budj Bim and Baiame’s Ngunnhu with the only difference being the applicability of criteria g that concludes that “the place has outstanding heritage value ... because of the place's importance as part of Indigenous tradition” has been documented whereas it is a cultural realm that the Gunditjmara have been reluctant to explain and document to the Australian community believing it is their cultural knowledge at this stage and has no formal bearing upon a National Heritage listing nor a World Heritage nomination (http://www.environment.gov.au/heritage/laws/publicdocuments/pubs/105778.pdf, accessed 1st August 2011.).

_Baiame’s Ngunnhu_ is one of several demonstrations of Indigenous pre-contact hydraulic engineering expertise in Australia. Such mechanisms were directly linked to resource harvesting activities, often resulting in one community managing the resource but enabling regional sharing often necessitating the construction of ‘neutral territory’ and a codified set of sharing operational rules together with a distinctive cultural Dreaming story about its creation, rationale and management expectations as documented in the Baiame Ngunnhu example.

**THE BUDJ BIM LANDSCAPE: VALUES AND MEANINGS**

The BBNHL, around the Lake Condah and Mt Eccles area of south west Victoria contains one of Australia’s largest and oldest aquaculture systems which dates back thousands of years. Built on a volcanic lava flow formed by the eruption of Mt Eccles (_Budj Bim_) around 30,000 years ago, the landscape also contains permanent stone houses and modified wetlands. The extensive development of channel systems, fish and eel traps demonstrates that a sizeable Aboriginal community lived in the area and systematically farmed eels on a large scale. This provided the basis for the development of a settled society. The Mt Eccles/Lake Condah system is unique in Australia, and potentially on a world scale.

As landscape planners, the Gunditjmara continue to possess technical knowledge in freshwater aquaculture and hydraulic engineering, and have more recently engaged consultant engineers, natural resource management scientists and other technical expertise to corroborate and inform their own management strategies for land now under their ownership. Arising from some 60,000 year of occupancy, this knowledge and expertise includes sub-expertise specializations in architecture, sustainability and natural resource management curatorship (Gunditjmara with Wettenhall 2010; Reynolds 2005).

The beginning of this landscape, to the Gunditjmara, and its environment rotates around ancestral beings – part human, part animal – who brought life to this barren expansive continent (Gunditjmara with Wettenhall 2010). Their _Dreaming_ stories record the journeys of these ancestral beings whom left narratives or physical representations in the landscape, as part of this transformative role. Temporally deep in the origins of the landscape, these stories are also integral in intermittent
reappearances that have cast new transformations and responsibilities into the landscape. As Eileen Albert, a Gunditjmara women, recounts,

*In the Dreamtime, the ancestral creators gave the Gunditjmara people the resources to live a settled lifestyle. They diverted the waterways, and gave us the stones and rocks to help us to build the aquaculture systems. They gave us the wetlands where the reeds grew so that we could make the eel baskets, and gave us the food-enriched landscape for us to survive* (Albert in Gunditjmara with Wettenhall 2010: 7).

In this setting, every aspect of the Budj Bim environment and landscape holds some meaning, sense of purpose and contains a library of oral narratives about Indigenous science and history.

To the Gunditjmara, the ancestral being *budj bim* is integral to this environmental creation. His presence resides in Mt Eccles, an erroneously colonial rocky outcrop that celebrates English aristocrat Eeles, where the doomed form of the mount is *budj bim*’s forehead. With the eruption of his head, lava spat out and flowed through his teeth in endless streams of red lava, creating the Tyrendarra lava flow. In the Dhauwurd wurrung language of the Gunditjmara, *budj bim* means “high head” and *tung att* means “teeth belong to it”. *Budj bim’s* journey and transformative acts link the Serra Range at Gariwerd (The Grampians) to the desolate isle of Deen Mar (Lady Julia Percy Island) in Portland Bay to Cape Bridgewater to the west, with Lake Condah in the centre, all of which mirror the lava flows that were released from *Budj bim* and nearby Tappoc (Mt Napier). Included in this lava field is the volcanic cone of Tappoc, and the foreboding granite escarpment of Mutt Te Tehoke (Mt Abrupt) that watches southwards over much of this landscape. *Deen Mar*, at the far southern and lowest end of the lava flow, is the final resting place of the spirits of the Gunditjmara people when they die. The head of *budj bim* itself is analogous to a Eurocentric sacred place because, to the Gunditjmara, it is a place that only law men or elders may stand upon and venture to, and in their absence it is guarded by the silent sentries of *gneering* or weeping she-oaks (*Allocasuarina verticillata*) (Bell pers. comm., 2010; Saunders pers. comm., 2010; Gunditjmara in Wettenhall 2010, pp.6-7; McNiven & Bell 2010).

Within this country, formerly a recent volcanic plain, is an extensive dendritic watercourse system that flows north-south often resulting in low-lying and seasonally perennial swamps, lakes and depressions. The undulating volcanic plain composed of weathered basalt rock and soils, of 1.5 to 4 million years, affords rich acidic native grassland and introduced perennial pastures to support extensive communities of herbaceous mammals and sheep and cattle respectively (Carr et al 2007). The most recent of these volcanic upheavals occurred some 20,000-30,000 years ago at Mt Eccles, causing the Tyrendarra lava flow that advanced west and south of this volcano over some 50km reaching under Portland Bay today. This lava flow progressively became distorted into hummocks and depressions, resulting in extensive fields of loose or interconnected small-large scoria either heavily air-pocked or dense hard rock. Central in this flow route was the formation of Lake Condah.
The Gunditjmara witnessed these volcanic eruptions; a major transformation of their country. Their response, in terms of survival necessitated a shift from a semi-sedentary hunter-gather society to a permanent society based upon intensive aquaculture production arising from their mastery of hydraulic engineering principles and their manipulation of this post-lava flow landscape. The end result, after some 25,000 years of landscape planning activity, and some 5,000-7,000 years of lava flow manipulation, was a semi-permanent community, dependent upon and culturally responsible for the intensive production and harvesting of fish and eel through the conscious acts of engineering an intricate hydraulic system to support aquaculture production. Semi-permanency was aided by the formulation of unique micro-climatic responses including architecture from stone and vegetation, their new-found role as a core food supplies and sharer/trader to adjacent countries and the wider region, and by their spatial and physical neutrality of land ‘ownership’ (Builth 2002, 2003; Clark 1990a, 1990b; Coutts et al 1978; Lourandos 1980; Sutton 2004; Williams 1988; Jones 1993).

The reliable rainfall, with falls mainly in the European winter and spring, results in an average annual rain fall of 700-800mm with an average daily temperature of between 12-26°C in summer and 5-13°C in winter. This mixture of characterizes in an often bleak, seasonally wet landscape and environment. The latter hosts a suite of water-based vegetation communities stretching from perennial and ephemeral wetlands to the Stony Rises woodlands and Stony Rises Shrubland. These botanical categories dominated by Blackwood (Acacia melanoxylon), Manna Gum (Eucalyptus viminalis), Black Wattle (Acacia mearnsii) and Cherry Ballart (Exocarpus cupressiformis), with scattered grassy patches amidst a majority of dense scrubland and herbaceous vegetation (Carr et al 2007).

All this knowledge and expertise was suddenly cast aside in the 1840s-60s, and again in the 1930s-50s, when colonial pastoralism, intensive settlement policies, guns, small-pox, uncontrolled fire, and the European protectorate and religious indoctrinal missions ‘invaded’ the landscape resulting in death, dispossession, cultural-knowledge disintegration, ‘natural’ landscape transformation including extensive drainage measures, and the transposition of conventional European science onto the environment. During these periods, and over the wider 160 years, sheep invaded the pastures, the Gunditjmara were herded, split, died of disease, and knowledge and religion-retrained despite attempts to fight against this onslaught (Gunditjmara with Wettenhall 2010; Context 2000; Dawson 1881; McNiven & Bell 2010). These periods witnessed the disintegration of these traditional aquaculture systems, the imposition of Western knowledge, science and land systems, and the cultural dispossessions of land, spirit and purpose.

The last 25 years have witnessed a major shift in these acts of intellectual and physical planning. The former Lake Condah Mission Station has been returned to the Kerrup Jmara Elders Aboriginal Corporation, additional properties progressively acquired and transferred to the Corporation, and Crown land whether reserved (at Mt Eccles National Park) or unreserved transferred to the Corporation openly or under deed embodying management and access conditions (Context 2000).

**TOWARDS A WORLD HERITAGE NOMINATION**
The World Heritage Convention was developed to ensure the “proper identification, protection, conservation, and presentation of the world’s heritage,” was adopted by member states of UNESCO in 1972. The Convention seeks to recognise that the protection and conservation of the World’s natural and cultural heritage can contribute significantly to sustainable development. The Convention aims to “identify, protect, conserve, present and transmit to future generations cultural and natural heritage of outstanding universal value.” Categories, criteria and conditions have been developed to guide the nomination process and evaluation of the outstanding universal values of areas nominated for inscription on the World Heritage List.

To be included on the World Heritage List, sites must be of outstanding universal value and meet at least 1 out of 10 selection criteria. This evaluative criteria operates on the same system as the Australian National Heritage listing criteria being that 1 or more criteria may be relevant and applicable, but that a place may simply satisfy only 1 criteria or a suite of cultural and or natural criteria like Kakadu National Park. Until the end of 2004, World Heritage sites were selected on the basis of 6 cultural and 4 natural criteria. With the adoption of revised Operational Guidelines for the Implementation of the World Heritage Convention, only 1 set of 10 criteria exists.

When reviewing the World Heritage List (http://whc.unesco.org/en/list), there is only one comparable place included so far that possesses Indigenous cultural values and associations together with evidence of aquaculture systems. This place is the Saloum Delta in Senegal, west Africa, of some 145,000ha in extent, that was inscribed in 2011 under criteria iii, iv and v (http://whc.unesco.org/en/list/1359, accessed 1st August 2011).

THE BUDJ BIM WORLD HERITAGE SYMPOSIUM

In June 2011 the Gunditjmara, through their Gunditj Mirring Traditional Owners Aboriginal Corporation, their Lake Condah Sustainable Development Project, and their Winda-Mara Aboriginal Corporation, assembled a key academic and practitioner panel to publicly review the respective discipline significance and importance of this landscape. The panel and the key peer reviewers thereafter met in conjunction with the Gunditjmara to consider the position of BBNHL to the World Heritage nomination process, with an oversight provided by Australia ICOMOS representatives. Academic perspectives from archaeology, aquatic ecology, vegetation, geology and geomorphology, hydrology, and environmental anthropology were offered as a context to the public symposia the essence of which were tested in the subsequent workshop.

In testing the World Heritage criteria the workshop analysed each criteria against the collective and individual disciplines and perspectives to identify potential ally valid criteria to pursue and assemble a prospective nomination. The assessment was informed by Australia ICOMOS representatives and wider practice authorship in National and World heritage inventories and assessments gathered in the room.
In essence the Workshop concluded that criteria iii, iv and v were potentially relevant to a nomination of Budj Bim, with criteria iv being relevant but would be at the discretion of the Gunditjmara to entertain. As a comparison, Saloum Delta was inscribed under criteria iii, iv and v (http://whc.unesco.org/en/list/1359, accessed 1st August 2011). Of some 936 properties presently inscribed on the World Heritage List, some 385 properties have been listed under criteria iii, some 506 properties under criteria iv, some 124 properties under criteria v, and 205 properties under criteria vi (http://whc.unesco.org/en/list, accessed 1st August 2011).

Detailed conclusions of the Workshop resulted in the following conclusions and observations.

Criteria i, representing “a masterpiece of human creative genius” was concluded as not being applicable and similarly Criteria ii – demonstrating an “important interchange of human values, over a span of time or within a cultural area of the world” – was concluded as being challenging to launch a valid argument; thus, no applicability.

Criteria iii was concluded as possessing some bearing in the belief that there was evidence “a unique ... to a cultural tradition or to a civilization which is living or which has disappeared” being the overall Gunditjmara residency in the region (some 60,000 years at least) and their historical and continuing construction and maintenance of the aquaculture systems in the region (some 7,000 years at least) in direct response to volcanic environmental changes; thus, medium applicability. Such was predicated upon notions of land use, traditions and beliefs.

Criteria iv similarly concluded as being relevant because clear evidence existed about “an outstanding example of a ... technological ensemble or landscape which illustrates (a) significant stage(s) in human history” being the extensive fish/eel trap systems and aquaculture network as validated in the National Heritage listing. But it was also observed that this criteria had an unclear applicability as it is normally based upon a robust comparative typological assessment at an international level of ‘fish trap systems’ that would identify and quantity “uniqueness” and or “distinctiveness” and validating such might prove fraught; thus, medium applicability with a risk attached.

Such a typology raises the comparative context of Saloum Delta, but there are also the organic remains of wooden-stake and woven basket traps linked to 8,000-7,000 year old European Mesolithic marine and freshwater traps in Maine and California that are perhaps the earliest known evidence for use of such facilities dated in North America (McNiven et al 2011: 2).

Criteria v was considered, by the Workshop, to be of most relevance as there was evidence at Budj Bim of “an outstanding example of a traditional human settlement, land-use, ... which is representative of a culture ... or human interaction with the environment” because of the historical longevity of the aquaculture system matched with direct cultural management, rituals and narratives
demonstrated a unique entity; thus, high applicability. The perspective concluded was that such an argument needs to be launched on the basis of land use and not typology recognising the same concern raised in the above Criteria iv discussion.

Criteria vi, implying evidence existed that “directly or tangibly associated [the place] with events or living traditions, with ideas, or with beliefs” was a matter at the discretion of the Gunditjmara to entertain as it would necessitate opening up and documenting their cultural beliefs, narratives and Dreaming stories that have substantively to date not placed in the public domain, unlike at Baiame’s Ngunnhu where the Dreaming story has been extensively exposed; thus, discretionary applicability.

Criteria vii, viii, ix and x were concluded as being not applicable as they relied upon the uniqueness of natural processes and or features, and such elements as extinct volcanoes in the region were hardly internationally comparable to similar volcanoes overseas; this, no applicability.

CONCLUSIONS

Given this assessment, which provides an indication of potentially relevant World Heritage criteria to pursue and to identify strategic information to assemble, the matter is now in the hands of the Gunditjmara to consider and continue their progressive discourse on this topic. The Workshop has provided guidance on what were the most relevant criteria a potential World Heritage nomination could be pursued, how to proceed and what information now needs to be assembled over the near future placing an emphasis upon the need to map the extent of the system and to position it within a rigorous typologically benchmarking study to ascertain its sub-levels of hydraulic engineering complexity and uniqueness. Such will inform continuing discussions towards a World Heritage nomination of the BBNHL and its larger sphere of relevance.

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BIBLIOGRAPHY

Australia (2011), National Heritage List www pages, including
http://www.environment.gov.au/heritage/about/national/criteria.html,
http://www.environment.gov.au/heritage/publications/about/pubs/national-heritage-


Dawson, J (1881), *Australian Aborigines: the Language and Custom of Several Tribes of Aborigines in the Western District of Victoria, Australia*. Melbourne: Robertson.


McNiven, IJ, J Crouch, T Richards, Gunditj Mirring Traditional Owners Aboriginal Corporation, N Dolby & G Jacobsen (2011 in press), Dating Aboriginal stone-walled fishtaraps at Lake Condah, southeast Australia.


Stanner, W (1968), The great Australian silence, *After the dreaming* Sydney: ABC.


Weir, JK (2009), *The Gunditjmara Land Justice Story*, AIATSIS, Canberra

SESSION 2B - Histories of Architecture @ the Edge
ISLAMIC GARDENS BETWEEN RESTORATION AND REPLACEMENT

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ABSTRACT

Architecture is considered the visible reflection of the local character of contexts. Therefore, conserving the architectural heritage is becoming one of the critical concepts in life, especially with the rapid change and transformation characterizing the globalization era. As a vital part of the broader context of the architecture; landscape architecture is also considered an effective tool of societies’ self representation. Gardens reflect a very special relationship between the man and nature and represent the history of the state of societies in which they were developed.

Islamic gardens are one of the historic gardens having a special charm of their own. Gardens associated with Islamic period over several hundred years, are designed according to certain ideological principles employing certain physical elements shown in the west as well as the east. They represent an ideological continuity which is unique in its spread and development over a wide range of geographical and cultural regions. The Islamic architectural heritage is usually well protected. In the restoration process, the historic buildings are returned back to their original conditions. However, with the changing nature of gardens; it is sometimes hard to track back their original state. In that case, in order to conserve those gardens; it is important to study the design principles upon which the physical elements were chosen.

In this paper, the principles of design of the original Islamic gardens will be reviewed through a quantitative analysis of a questionnaire. These principles will be compared to the current situation of the garden of Humayun’s Tomb built in the Mughal era in India, after its conservation in 2003.

INTRODUCTION

In the 21st century, the age of globalization, the problem of “change and development” versus “preservation & keeping cultural identity” has been one of the main topics that were highlighted world-wide. While most of the countries are trying to follow a balanced pattern of development that preserved their harmonious and uniform character, some communities are still not adequately aware of the degree of complication and importance of this process. Ignoring the potential of architecture as a mean of self-representation, these communities
have been thriving towards modernization throwing away their historical resources, which
guided them to an acute problem of architectural identity due to the astonishing number of
various architectural styles, not reflecting the local culture and heritage.

Conservation is a way to provide, for the existence of the greatest possible diversity, not only
a better chance for the continued survival of humanity, but also for the opportunity of living
in a world of richness and prosperity (Mohamed, 2004). Therefore, conservation is
considered one of the critical concepts in our life especially with the rapid change
characterizing the globalization era.

Many historic gardens are protected as cultural heritage places in most of the world’s
legislations. However, all these legislations are recently implemented, and obsolete in many
practice case. This is sometimes due to the lack of knowledge, in other more regrettable cases
for unclear interests to government administrations. These administrations are accustomed to
consider a historic garden as just any green space but not as heritage, which it is in reality
even from a legal point of view.

The nature of gardens has many characteristics which raise special difficulties in their
conservation. Compared with the other visual arts, gardens have the extra dimension of time;
they are dynamic. They are always changing, always developing and decaying. As a result
much of the structure and the detail of gardens are transient, unlike artifacts, growing plants
are constantly renewing themselves. Gardens are then never static or complete; they consist
of a series of overlapping life cycles. For this reason the garden is not considered an object,
but a process (Sale, 1985).

In order to preserve gardens, they must be constantly restored. Plainly, restoration means to
return to its former condition. This can be done using archaeological evidence, drawings,
estate records, illustrations, travelers’ accounts and any other information. But one has to be
careful that most gardens have been subject to continual change. Because of these difficulties,
it is also important to follow the principles of design that were adopted in designing the
gardens and upon which their physical elements were chosen.

ISLAMIC GARDENS

Islamic gardens are one of the historic gardens having a very special charm and attraction of
their own, that’s why international garden designers in search of inspiration and useful ideas
are exploring the old gardens of the Islamic era (Hamed, 1994). To capture the essence of a
traditional Islamic garden, the designer should ideally possess a combination of an
understanding of the underlying spiritual message and the design principles, together with a
knowledge and experience of the climate and growing conditions of the local areas.
The existing Islamic gardens range is from the 12th to the 19th century. However, we know from literary and archeological sources that gardens exhibiting Islamic influence began in the 8th century. Many have vanished over the course time. Some have fallen into disuse, while others have been deliberately destroyed, which stimulates us to encourage the preservation of the rest of these special places that express the Islamic culture (Lehrman, 1980).

Islamic gardens belong to a historical tradition of formal gardens extending over three continents, and at least five centuries; from West Asia and Persia to North Africa and Southern Europe, i.e. Moorish Spain, and in the East to Central Asia and the Indian subcontinent. There are thematic connections that link the spatial and aesthetic qualities of these arrangements of land, water, and vegetation, no matter that individual example may be widely separated in time and space (Shaheer, 2000). Wherever conditions permitted, gardens were established throughout the Islamic world. Their attraction was threefold. First was the idea of Paradise as a reward for the faithful, based on many references to the Paradise Garden in the Quran. Second was the secular tradition of the royal pleasure garden, a tradition that long predated the Islamic era especially in Iran. These two attitudes interacted with each other. Third was the particular response to the demands of terrain and climate in this part of the world, with its predominant dryness and heat. With the image of the desert oasis in mind, the creation of a formal garden, irrigated and sheltered from the outside world provided a manifest source of delight (Lehrman, 1980).

Persian gardens, Spanish gardens and Mughal Indian gardens are the most famous three examples of typical Islamic gardens. India was the last of the three countries to experience the transformation to Islam and wasn't invaded by Muslims until 1200 when they united the region that was previously ruled by independent city states (Hassan, 1999). Gardens traditions established by the great Mughals (1526-1857), in the subcontinent represent a golden era in the history of landscape design.

The description of Paradise in the Quran served as the basis for design of gardens all over the Muslim world. The Mughal rulers of the subcontinent tried to create man-made reflections of the Koranic images of Paradise on earth. Cool pavilions, flowing springs, rivers, gushing fountains, shady and fruit trees, mentioned in the Quran’s description of Paradise are essential features of Mughal gardens like Islamic gardens elsewhere which make it the richest and the more mature gardens in the Islamic world.

The traditional Islamic gardens included certain shared design elements driven from descriptive verses of paradise garden in the Quran and Hadith (Prophet’s words). These gardens were planned in axial rectangular patterns of simplicity, clarity, discipline, and delicacy not to be found elsewhere during that time. The most obvious in these elements are the quadripartite layout, the water feature, the trees and flowers, the pavilions, the walls and gates.
HUMAYUN’S TOMB, DELHI

Humayun was the second Mughal Emperor in India; his tomb was to be the first of a succession of monumental garden tombs built by the Mughals. This kind of Mughal garden tomb stems from a tradition inherited from their Mongol and Tartar forebears (MacDougall & Ettinghausen, 1976).

Located in Delhi near the river beyond his unfinished city is Humayun’s tomb. Begun in 1564, eight years after his death, it took nine years to complete. The tomb was sponsored by his widow, Haji (Hamida) Begum, a Persian from Khurasan, and is believed to have been designed by a Persian, Mirak Mirza Ghiyas (Moynihan, 1979).

The plan is on an impressive scale, and it is arguable that its simplicity sets off, better than any planting, the tomb itself, a mass of glowing complicated color on its monumental quartzite platform (Crowe, 1972). From the gates, the garden is divided into quarters by gravel walks (broad causeways) about forty feet wide and raised a few inches to allow for irrigation; these lead to the tomb in the center. The plots are quartered repeatedly by narrower walks to form thirty two plots in all (Moynihan, 1979), with the occasional water basin at some of the intersections. Humayun’s tomb stands on a large square platform and rise high with an immense marble dome which indicates its Persian origins (Brookes, 1987).

Between 2000 and 2003, the Aga Khan Trust for Culture has funded and collaborated with the Archeological Survey of India in implementing a project to revitalize the 30 acre garden surrounding the Humayun’s tomb.

Methods
The study aims to understand the influence of conservation on the original garden. Therefore, the original principles of design of the gardens needed to be studied. A questionnaire was distributed to architects and landscape designers including an old picture showing the layout of the Tomb and old descriptions of the garden. The designers were asked to indicate the main principles of design of this garden. The principles of design that were used in the criteria of measurement were: the unity, the balance, the transition and sequence, the proportions and scale, the rhythm, the focalization, the repetition, the simplicity, the harmony, and, the variety and contrast.

Before the restoration the result of the quantitative analysis was as shown in figure (3). From the figure we can find that the focalization and the balance were the two dominant principles in the garden, and then came the principle of unity, repetition, harmony, simplicity, and variety and contrast. Finally the sequence, rhythm and proportion and scale were not noticed in the gardens.
By using the boxplot, the degree of the importance of each principle compared to one another we also found. Figure (4) shows that the focalization was the most important principle, and then came the balance and the repetition. The transition and sequence and variety and contrast were having the less importance comparing to the other principles.
In order to analyze the difference in the main principles of design of the garden before and after the conservation, the author documented the garden after the restoration in 2009 as shown in figure (5).

![Humayun’s tomb layout after the conservation](image)

**Figure 5: Humayun’s tomb layout after the conservation**

Using this documentation of the garden and the distribution of its different plants, the questionnaire investigated the principles of design of the garden after the restoration. The same principles of design were used in the criteria of measurement. After the restoration the result of the questionnaire indicating the principles of design are shown in figure (6)
Figure 6: Degree of each principle of design after restoration based on the questionnaire

From the plantation of the layout of the Humayun’s tomb garden after the restoration we can observe that the original main principles of design of the garden are not the same.

- The focalization is only ensured by two cypress trees on each side of the main path leading to the tomb and four palms at the corners of the tomb.

- The balance is also interrupted by the unsymmetrical plantation layout.

- The trees are repeated but not with a certain order.

- The unorganized distribution of the trees decreases the unity, the harmony, the rhythm and the simplicity of the layout; and on the same time increases the variety.

From these results we can see that the restoration of the Humayun’s tomb garden was following the process of conservation. However, it didn’t give a lot of attention to the main layout of the plantation. That is may be because the restoration of the plants wasn’t through landscape designers. For that reason many of the main principle design of the garden are becoming weak.

SUMMARY
This research aimed to know better the principles of design of the Islamic gardens, to emphasize the concept of conservation as an action taken to prevent decay, and see how the conservation could conserve or distort the main principles of the design.

From the case study, the study concludes that while conserving historical gardens, the principles of design of these gardens must be well studied; and every element of the garden must be put in a way to ensure and demonstrate them. The study is also recommending that the architect or the landscape architect lead a major role in the process of conservation.

REFERENCES


THE URBAN HISTORY AT THE EDGE OF BAGHDAD AND LATE EIGHTEENTH CENTURY TEXTUAL REPRESENTATIONS

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ABSTRACT

The urban history of Baghdad was associated with the Tigris River since the establishment of the first urban settlement around 3000 years ago. Being at the edge of the river which provides the central spine for its growth, the city’s urban morphology and development were influenced significantly by the waterway. This urban corridor provides aesthetics, irrigation, security, and transportation, and secures functional and symbolic measures to place.

The urban history of Baghdad in late eighteenth century is ambiguous. The limited historical material inherited from that period focuses on the demonstration of architectural manifestations in relation to governance and empire. Natural and cultural landscapes are rarely represented. The Tigris River is represented in these historical sources as an adversity due to its recurrent overflows. Conversely, literary materials reflect different images of the river as they highlight its significance as an inspiration for beauty and prosperity.

This paper explores methodologies for the social urban historiography of Baghdad that are able to deal with such ambiguities and paradoxes brought up by city’s edge conditions. The paper examines alternative methodology for urban historiography through two sources: firstly, observations by travellers, and secondly, textual references to the edge in the poetry of the eighteenth century, particularly those by the prominent Baghdadi poet Kathem Al-Uzari. The paper argues that this method would raise the understanding of the primary elements of the events that contributed to the production of space, unfold new criteria for historiography at the edges of Baghdad and assist in extending an understanding of the role ambiguity plays in the urban history of the city during that period.

INTRODUCTION

‘Among the many cities that were part of the urban environment of the medieval Near East, Baghdad perhaps stands out above all others’ (Lassner 1970).

Baghdad provides a remarkable case that could enrich the investigation of the relationship between literary and material culture. The unique geographic location allowed it to be a major trade centre and an internal port for centuries. In addition, it was the administrative focus of empires, and a great centre of theological studies as well as general learning. Along with encompassing great historical urban forms, Baghdad was home for many intellectuals who produced significant prose work that can motivate this kind of research.

The study of the social urban history of Baghdad in late eighteenth century is significant. The eighteenth century is considered as ‘abstract and brief chronicle of the past’ (Said 2007), because of its ambiguity, complexity and transitional criteria. Conventional historiography lacks a strong focus on the social systems, which represent ‘a universal problem that
preoccupies thought today and touches its core reality’ (Al-Sadr 2006). Conventional historiography also lacks an integrated conception of urban history, as it examines single intangible spatial ideas like geometry, scale, and harmony, and it analyses composite ideas that combine simple conceptions, like orientation and connectivity. Accordingly, the prevailing concern of Baghdad’s historiography has been about the mass of traditional buildings rather than other spaces; a condition described by Edmund Bacon as ‘space blind’ (Bacon 1967). Thus, an integrated conceptual image is not yet provided, and the historical urban experience would be partially understood.

The aim of this paper is to combine conventional conceptions with other notions from different disciplines, particularly travelogues and poetry, and present them in a simple conceptual unit. The paper utilises comparative analysis method which evaluates different synchronized narratives. By this method, undiscovered realities are discovered and some hidden criteria that are usually underestimated in the representation process are unfolded, which may urge for more advancement in history writing methods. Before commencing this investigation, a general historiography of Baghdad in relation to the river is essential to provide a general historical milieu of the city.

HISTORIOGRAPHY OF BAGHDAD AT THE EDGE

Baghdad is considered as the cultural mediator between the north and south of Iraq and in the point where the two great rivers Euphrates and Tigris are close to each other. The study of the urban morphology of Baghdad indicates a strong connection with the ‘edge’ of the river. The Tigris River which passes through Baghdad has been a major collective icon of the city’s historical events. For locals, it has been ‘the sunshine and sunset, and the night with its moon and stars’ (Makkiyya 2005). It has also been a source of inspiration for poets throughout the city’s history to a degree that almost all scholars, especially poets indicated the river in their works. A good example of current reverie poetic work is a poem by Sheikh Ahmed Al-Waeli. The poet describes the eternal beauty of the city, and associates the flow of the Tigris River with scholarly moves.

Oh Baghdad, every time I examine your originality closely
My admiration to you increases a lot
Many intellectual tributaries are flowing in your river
They seduce the minds and astonish the brains (Al-Waeli 1980)

Throughout history, the Tigris River has been a major element of the urban eternity of the city, since it coexisted with other elements that contributed to shaping the city and its identity. For example, the first urban settlement emerged around 3000 years ago as a market village on the Tigris River. It is interesting to note that the first planned city of Baghdad wasn’t built directly on the river, which fastened its decline. That city was the famous Round City that was built in 145AH/762AD by the Abbasids (Lassner 1970), mainly for administrative and security reasons. Shortly, new blocks began to grow around the walled quarters towards the river, where people retained proximity to the waterway and freedom of trade.
The Round City was abandoned after 69 years as the Abbasids moved their capital to Samarra northern Baghdad. The city gradually turned into ruins until it vanished completely (Cooperson 1996). Conversely the city grew by the river (Figure 1), and its specialised markets developed into a vital commercial complex at present. Therefore, the river and market activities are crucial elements of this city’s urban continuity. Currently the city of Baghdad has two equal parts; Rusafa on the eastern side of the river, and Karkh on the western side. Yet throughout history important divisions were on Rusafa. The proximity of Rusafa to the eastern trade route, its location on slightly higher land, and the long existence of markets associated with honourable tombs and mosques may explain the superiority of Rusafa over Karkh during that period.

EIGHTEENTH CENTURY POLITICAL AND URBAN DIMENSIONS

Historians mark the year 1750AD/1163AH as the starting date of the Mamluk’s rule of Baghdad and the surrounding areas (Longrigg 1968). The Mamluks were originally a group of young Georgian slaves, who were sold in Tbilisi markets, trained in special military schools and were appointed to the army or government positions later (Nawras 1975). Those rulers attained some political autonomy from the Ottomans, though this independence did not change the constant physical deterioration of built forms due to the limited maintenance of those structures. The river also received slight attention, since the lack of maintenance of the old dams caused recurrent overflows which brought great damage to the urban landscape.

In late eighteenth century, Rusafa was enclosed by a defence wall from all sides except the river's side. The river’s edge was mostly confined to particular public buildings like castles, administrative offices, military barracks, schools and mosques. Those buildings were often constructed on the basis of the monopoly of the river's spatial qualities; a practice that began in the Abbasid’s period and continued for centuries later. For Baghdadis, the river’s space is conceptualised indirectly through sky space and through some narrow lanes that lead to the river's shores. Nevertheless, the Tigris River continued to impart its magic effect on the local’s feelings and emotions, and that was reflected evidently in their intellectual works.

This brief description of the urban history of Baghdad’s edge in the eighteenth century draws a fundamental understanding of the river’s image. In the following paragraphs, the textual representation method is implemented to provide more conception of the river’s role in the social urban history of the city. Starting with the travelogues and ending with selective poetry, this investigation seeks more knowledge to set up an integrated representation approach of urban history.
During the eighteenth century, number of travellers visited Baghdad as part of their missionary tours in the region. They generated some maps and drew some valuable images of the city (Figure 2). In addition, they recorded their observations and compared Baghdad with other adjacent cities like Damascus, Istanbul, and Cairo. Those travellers were generally representatives of colonial powers, and their observations were different from the locals’ visions, as they viewed the city with preoccupied minds and possessed images. Consequently, their writings were clear representations of unclear, or sometimes a distorted image of the city. In one of his interviews about Orientalism, Edward Said notes that ‘all representation is misrepresentation in one sort or another’ (Said 2004). However, I believe that traveller’s observations and maps would enrich this study and promote the intended comparative investigation.

Travelling narratives were observations from outward. These narratives rely on visibility and distinctiveness to conceptualise the city’s image, its structure and context. The extensive emphasis of travelogues on specific dates, places, and people’s names makes them a rich source of information for transitional histories. Those narratives symbolize architecture as an artefact and art, unlike conventional historiographies which lack such emphasis and stress a limited set of architectural ‘hero’ figures (Nasar 1998). Yet the aesthetic perception of those sources typically relates to the classical picture of cities in the Muslim world and therefore the city image ‘fits naturally into the fundamental concept of Orientalism’ (Raymond 2002), which was strongly challenged and criticised for providing a radical concept of the traditional cities in the Islamic world.

The river was normally the first component of the city travellers perceived as they approached the city. Although some travellers briefly expressed their appreciation of the river’s environment, they usually recorded statistical information about the river. One of the famous travellers who visited Baghdad in late eighteenth century was the German traveller Carsten Niebuhr, who passed through the city in 1766AD and drew a map that illustrates the
main roads in both parts of the city, some important buildings, the defence wall, the ditch, the river and the only bridge. Niebuhr estimated the river’s width between 600-620 feet and described the only bridge as a ‘weak’ bridge with 34 small boats tied together with three chains (Niebuhr 1792). He expressed the city as having many orchards which indicates the proximity of water and the prevailing atmosphere of the river. The most significant work of this traveller was the map of Baghdad he produced, which brought up insights of the geographical settings of the city that were rarely recorded by others (Figure 3).

The French traveller Olivier was another traveller who visited Baghdad in 1791 and recorded few observations related to the river. He observed that the city wall which does not continue in the rivers direction like most Turkish cities because the houses were built on the river's edge (Baghdad bi-aqlam Rahhalah, 2007). The eastern part of the city was enclosed by a defence wall on the river’s edge for centuries. In late seventeenth century, the pasha ordered to demolish that part and open the city to the river. Olivier has described Baghdad as ‘Turkish’ but in 1791AD the city was almost independent from the Ottomans’ rule until 1831AD when they defeated the Mamluks and got Baghdad back under their control (Nawras 1975).

Olivier utilises the name ‘Baghdad’ for the eastern side of the city, what is called ‘Rusafa’ now, stating that ‘Baghdad lies on a plain land on the right bank of the river’ (Baghdad bi-aqlam Rahhalah, 2007). There is no doubt that the eastern part of Baghdad was more significant than Karkh as it comprised the administrative institutions. Yet for the residents both parts belonged to Baghdad, and the literature composed in the same period supports this statement. Olivier wrote an interesting remarks about Baghbadis, stating that ‘we could imagine that the people of Baghdad are sweeter than other people and their elderly are more educated and nice and the merchants are more effective and devoted to trade than other merchants in the empire’(Baghdad bi-aqlam Rahhalah, 2007). Because of its unique location, significance of its educational institutes, and the blessings of the river, Baghdad attracted many scholars which may have resulted in those unique social qualities. The study of travelogues is complicated and broad, but because of the limited scope of this paper, other qualities and attributes of the river are explored next by interrogating selected pieces of the poems of Sheikh Kathem Al-Uzari as an exemplar of local scholars prose works.
2. Textual Representation of The Poetry of Kathem Al-Uzari

The well-known Baghdadi poet Sheikh Kathem Al-Uzari was one of the most prominent scholars of the eighteenth century. He was born in Rusafa in a neighbourhood called Raas Alqurayya in 1143AH/1730AD. He moved at some stage of his life to Karkh, where he spent the rest of his life. Historians did not specify the exact date when he moved to Karkh but there are some literary indications that he was mature at that time, probably in his mid thirties. Al-Uzari died in Karkh in 1211AH/1796AD and was buried in Kadhimiyya district northern Baghdad (Shukur 1980).

Like other scholars in the area, Al-Uzari studied Arabic literature, Islamic sciences, history, theology, philosophy, Qur’an interpretation, and astronomy. He excelled in literature and wrote eloquent poems at the age of twenty. The poems of Al-Uzari comprised different subjects like science, astronomy and geography, in addition to significant epics of wisdom, which makes them a great source of insights for diverse professions. Al-Uzari was highly knowledgeable and full of humour (Shukur 1980). His poems were effective on the society, as they combined unique fluent language and pleasant style with powerful meanings.

Al-Uzari did not write specific poems dedicated to the river, yet the indications of the river’s characteristics were embedded in the whole poem collection. He illustrates the city’s natural landscape like breeze, rain, trees, as well as beautiful spaces. In one of his poems that were composed to praise the community leader Suleiman Al-Shawi, he expressed great admiration for the beauty of Baghdad, and undoubtedly the river was the source of that beauty.

If you mention beautiful places in the area
Do not forget to mention the crescents of Zawraa’
As this homeland overflows with beauty from its sides
The beauty pours like the rain when it pours from the sky
I wonder if this is only a city or is it heaven on earth!
Or is it a cheek of a beautiful girl that is full of blood!
(Shukur, 1980, p.59)

In this poem Al-Uzari draws a magnificent image of Baghdad, where the river has a great share in its natural splendor. The poem confirms the interlocking criteria between the river and beauty and signifies the loveliness of both parts of the city (Figure 4). Al-Uzari calls the city as ‘Zawraa’ instead of Baghdad, which suggests a ‘beautiful history’ too. The name Zawraa’ refers to the Round City of the Abbasids which was built in the eight century and was full of wonders. While the Round City demonstrated negative aspects as discussed before, its amazing physical structure was rooted in peoples’ minds reminding them of a great history. Boyer (1994) identifies this nostalgic practice that advertises the iconic recollections of history as ‘synthetic memories’. This piece of literature was written in Arabic which is a poetic language that ‘no language on this earth would match it in this character’ (Said 1973). The poem clearly
focuses on symbolic significance of place and metaphoric images rather than describing visible figures.

Because the eastern part of Baghdad was the hub for the ruling power, there was too much tension and sometimes consistent fights. This situation was unpleasant to some residents including Al-Uzari, who decided to move to Karkh where there was more freedom and less tension. Although he left his birth place, where he grew up and spent his youth, Al-Uzari kept an appreciation for both sides, believing that they constituted one whole unit.

I send my tributes to those places that were lively
We enjoyed living there and the rain was pouring constantly
It is great to have Karkh as my home and to have my loved ones as neighbours
And to have people who would be pleased if I was pleased and would be hurt if I was hurt (Shukur, 1980, p.19)

This poem indicates how physical beauty was combined with social beauty to produce great feeling of belonging. The poem illustrates the freedom of movement between both sides of the city, and indicates how the Tigris River acted as a linking element rather than a mean of separation (Figure 5). The river was also represented as a source of blessings for both sides. Though with more truthful friends and less betrayers around, Al-Uzari was rather pleased to live in Karkh and consider it as home.

Besides being a source of beauty and purity, the river was a source of relief and tranquility for the residents. During hard times like sieges or plague attacks which normally result in great loss of lives, Al-Uzari recalls the positive criteria of place in order to overcome those harmful events. He reminds himself of the wonderful places in the city that were full of mild breeze blowing from the river’s surface.

The houses of my loved ones are empty
And the antelopes scattered everywhere in that valley
Oh God I can’t forget those places with the fragrant breeze
That comes from the aromatic trees
I wouldn’t be able to control my grief without those Babylonian eyes
That showed walking elegantly and calmly between Euphrates and Tigris (Shukur, 1980, pp.198-205)

In this poem, the contradictory criterion of Baghdad is represented clearly. While the city experienced population loss, its beautiful places remain overflowing with fragrant breezes that stimulate new life. Correspondingly the Tigris River expressed dual contradictory images of beauty and devastation. Yet the devastating effects of the river where never mentioned in the literature of Al-Uzari and other scholars, which suggests that the blessings of the river where greater than its negative aspects. The trend of poets at that time was to utilize the timeless relation between beauty and women in their writings. Al-Uzari imagines some girls coming from the luxuriant area between the two rivers, which is a sign of happiness and cheerfulness during hard times. The whole collection of Al-Uzari’s poems is rich in
metaphoric pictures of the river’s environment. The criteria of the poems and the eloquence of the Arabic language entail meandering representations, yet the main gestures of the river remain explicit.

COMPARISON AND CONCLUSION

The textual representation of literary work explored in this paper emphasizes the great role of the river in the urban history of Baghdad and confirms the need for more exploration in order to augment the image of the eighteenth century Baghdad. The Tigris River witnessed major events of the city’s history and it had a great impact on the urban development of the city. The river’s interlocking criteria allowed enormous influence on social modes and emotions in addition to its great impact on the physical structure of the city. However, conventional historiography studies of Baghdad take issues related to the river and other elements of the built environment too lightly, while they concentrate on physical structures, political issues and commercial matters.

An overall comparison analysis of the selected travelogues of the eighteenth century and the poems of Sheikh Kathem Al-Uzari suggests the great need of establishing a revised method of writing history other than the traditional method that overlooks important relations between buildings, human behaviour and the larger settings of cities. The narrow view of those historiographies makes the results unrepresentative, as they focus on architectural figures and monumental buildings which occupy less than 2% of the built environment (Nasar 1998). Hence, the change of the emphasis from physical to social and environmental approaches would ease problems of representation.

The natural landscape presented in the narrations reflected the river’s footprint. The poems of Kathem Al-Uzari expressed internal views of locals with intense presentation of the environment. These poems suggest different phenomenological approach to writing the history of the city by recognising other elements that help to comprehend space like smell, imagination and interrelationships. On the other hand, the travelogues explored here expressed a great emphasis on the visual quality and generic appearance of space. The city structure, context, and likeability relied on individuals’ experience and intensions. However, both materials unfolded hidden criteria of the social urban history of the edge of the city.

It is interesting to grasp the different perception of the river’s edge from different observers during same time. While the edge of the river was for the locals a connection point between both sides of Baghdad either physically or visually and emotionally, for the travellers, the edge was the boarder of the city and the river was a space ‘in between’ two separated regions. The river was the luxury fringe of the city and the source of beauty and perfect natural atmosphere. However, straight connection to the river was confined to the rulers and other officials who had a direct and horizontal gaze from their palaces. For other Baghdadi residents the connection was vertical as their views were inward to the court and upward to the sky (Makkiyya 2005). This limited exposure promoted more metaphorical perception of the river’s environment. Conversely, the travelers enjoyed an open relationship with the river and the bridge as they did not spend long times inside the city. The Tigris River was a catalyst of insights for both groups, though it had greater effects of inspirations on the residents.

The comparison between the two literary resources opens out great opportunities to explore the urban history of Baghdad further. The comparative analysis facilitates new components and involves more subjectivity in historiography rather than objective criteria. It is evident that for travellers, geography was essentially the material underpinning for knowledge about
Baghdad’s edge, while sensitivity and interactivity were the main motivational resources for the residents. Yet an overall image suggests the edge as an important component of both geographical and social criteria, and a reliable representative of the urban history of the city. With more investigation, a whole bunch of issues and questions will emerge about the validity of traditional and transmitted historiography of Baghdad at the edge.

REFERENCES

Al-Sadr, MB 2006, Our philosophy, Ansarriyan Publications, Qum.
Buckingham, JS 1827, Travels in Mesopotamia, including a journey from Aleppo, across the Euphrates to Orfa(h, (the Ur of the Chaldees,) through the plains of the Turcomans, to Diarbeker, in Asia Minor; from thence to Mardin, on the borders of the Great Desert, and by the Tigris to Mousul and Bagdad; with researches on the ruins of Babylon, Nineveh, Arbela, Ctesiphon, and Seleucia, Henry Colburn, London.
Fogg, WP 1985, Arabistan, or, the land of the Arabian nights: being travels through Egypt, Arabia, and Persia, to Bagdad, Darf, London.
Longrigg, SH 1968, Four centuries of modern Iraq, Librairie du Liban, Beirut.
Niebuhr, C & Heron, R 1792, Travels through Arabia and other countries in the East, R. Morison and Son, Edinburgh.
Stark, FBPG [1947 i.e. 1937], Baghdad sketches, Published for the Publishers Guild by J. Murray London
DRAWING OUT THE ‘ANATOMY OF THE EDGE’: IN-BETWEEN-NESS IN THE VERANDAS OF SOUTH-EAST QUEENSLAND

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ABSTRACT

The Queenslander and the veranda have become ubiquitous terms of the Australian architectural lexicon. The veranda has a long historical tradition in vernacular residential building typologies across Australia, but nowhere more prolific than in the sub-tropical regions of South-East Queensland. The veranda is generally discussed in terms of its functional ‘threshold’ characteristics; the space held in tension between the domestic interior and urban/landscape exterior. Its phenomenological uniqueness mythologised by writers such as David Malouf; underpinning the conceptual and spatial organisation of the architectural imaginings of Brit Andresen & Peter O’Gorman and Donovan Hill. Whilst some research has been conducted in order to establish a historical lineage of the veranda as an architectural typology, little is actually known, or has been researched, about either the veranda’s anatomy or the specifics of its place-making physiognomy. This research outlines the initial phase of a teaching-research nexus project commenced in 2009/10 at the Queensland University of Technology which aimed to explore the South-East Queensland veranda through a combination of historical research, conducted through sectional measured-drawings, in combination with speculative research, conducted through experimental mixed-media. Its emphasis was on the technical and the experiential; based on the scale of people, at moments of either transition from inside or out, or inhabitation of the in-between. As a result, this project aimed to document variations of the veranda’s anatomy in its context and, in so doing, speculate upon the nature of its relevancy in architecture today.

INTRODUCTION

Edge-ness, is a description of inter-relationships between the physical and metaphysical, and between the animate and inanimate; between people, buildings, landscapes, concepts, and emotions. It is both a descriptor of a condition of physical containment and a meta-physical relationship between object and event, between physical attribute and phenomenological experience. The epistemology of ‘edge’ stems from the physical manifestation of intersection: the collision of two sides of a sword’s blade at an edge. Edge-ness therefore also embeds within it the animate capacity of its intended action; its function and utility to cut, maim and kill. In a Deleuzian sense, the ‘edge’ brings the embedded ritual and amenity of the blade into being as the climax of formal and cultural intersection. Edge-ness therefore is also a non-condition, or rather, a space of no space. It is neither the form nor the act; it is the transition between differing states of being. It is in this very transition that the most striking and powerful action of the edge is revealed. Its dynamism as a ‘threshold’ between varying states that makes manifest the ‘embodiment of becoming’ and denotes the edge as a site of flux and indeterminacy.

In architecture, one of the primary means through which this transition is enacted and experienced is through the transition between states of privacy; from the secure and safe inner-sanctum of the domestic interior, to the vulnerability of public exposure in the urban void beyond. In much contemporary architecture the enacting of this edge-threshold has been somewhat ignored, repressed by overarching compositional tactics that are more concerned with notions of formalism and generative cleverness. This research therefore seeks to better understand and speculate upon the unique vernacular edge-condition of the Queensland veranda in order to speculate upon the intensity of ingredients that are characteristic of its anatomical recipe.
HISTORICAL REFLECTIONS ON THE ‘TIMBER AND TIN’ VERANDA

Undoubtedly, the contemporary domestic architecture of Southeast Queensland is directly influenced by the oppressive sub-tropical climatic of the region, however, to what degree the formal characteristics of Southeast-Queensland vernacular architecture is a response to climate is widely debated. Notions of ‘appropriate’ housing types were imported by settlers throughout Australia’s ongoing colonisation of the late-eighteenth and early nineteenth century. Its housing types were also heavily influenced by the specific limitations of available building materials and technologies possessed in the region. The availability and relative malleability of timber and tin directly underpinned the evolution of the ubiquitous Queenslander. Its lightweight timber frame, corrugated iron roof, and spidery legs which effectively negotiate undulating topography continue to influence architectural taste in Queensland today.

The Queenslander, and its inherent multitude of typological iterations, fundamentally rely upon varying veranda-type edge-treatments in addressing climate and mediating the transition from public to private. Many historians believe that the veranda was appropriated, or informed by, similar building-edge treatments found in Southeast Asia in the eighteenth–century, whilst other historians believe that the veranda was appropriated from British-Indian verandas. Douglass Bagalin (Drew, 1992) believes that the veranda has its origins in Spain where there is evidence of the Portuguese word ‘varanda’ as early as the sixteenth century (Evans and McCowage, 1988, p36-7). Its genesis further contested by the assertions of Brian Hudson (Hudson, 2006, p147-59), Balwant Saini & Ray Joyce (Saini and Joyce, 1982, p22) and Jeffrey Archer (Archer, 1987, p29-31) whom collectively believe that the Australian veranda is in fact a sibling of the verandas of the Caribbean. While the veranda’s cultural and conceptual genesis is vigorously contested, it remains—none-the-less—an important local icon.

Imported by colonial settlers from various settings, it was applied and adapted to the peculiarities of the Queensland setting (Paynter, 1965, p93) and the restrictions placed on it by building legislation. Potential fire risks created by the abutment of timber dwellings caused great concern in the nineteenth-century; both in England and equally in the growing antipodean colonies of Australia. The government of New South Wales adopted building regulations in 1838 that was based upon the London Building Act (1709) which effectively led to the demise of the veranda in NSW. Similarly, in Queensland, the Undue Subdivision of Land Prevention Act (1885) had a resonant effect upon the urban form of Brisbane and the resulting perturbation of ‘timber and tin’ Queenslanders across the urban and suburban landscape (Gregory, 1994, p2). In the nineteenth century miasma (foul air) was believed to be the cause of many tropical diseases and ailments, such as malaria (Halliday, 2001, p22-9); as such, the Act mandated 16-perch minimum lot sizes in order to ensure a healthy flow of air around each house. The effect of this legislated fear of stagnate air directly informed the evolution of urban density models based on detached housing types, such as the Queenslander. As Peter Skinner (Skinner, 2004, p30) further observed, the effects of the Act “can be seen in the ingrained attachment to the detached house in Brisbane that now extends into the twenty-first century.”

The deployment of the Queenslander and veranda was specifically orientated to the shape of its site, however the site itself was often contextually indifferent to solar orientation; directly effecting its ability to mitigate the impacts of sun, wind and rain (Taylor et al., 1964). Helen Gregory (Gregory, 1994, p8) observes that “[h]ouses were usually constructed to face the street irrespective of the direction of prevailing breezes. This factor, when combined with the high heat conductivity of tin and
the poor insulating qualities of timber, exacerbated the heat problem.” The Queenslander was, therefore, sited with a general indifference to the climatic problems that it was ultimately exasperating. Even where it was applied in a more amenable orientation, it was done so with little empathy to the changing lifestyles of its occupants. As Jennifer Craik (Craik, 1990) has keenly noted, “the house only works in the climate if a constant cross-flow of air throughout could be maintained. This pre-supposed that someone was home all day to keep the doors and windows open. Such times are now recalled with nostalgia!”

If the veranda’s mediation of climate was achieved with varying degrees of success, what other pragmatic and social functions did it serve? The veranda, Balwant Sinai (Saini and Joyce, 1982, p22) observes, “provided spaces on the edge of the dwelling of an informal semi-outdoor lifestyle ideally suited to the climate.” The oppressive Australian summer, amplified by the palpable viscosity of the water-saturated air inescapably experienced in the Queensland sub-tropics, has cemented the veranda as a pivotal device in represing the effects of climate. “The harsher climate”, according to Robin Boyd (Boyd, 1952, p34), “or the rougher the life, the more the veranda was used ... the veranda was more than a shelter ... it was the living-room.” Thus, this simple vernacular lean-to structure became—almost by accident—a device for social interaction: both within the private confines of the house, and in mediating the interaction with the public life of the street. Whilst it is safe to say that the veranda was not indigenous to Queensland, its social and cultural role remains robust. Put simply, the legacy of the Queenslander, and its associated veranda prosthetic, is culturally important in maintaining cultural identity formation for Southeast Queenslanders (Gregory, 1994). Its cultural role appears to transcend its broader social relevance or functional appropriateness in addressing changing spatial uses and organisational structures within the dwelling, or its effectiveness it suppressing the more extreme aspects of the Australian climate. The typology continues to prosper primarily due to our collective romantic attachment to it, and its semiotic identification of Queensland-ness.

In contemporary 1960s Australia, alternative architectural edge treatments began to emerge in opposition to the vernacular veranda. Among them were pierced concrete, masonry louver blocks, and horizontal metal sun louvers (Paynter, 1965, p95). John Paynter (Paynter, 1965, p95) suggests that these new materials and surface treatments, although generated out of a ‘thirst for shade’, resulted in newfound “sculptural qualities, lending form and modelling to the façade.” Some variations of the veranda incorporated elaborate layers of ornamentation and fenestration in order to achieve their compositional effect (Boyd, 1952, p34). As the cost of housing increased, verandas shrunk in size and proportion to the overall dwelling becoming nothing more then figurative screens; effectively reducing the veranda’s typological physiognomy and social importance. Rather than a space of continuous dwelling—like the extended living-room—it became a quintessential porch or awning-covered edge to enact the transitioning between states of interiority and exteriority (Boyd, 1952, p10). Sue Bridwell Beckham (Beckham, 2007, p86-93) identifies the resulting liminal space as neither an interior or an exterior space, while simultaneously being both. For Bridwell Beckham, this space offers the possibility of corroding certain social rules, allowing for the ‘chaste and virtuous’ to overcome the potential social isolation that results from the imposing force of the interior. It is thus a space that is territorially extruded as a proxemic relation of the interior, while simultaneously sharing a genealogy with the exterior (Hall, 1968).

As contemporary Queensland architects continue to expand their oeuvre, they tend to repress certain aspects of the Queenslander. Today, the veranda is generally applied in a vain attempt to engender a historical romanticism or cultural nostalgia (Craik, 1990, p193). Questions over the veranda’s current cultural relevancy is directly influenced by changing lifestyles and architectural tastes (Archer, 1987, p85). As Rod Fisher (Fisher, 1994, p32) argues, “Queensland does not have one particular type of housing, but a dominant tradition of timber building” of which the veranda is a part. Rather than
seeking out a romanticised version of the past, Paynter suggests that “we must learn to live with the Australian climate and to design for it, or better still, with it but not against it.” Further, if, as Janet Hogan (Hogan, 1982) has observed, “the history of the city is written in its buildings”, then it is clear that Brisbane’s history is ingrained in a legacy of ‘timber and tin’ villas and pavilions that struggle to balance populist demands for a ‘cultural nostalgia’ with the pragmatic pressures of dwelling in a subtropical climate. We can continue to revive the past in a romantic attempt to engender the character and values of another time, but to do so denies the specificity of the ‘here and now’. It denies, as Walter Gropius (Gropius cited in Paynter, 1965, p99) so eloquently observed, the diversity of expression that can result through the basic differences that are imposed by climatic specificity.

QUESTIONS OF DRAWING TECHNIQUE AND TACTIC

This brief historical overview is intended to place the veranda within a genealogical tradition of addressing the building’s edge in Australian architecture. To complement this conventional research method, specific verandas around Brisbane were forensically examined in order to reveal a ‘typology of concerns’; as representations of particular preconceptions of the veranda, and as instruments through which to speculate upon the Veranda’s physiognomy as a unique edge condition which can be viewed on the following <web.mac.com/christopherbrisbin/Drawing_out_the_Anatomy_of_the_Edge/>. Considering the veranda’s undeniable cultural and architectural importance in Australia, and the significant amount of scholarly enquiry associated with it, it is important to limit and contextualise the aims of this particular study so as to explicitly outline as much what is within the scope of the research, as what exists outside of its purview.

In graphic terms the drawings were compositionally informed by precedents of typological research conducted by Nigel Bertram and Kim Hallik (Bertram, 2002) as well as the work of Japanese architects Atelier Bow Wow (Bow–Wow, 2007). The anatomy of these drawings required the use of black and white line-work, applied with a sense of instructional graphics in order to convey empirical information in a cross comparable manner, that nonetheless had a wit and sensibility to them. In a similar vein to Robin Evans (Evans, 1997) observation of the power of drawing in expressing the operative translation of idea into building, in this project the drawing acts as a filter through which to draw out the idea/essence of the building. As Simon Unwin (Unwin, 2007, p109) has observed:

[I]f architecture ‘travels’ in one direction from the imagination ‘across’ the ‘threshold’ of drawing on its way to becoming real building, then ‘on its way back’ to being understood (made sense of) by the mind, it should ‘come back’ across the same (or a similar) ‘threshold’. But the situation is more that all are roaming and interacting simultaneously on the same arena, the arena that is drawing.

This measured sectional-elevation drawing method has become a recognisable and widely understood analytical method in Architecture, and therefore provided methodological precedent upon which to interrogate the veranda as both a constituent prosthetic of the house/edge/yard/street relationship, but also as an independent artefact upon which to receive our analytical gaze. Traditional drawings of the veranda that can be found in historical and contemporary texts alike, deny the interior spaces that it veils and suppresses its relationship to semi-public landscape and/or public street beyond. It is therefore generally treated as an independent ornamental device, not a constituent element of the house’s overall composition. However, this paper’s contention is to treat certain readings of the veranda and Queensland architecture as the ‘site’, as much as the verandas themselves and to consider...
the holistic intersection of interior/threshold/landscape as paramount in the veranda’s conceptual success. Further, in settling on the section-elevation type, we considered the propensities of the drawing method to expose minute three-dimensional relationships and to place the reality of the architecture visibly adjacent to these readings. Whilst at the same time the drawing’s elevational characteristics illustrated something of the use and ‘occupation’, an important term to the experiential reading of the space described through the section. While recognising that they will not be entirely empirically based in proposing conclusions about the veranda we hope to reveal none-the-less the veranda’s ‘mechanisms for action’.

REFLECTIONS ON THE VERANDA—DRAWING STUDIES

Defining via Exceptions:

The single, most basic question that was repeated over and over again, both through the conventional historical research, and in particular through the voice of the drawings, was ‘is it a veranda?’ It is not necessarily any surprise that such questions of nomenclature would emerge through the rigorous unpicking of what it was that the veranda actually did. After all there is a plethora of typological cousins to the veranda that bear similar traits; stoop, porch, balcony, awning and deck. Part of this confusion in the veranda’s categorisation is a direct outcome of the nature of such typological research that focuses upon finding generalities from specific places, and therefore is always oscillating between the exceptional and the generic. In asking this question, the terms of defining what a veranda is, and does, changed. However, what might be called ‘physiological definitions’ became significant because of these very exceptions. Interestingly, it was significant because many of the projects selected for documentation deliberately deviated from this anatomical definition, yet were emphatically defined as verandas because they seemed to possess certain common qualities. These qualities were often fundamentally organisational, but they were also experiential. It could be argued that this related to the ‘essence’ of the veranda. The following are examples that complexify the physiological definitions of a veranda.

Veranda as Buffer:

The drawing of the Regatta Hotel (1886) illustrates an example where the building still possessed the ‘essence’ of a veranda. Here, the structure attached to the building was still a veranda because it manifested as a ‘buffer’ between the inside and the outside, despite having two balconies above it. The organisational relationship of the balconies above the threshold would effectively categorise the bottom space traditionally as an awning. However, because the veranda occurs within the site boundary, and does not project onto the street, it was loosely defined as a veranda.

The Veranda Effect:

The idea that the conventions of the veranda are a form of experiential effect rather than a particular elemental configuration that can be quantified and measured is important as it identifies the formal circumstances in which the effect occurs is as idealised as the central aim of the research, even while it is recognised that this is a subjective and speculative search in itself. A sense of enclosure, and the idea that the veranda is a space for rest and acclimatisation is core to the majority of scholarship on the veranda. But the relationship of experiential envelope to public and private space was also identified as being very important. Similar to the Regatta veranda, the Spring Hill (1896) veranda served as a place for rest and repose from the oppressive climate of Queensland. In this instance, it penetrated into the public realm. Here the veranda no longer acted to mediate between, between the private and public realms. Here, what at first glance appeared to be a veranda was in fact categorically
simply an awning as it no longer served any form of social mediation. The appropriation of the anatomy of the veranda—its basic skeletal structure—without the application of its more fundamental conceptual structure in the Spring Hill example demonstrates a public-ness in the veranda’s application that ultimately reprograms its true veranda-ness.

Villa Veranda:

The appropriation of the anatomy of the veranda without understanding its actual physiognomy is brought to bear here as the Spring Hill example demonstrates a public-ness in the veranda’s application that ultimately reprograms its use and undermines its conceptual framework entirely as a functioning a-typical veranda. The proposition that there was a form of veranda urbanism at work was proposed, initially, not based upon any particular observations drawn out of rigorous historical research concerning the veranda, but rather it developed from applications of the types that appear genealogically similar to the veranda such as the Spring Hill example. It was also born out of contemporary urban projects, such as the James Street Markets (2002) by Cox Rayner Architects; where long linear awnings were used to resolve the public edges of commercial and hospitality projects in order to engage with the public realm beyond, and conform with the relatively recent concern with Tropical outdoor-living (Carter, 2005). The veranda here was applied as a device that also provided a model for a particular relationship between the public and the private realms that would seem intuitively linked to traditional applications of the veranda. However, as the research survey progressed, it became clear that there was indeed an emerging veranda urbanism that resulted from how a building was orientated upon its site, and how this orientation effected the veranda’s interstitial configuration between the building and the site.

Evidenced by the research drawings, the veranda’s setback from the site’s front boundary is important in structuring how the veranda stages and mediates the public relationship between the house and the street. In effect, the veranda acts to negotiate between these two public and private territories. Specifically, the veranda becomes an important transformational device in that it assists in reconciling the ineffectual size of the lot relative to the house’s yearning to be a true typological villa. That is to say, in situations where the sites were thinner, the veranda became an important device in reconciling the villa typology’s need for greater site area upon which to perch. It could be possible to argue a direct relationship between the colonnade of the villa and the veranda on these thinner sites, however more research into the figure-ground plans of the veranda and their parent dwelling would be required in order to arrive at any definitive conclusions.

Slope of the Lot:

Topography was also revealed as an important component of the veranda’s physiognomy. The topography was clearly a primary agent in defining how the veranda engaged with the street, controlling the view lines and spatial character of the resulting interstitial space. Notably, the fall of the lot in relation to the location of the house and the street was important because it created a variety of different scaled spaces, and therefore functional and recreational uses. The resulting veranda elevation appears to be often due to the desire to provide a utility space for storage below the house. In this instance the veranda effectively acts as a screening device, preventing the socially undesirable display of the accumulated possessions housed beneath the veranda’s floorboards. When the site slopes toward the street, the building is thus elevated above the street. This topographical condition amplifies arrival and address to the street, providing more drama to the front steps that fold from the street to the veranda’s edge. However, elevated blocks of land often also appear to cause the veranda to veil itself with lattice screening in order to provide visual privacy. In some verandas, the result of this screening was to move the socially activated spaces of the house, to the rear as a deck. This
effectively reduced the veranda to a service zone that no longer served any social mediation or activation roles to the street, rendering it as no more than nostalgic ornamentation.

Where the site sloped away from the street, the effect was quite different. This was particularly evident when observed relative to the landscape planting. Planting along the front boundary of the site consisted of trees and climbers on fences that conspire to make the space more enclosed and private. As a result, the veranda appeared to become more social. Considering ideal orientations on sites, downward slopes to fronts are generally south facing and so have moister microclimates. This has a direct effect upon the resulting screening by reducing the amount and density of vegetation that will grow in this orientation of the site, and therefore there is correspondingly less screening to the street.

Layers of Screening:

In combination with issues such as the slope of the site, the cumulative effect is a layered screening facade deep into the site. The majority of veranda conditions that were documented revealed that the front fences were generally opaque, sharing fenestration motifs between the building, veranda, and fence. The fence therefore can be understood to be providing the initial screening to the street. Gardens and landscape also obscure views to and through the house from the street. Finally, the lattice screening was often used as a skin on the outer surface of the veranda itself in order to both mediate climate, reducing solar penetration and glare, but also to prevent and/or control the unwanted wandering gaze of the public beyond.

CONCLUSION

In concluding, one collaborator, in completing a conceptual requirement of the project called the Experiential Device, created a light box that contained layered images that were applied onto overhead transparencies. Each transparency was conceptualised as a single layer in the overall veranda’s physiognometric sequence. As each image was layered over the next, the resulting x-ray image became progressively more and more opaque. It thus acted as a highly effective operable device to analyse the effectiveness of each of the constituent layers that defined the experiential sequence of movement and transition. What it most effectively revealed was the degree to which the veranda’s buffer effect could be replicated within a relatively thin space. Here, the veranda was re-conceptualised as a theatric concierge; as a social mask to mediate interaction between street and home. Its climatic operation less important than its social structuring of liminal space. This aspect of the veranda relying heavily on its relative height to the street and the slope of the lot. The sectional-elevational drawings thus became fundamental in determining the degree to which subtle variations in sectional height were required in order to support the veranda’s mediatory effect on social hierarchy.

Finally, the drawing method promoted by this teaching/research nexus project exemplifies a method of collaboration through which teaching and learning yield mutually beneficial outcomes. The drawings were fundamental as an operative device that could be re-orientated in relation to varying criteria. Literally, re-composed on the wall in relation to each other based on common characteristics; height, age, material, width, landscape, etc. Each operation of reframing the drawings as a suite entailed the exposure of other aspects embedded within their net, further expanding the argument of the research. The drawings therefore should be considered as a vocal collaborator and guide in traversing the social and spatial complexities that the veranda mediates. The drawings thus still have much to say, the question is whether we have the methodological strength of conviction to effectively listen to their wisdom and authority.
REFERENCES

HOGAN, J. 1982. Living history of Brisbane, Brisbane, Boolarong.
SKINNER, P. 2004. When a little is a Lot: an architect’s view. Queensland Planner, March 44.
TOUCHING THE SURFACE, LOOKING FOR SUBSTANCE – ARCHITECTURAL SURFACE AND CONTEMPORARY AUSTRALIAN PRACTICE

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ABSTRACT

Connecting to the theme of histories of architecture at the edge, the paper constructs a brief theoretical history of the architectural surface. It poses a challenge to architectural history, which is informed by conservative modernism, and its imperatives of space, structure, and function. Otherwise marked by thinness, surface is shown to have a more pervasive presence in the practice and theory of architecture, as attitudes to surface emerge and collapse, are revived and revised, thereby sustaining itself as a legitimate theoretical and artefactual entity, despite of and in cooperation with imperatives of architectural modernism. It achieves this by figuring as five distinct and occasionally interwoven modes – representational element; urban artefacts, markers, thresholds; integrated concept; physical and visual transience; and design and composition tool. In other words, surface engages the metaphorical, liminal, spatial, visual, as well as the methodological in architecture. By extending these frameworks to recent buildings designed by three practices in Sydney, Melbourne and Brisbane, the paper demonstrates the currency of these ideas, especially the careful, systematic, and purposeful consideration exercised in the design, resolution, and crafting of these surfaces.

INTRODUCTION

Emerging out of the research for David Saunders Founders Grant (SAHANZ), the paper argues that as a historiographical lens, surface marks the edge of architectural history, constrained ordinarily by disciplinary conventions of space, structure, function and programme. Using the frameworks of precursors, interruptions, failed interruptions, emergences, and reappearances, the first part of the paper structures a brief theoretical history of the architectural surface. This demonstrates that architectural surface is a complex and multivalent entity (conceptually and physically) that is pervasive and not ancillary to the history, theory, and practice of architecture. It has historically progressed and transformed, to return and coexist, as five distinct modes of figuration - representational; urban; integrated; transience (physical and visual); and design/ composition tool. The second part of the paper brings these frameworks into conversation with buildings designed by Dale Jones Evans in Sydney; John Wardle in Melbourne; and Donovan Hill in Brisbane.

PERSISTING SURFACE: BRIEF THEORETICAL HISTORY OF THE ARCHITECTURAL SURFACE

Precursors
Between the Renaissance and the eighteenth century, surface functioned as the urban marker, through the articulation of windows, doors, and loggias. Kohane and Hill (2006, p. 149) note the connection between windows and urban order, arguing that just as ‘doors and windows were parts of the whole building, so the building was part of the whole city. The symmetry of openings provided order to the wider urban environment’. Besides providing order and decorum, the surface also connected the building to the city through the means of theatricality. This was achieved through the design of loggias and balconies. Jacopo Sansovino’s Library in Venice enabled observation of the drama acted out in the urban arena, whilst also suggesting its role as a stage-set backdrop, against which the drama of city life could be played out (Johnson 2000, p. 439).

In post-enlightenment Europe and Britain, surface as representation came into sharp focus, as emerging knowledge on origins, religion, and science led to the rigorous interrogation of meaning. The first key topic was polychromy, towards which Felix Duban (1798-1870), Henri Labrouste (1801-75), and Gottfried Semper adopted a historicist attitude, promoting the use of colour as an authentic link with antiquity. The second key issue was tectonic ornament. Tectonics was to do with honest expression of structure or construction, and this was linked to the truth as the core value of religious morality (Crook 2003, 37). Truth to materials was evidenced in the use of coloured bricks to achieve decorative patterns in William Butterfield’s All Saints and G.E. Street’s St James the Less (Chatterjee 2008). Truth to structure was advanced by AWN Pugin (1812-1852), who argued that ‘ornament should consist of enrichment of the essential construction of the building’ (Pugin, 1973 [1841], p. 1).

Interruptions

The crisis of representation continued into the twentieth century, connected now with issues of imaging modernity and the technological imperative. Prompted by Adolf Loos’s polemical essay “Ornament and Crime” (1975 [1908]), the first disruption was the white wall. Loos rejected art Nouveau ornament of Vienna Secession figures like Otto Wagner, Otto Eckman, and Henry Van de Velde, declaring that the removal of ornament would make the ‘streets of the cities will glow like white walls’. He believed that the ‘house does not have to tell anything to the exterior; instead, all its richness must be manifest in the interior’ (Loos 1931 [1914]). Misreading Loos’s essay, Le Corbusier and other French architects adopted the legacy of advancing the language of whitewashed walls, a language of an architecture that was mute, which emphasized absence and lack as the new mode of representation.

The second key break was the so-called exposure of structure. The desire for self-representation (as opposed to representation) was the keystone of modernist thought. While it was a logical outcome of the advent of framed construction, it gained vitality and legitimacy from the debates on tectonic ornament in the nineteenth century, and further momentum from the notion of self-referential and non-representational autonomy in modern art. Commencing with Louis Sullivan’s use of the steel framed structure and ornament as its elaboration, and gaining full expression in Mies Van der Rohe’s
use of structural steel and glass in high residential buildings like the Lake Shore Drive Apartments, the desire for directness also informed Le Corbusier’s emphasis on the unpainted and unfinished concrete frames and surfaces in buildings like Unité d’Habitation Marseille.

The third interruption was the desire for transparency, manifested in iconic glass-houses, and high rise curtain walled structures. The glazed surface was resistant to decoration as it could neither age nor take on the marks decorative impress. Furthermore, it resisted deceit and dissimulation, and it was due to the declarative power of transparency that glass was deployed as a symbol of democracy and rationality. The preoccupation with transparency was no doubt indebted to deeper cultural desires evidenced in nineteenth century fascination with the body, culminating in the emergence of the X-Ray, which Beatriz Colomina notes as coextensive with the twentieth century glass structures that draw the eye into its interiors without the necessary dissolution of the building’s boundaries (2003, p. 123). The status of surface was finally and significantly weakened due to August Schmarsow’s discovery of space in late nineteenth century, and its subsequent permeation into architectural discourse from the early twentieth century.

Failed Interruptions

These interruptions were incomplete. Mark Wigley (1995) and Helene Furjan (2003) argue that the white wall was not a surface-less plane. For both Loos and Corbusier, the white wash was a form of clothing – an architectural argument formed within broader debates on fashion. For Loos, it was akin to the gentleman’s black suit, and for Le Corbusier it was akin to a white shirt (Furjan, p. 121; Wigley, p. 2-33). Furjan (pp. 125, 121) argues that in the ‘understated suit of the English bourgeoisie’ (and this applies to the white shirt as well) the focus shifted from the ‘application of gilt, appliqué or filigree’ to the ‘cut and quality of cloth’. This manifested as smoothness and flawlessness of the plaster coat, inherent decorativeness of the marble in Loos’s projects, and the firm and crisp form of the surface enabled through the concealed use of structural formwork in Corbusier’s projects (Furjan, p. 116; Wigley, pp. 185-186).

Self-representation and architecture are disciplinary contradictions. This is evidenced for instance in Mies’s works. Robin Evans (1990, p. 58) notes that the Lake Shore Drive apartment ‘refuses to declare the downward thrust of its own mass’, amplified by the visual disconnection between the painted columns and the white soffit (60). In addition, the Mies had used welded I-beams on the outside of structural columns. Venturi explains that the I-sections were as ‘decorative as the pilaster on the Renaissance pier or the incised shaft in the Gothic pier’ (Taylor 1992, p. 194). While it was added to stiffen each frame, Mies claimed that without these elements the building simply “did not look right” (Schulze 1995, p. 243). Using Walter Benjamin’s theory of the trace in craft (hand made or industrial production), Ruskin’s argument that architecture is anything that exceeds the act of building, and Carlyle’s theory that language is the clothing of thought, and together they constitute the emblem – the visual thing – it is possible to argue that all productions are also forms of representation.
The glazed surface too repelled the penetrating eye, thereby marking the failure of transparency. In “Fear of glass”, Jose Quetglas (1988) notes the doubling and the reversal of the reflections in/on the glass walls of the Barcelona Pavilion which deters and rejects the observer. This is complicated and exacerbated by high-rise structures. Referring to Mies’s Friedrichstrasse project, K Michael Hays (1984, 19) notes that the ‘glass curtain wall-alternately transparent, reflective, or refractive depending on light conditions and viewing positions-absorbs, mirrors, or distorts the immediate images of city life’. Leatherbarrow and Mostafavi (2003, pp. 201-203) recognize this constant transience as the architecture of distraction, which sets up visual conditions not unlike that of the moving image. This marked the emergence of surfaces that were optically transient.

Emergences, Reappearances

The persistence of the surface was complemented by the emergence of new mindsets. The first is the concept of the integrated surface, which emphasizes the performative role of the surface in manner that is productive to the construction, occupation, and experience of the building. Bypassing the pragmatic manifestation of this as the double-glazed curtain wall, the paper makes forays into poetic examples that privilege the dialogic relation between surface and structure and/or space. Examples of this include Toyo Ito’s Tod’s Omotesando Building (2002–04) and Mikimoto Ginza 2 (2004–05) in Tokyo; Lars Spuybroek’s competitions entries for Jeongok Prehistory Museum, South Korea and Jalisco Library, Guadalajara, Mexico, which features the clustering of structural elements to produce a surface that is structural as well as decorative; and Zaha Hadid’s Marsa Dubai Residential Tower two concentric vertical concrete tubes, with the inner as functional and the outer as decorative as well as spatial (Tramontin 2006; Rahim and Jamelle 2007).

The second emergent mindset is the development of surface as a compositional and design tool. Over-articulation of the wall in the late twentieth century architectural practices privileged it as a compositional motif. Ken Moffett (1994, p. 242) notes the “increasingly pronounced tendency to treat the wall as an autonomous designed object, independent of the building volume with which it is associated. There is a ‘continuum of approaches, ranging from surface elaboration of the wall through low relief and high relief, to full design autonomy’. This is taken further as the emphasis on topology and architecture as a surface condition due to advancements in digital visualization and fabrication, which enabled the plastic manipulation of surface to create novel forms and spatial organizational models.

The representational surface reappeared through the Robert Venturi and Denise Scott Brown’s notion of the decorated shed (Leatherbarrow and Mostafavi 2003, p. 99). Urban markers and thresholds also reappear in Lucien Kroll’s Université Catholique de Louvain in Brussels, which is a critical comment on the commodification of urban living; and Rafael Moneo’s Murcia Town Hall, which resonates the rhythms of piers in the Baroque cathedral in the square (McLachlan 2006, pp. 194, 197). The notion of transience evidenced in the glazed surfaces of twentieth century architecture is revisited but transformed in the contemporary practice of techno-kinetic facades in Arab World Institution by Jean
Nouvel and Flare by Staab Architects, and media facades in the scheme for the Music Box by Foreign Office Architects.

THE LOCAL STORIES: RENEWED MEANINGS IN AUSTRALIAN PRACTICE

The theoretical history of architectural surface reveals its five distinct modes of figuration. The representational surface contains coded messages, symbolic and/or literal. As an urban marker or threshold, surface contributes to the making of public space. Surface as an integrated concept surmounts its exteriorized status as skin, asserting its vitality in construction and spatial experience of the interior. Optically and physically transient surfaces also resist their identification as pictorial or imagistic, by refiguring to the shifting climatic and occupational conditions. Finally, surface is absorbed into the language of form making (through manual and digital processes of layering, folding, pleating), offering a panacea to the classical orientations of the design discipline. Applying a psychoanalytic metaphor to the historical reading, the paper argues that the (persistent) surface is like the unconscious (depth) of architecture, which cannot be repressed and trivialized, but which must always prompt the displacement of dichotomies of interior/exterior, functional/superfluous, deep/shallow and so on. Contemporary Australian practice has variously engaged and enlarged these debates, since (and perhaps before) the watershed developments like Edmond and Corrigan’s RMIT Building 8 (1993) and Ashton Raggatt McDougall’s Storey Hall (1995) in Melbourne.

The Art Wall (2004) by Dale Jones Evans in Kings Cross Sydney compresses into the single surface multiple modes of figuration. At the representational level, the building is analogous to the human body with the steel plated base as the feet, the body consisting of two glazed faces covered with patterned laser cut screen, and the head consisting of an illuminated public art space (Evans 2004). The building’s surfaces are also strong urban gestures. The exterior becomes variously legible from different vantage points. At the most intimate level, the base thickens as well as hollows out a sculptural cavity, gesturing to the urban context. At a tactile level, the grittiness of the screen, which is meant to weather and take on the patina of age, connects with the context of Kings Cross as a tough inner city area. At a larger urban scale, the light box conceals and animates the plant room, and participates in the collective urban discourse of advertising and commerce (Evans, DJ 2009, pers. comm, 03 July).
The Art Wall also employs the notion of transience. In displacing the commercial typology of providing uninterrupted views, the building is wrapped in a metal skin. Evans argues that like the human skin, the skin of the building should not dissolve or dissipate. Hence, while the screen is characterised by steely opacity, it is also permeable. It enables the experience of being inside (enclosed) whilst being outside (exposed) (Evans, DJ 2009, pers. comm, 03 July). The resolution of the screen is underpinned by the architect’s training in photography and optics. The cuts and scores in the screen are treated as apertures, which are tested at 1:1 scale to ensure the simultaneous appearance and disappearance of the screen (Evans, DJ 2009, pers. comm, 03 July). The integrated aspect of the surface becomes apparent as the decorative patterns of the screen cast distinctive and transient shadows deep into the office spaces, thereby allowing the surface to permeate and animate the interior occupation. Dale Jones Evans’s (2008, p. 9) declaration that the screen entered his “architectural repertoire as a painterly devise expressed industrially or sculpturally, to mutually reinforce functional concerns; sun and environmental control, light-optics and picture making, public-private transitioning” confirms the evidence of coexistence of representational, urban, transience, and integrated aspects of surface in their projects.

The approach of Donovan Hill is urban and transient, and non-representational. They consider their buildings to be light reactive but not overly meaning rich. In commercial buildings that have a repertoire too limited to allow it a distinctive character, surface manipulation allows normative form to be managed and the building to be experientially “re-delivered” (Timothy Hill 2010, pers. comm, 13 July). Santos Place, Brisbane is wrapped in a skin that does not connote anything besides itself. It is purely optical and transient, designed to allow what Hill terms as the “cumulative” experiential dimension of the ornament - of varying scales of ornament interacting to produce visual effect. The surface reflects the light of the coloured gussets onto the horizontal spanning elements (Hill 2010). The spanning elements are doubled in the curtain wall and the surface effect is a doubling of the experience, evidencing the cumulative experiential dimension progressed by Donovan Hill. The optical pleasure of the Santos Place, viewed against the skyline of the South Bank, is a fitting urban response. As the horizontal spanning members are separated by a distance from the glass skin, the shadows on the piercings in the spanning elements move and shift as do the colour of the facade through the course of the day (Hill 2010). Furthermore, the building consists of two major clad flanks, and the colour scheme of the shear side transfers onto the gussets on the eastern side. The animate quality of the surface of Santos emerges out of a penetrating consciousness of the local qualities of light, and the urban condition of movement corridors and angles of view.
John Wardle Architects use surface as representation, especially the use of allegorical allusion to the programme, in a lot of their projects, such as the book bond brick facade in the Melbourne Grammar School indicating the shelving/library area, and cut-outs in the façade of Exercise Science and Sports Precinct, Victoria University, Footscray which are silhouettes of athletic bodies from Eadweard Muybridge’s oeuvre. However, the paper pursues their work with glass facades, which engage both the integrated and the transient phenomenon. Melbourne Grammar School’s glass façade is composed as multiple juxtaposed bays, which vary in depth. This doubles as well as multiplies the urban landscape context, as the reflection of the historical trees is constantly broken, shifted, and repositioned on the façade. The facade demonstrates degrees of opacity and transparency due to the shadows cast by the varying depths of the bays. The glass contains pixelated impressions of the *fleur-de-lis* of the School crest. These patterns simultaneously appear and disappear with respect to the moving eye, thereby ‘thickening’ the glass surface, as they coalesce with reflections of the landscape. The combination of these effects lends a strong sense of transience to the façade. The facade is also an integrated surface. As it is disconnected in its composition from functional or spatial imperatives, it allows a habitable threshold that hovers between the floor slab and the street. This creates distinctive and not always choreographed framings for viewing the landscape, which provides an experience quite different to that of standing against a window.

John Wardle Architects’ other projects use the glass façade to trigger epistemological shifts. The Jane Foss Russell Building, University of Sydney rejects the thinness of glass, imparting it with a conceptual and visual depth. This is achieved through a “layered system of glass, aluminium and frit patterning over the glass” and the “green glass and multi-coloured spandrels” that evoke the foliage of the heritage fig trees (Wardle 2009). The Urban Workshop, Melbourne rejects the non-tactile quality of glass. It does so by colliding the pulled thread textile designs of Anni Albers with the shifts in the Richard Serra grid (*To whom it may concern*, 1995) to develop a curtain wall of dis-aligned vertical soldiers, silver horizontal grid, and black fins to produce transient as well as a textured glass surface (Stefan Mee 2010, pers. comm, 21 January).

**SUMMARY**
In closing, this paper observes the deep connectedness of Australian practice with broader theoretical debates. Even though these connections are inflected through various particularities of place, client, philosophy, and project, they remain for now beyond the scope of this paper. The most important finding of this paper (and for the David Saunders Founders Grant at large) is that surface, at least in Australian architecture, is a considered, designed, and a resolved artefact that attends to ambitions of amplifying the experience of architecture beyond its formal and pragmatic limits, as an interior phenomenon and an urban artefact.

REFERENCE LIST


SESSION 3 - @ the Edge of Practice: Its Condition and Structure
XIANFENG ARCHITECTS IN CONTEMPORARY CHINA (1990s-2000s)

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ABSTRACT

The term “xianfeng” is a Chinese translation of “avant-garde” as “xian” means “advance” and “feng” means “guard”, conveying similar military meaning of the term “avant-garde”. Besides, “feng” has another meaning of “cutting-edge”. As such, on top of the original military metaphor of “avant-garde”, xianfeng refers to pioneers taking cutting-edge approach. Through the examination of both avant-garde theory and architectural avant-garde theory, xianfeng architects should have a fundamental condition of taking oppositional strategy against the past practice and mainstream convention as well as producing social criticism to issues in the society. By examining the works of Yung Ho Chang, Liu Jiakun and Wang Shu from this perspective, this paper argues that these architects can be considered as “xianfeng” architects in contemporary China.

KEYWORDS

Xianfeng, Avant-garde, Oppositional strategy, Contemporary Chinese architecture

TRANSFORMATION OF ECONOMIC-SOCIAL CONTEXT

The reform in China in the last three decades has a profound impact on Chinese architectural culture (Zhu, J., 2009, pp. 105-128; Zhu, T., 2009, pp. 88-93; Xue, 2006, pp. 3-5), so before discussing whether the selected Chinese architects are avant-garde or xianfeng architects, it is necessary to locate their works within the transformation of economic-social context in contemporary China.

Since 1978, there has been a significant economic, social and cultural transformation in China under the market-oriented reform. The marketization of society in China is described as a “Second Cultural Revolution” which is “incomparably more far-reaching and deep-seated in its consequences” than the previous failed one in the 1960s (Dirlik, 2001, p. 1). David Harvey even considers the year 1978 as a “revolutionary turning-point in the world’s social and economic history” due to the “liberalization of a communist-ruled economy” from a planned economy into a market economy in China that accounts for a fifth of the world’s population (Harvey, 2005, p. 1).

Under the Open Door Policy of Deng Xiaoping, considerable amount of foreign architects have been given commissions in China and their architectural interaction with Chinese architects is unprecedented. After the entry into the World Trade Organization (WTO) in 2001, the architectural market in China becomes more open to foreign participation. Importation of ideas and practices from the West facilitates cross-cultural dialogue in architecture, broadening the horizons of Chinese architectural practitioners, cultivating their
sensibility towards cultural difference and promoting their reflection of own tradition. Besides, the expanding middle class in the society and the emerging design-oriented developers also encourage young Chinese architects to explore alternative design approach.

In 1999, the exhibition “Experimental Architecture of China”, as part of the Twentieth World Congress of Architects, International Union of Architects (UIA), was displayed in Beijing, showing the works of Yung Ho Chang, Liu Jiakun, Wang Shu, Tang Hua, Dong Yugan, Zhao Bing, Xu Weiguo and Zhu Wenyi. Among these eight architects, the latter four are academic oriented with few completed architectural works, while Tang Hua’s works become conventional. On the contrary, Yung Ho Chang, Liu Jiakun and Wang Shu are outstanding and influential architects in contemporary China, actively involving in architectural practice.

Since “modernization in China was driven by external or Western forces” (Zhu J, 2009, p. 105), architectural breakthrough of Chang, Liu and Wang compared to their predecessors should be examined from a historical perspective involving the influence of Beaux-arts neoclassicism, modern movement, socialist realism and post-modernism.

TRANSFORMATION OF HISTORICAL CONTEXT

In the 1920s, the return of overseas Chinese architectural students, especially those from the University of Pennsylvania in US, brought the Beaux-Arts teaching programme and design method to China, influencing the adoption of eclectic approach in modern Chinese architecture. After the establishment of the People’s Republic of China in 1949, under Mao Zedong’s leadership, socialist realism was adopted as the “national form”, incorporating the Beaux-Arts approach with political symbolism, which was best exemplified in the Ten Grand Projects in Beijing completed in 1959. The influence of socialist realism continued until the late 1970s.

The economic reform in the 1980s not only introduced new investment and technology to China fostering modernization and urbanization, but also imported postmodern architecture which provided a theoretical basis for Chinese architectural practitioners to imitate traditional styles and incorporate classical elements such as big pitched roofs on top of new buildings as shown in New Beijing Library (1987) and Beijing West Station (1996).

In 1995, professional registration system for architects in China was promulgated, allowing architects to establish private practice rather than working in state-owned design institutes. Compared to acting as public servants fulfilling political task of the country and carrying out government policy in the past, architects nowadays enjoy more freedom for architectural expression in post-Mao China.

Within this context, the works of the three architects, Chang, Liu and Wang demonstrate self-conscious strategies in architectural design against grand narrative in the past (Chang, 2006, p. 12) and produce criticism of the current Chinese context. Their works will be reviewed in the later part of this paper.

EXPERIMENTAL AND AVANT-GARDE
Referring to “Experimental Architecture of China” exhibition in 1999, Chang, Liu and Wang are commonly regarded as experimental architects. However, as criticized by Gao Minglu, even though the term “experimental” maintains the idea of exploring boundaries, it lacks direction. In contrast, “avant-garde” highlights the “specific critical direction” of “two inseparable tendencies: social critique and self-critique”, implying “breaking free of constraints” in the social context (Gao, 2005, pp. 43-45). Although Gao focuses his discussion on Chinese contemporary artists, his view can be extended to discuss the contemporary Chinese architects.

The term “avant-garde” comes from the French phrase *l’avant-garde*, meaning “advance guard” or “vanguard”, that is “the foremost part of an army”. Under this military metaphor, it is now used to describe “pioneers or innovators in any art in a particular period” (Simpson & Weiner, 1989, p. 813). Besides, it can also refer to an “advance group in any field” having the works that are “characterized chiefly by unorthodox and experimental methods.” (LLC, n.d.) In order to lay down a theoretical framework for further discussion, avant-garde theory and architectural avant-garde theory are to be analyzed.

**ANALYSIS OF AVANT-GARDE THEORY**

Influential scholars of avant-garde theory include Clement Greenberg, Renato Poggioli and Peter Bürger. Greenberg considers that the avant-garde should maintain high levels of art by retiring “from public altogether” and raising to the level of “art for art’s sake” (Greenberg, 1961, p.5-6) in order to oppose kitsch production, that is, superficial, stylish fashion. In parallel with Greenberg’s thinking, Poggioli considers the avant-garde as “a minority culture” in “combating and denying the majority culture” (Poggioli, 1968, p. 108). Following the literal meaning of the term “avant-garde” as a leading edge of the mainstream ahead of their counterparts in a progressive movement, Poggioli highlights the opposition of the avant-garde to the majority and the public. (Poggioli, 1968, pp. 36-37).

Contrasting to Greenberg and Poggioli, Bürger takes a historical approach reviewing the development of western art history, especially the increasing autonomy of art as demonstrated in aestheticism among the bourgeois in the nineteenth century. By defining “autonomy of art” as “art’s independence from society” and “art’s detachment from the context of practical life” (Bürger, 1984, pp. 35, 46), Bürger points out that the aim of the avant-garde in the early twentieth century was to attack the institution of art with an aim to reintegrate art into life praxis and to return art to its effective place in the society, rejecting the idea of “art for art’s sake”. Theoretical contribution of Bürger has been considered as “persuasive” and “productive in the realm of architectural history” (Heynen, 1999a, p. 130), so the relevance of avant-garde theory to the architectural avant-garde is to be discussed.

**ANALYSIS OF ARCHITECTURAL AVANT-GARDE THEORY**

Compared to other architectural scholars, Manfredo Tafuri, Hilde Heynen and Michael Hays significantly contribute to the discourse of the architectural avant-garde. Tafuri, similar to the views of Bürger, considers that the criteria of determining the architectural avant-garde are their fundamental condition to “break with the past” (Tafuri, 1998, p. 18) and their attempt of pursuing reintegration of art and life (Tafuri, 1987, p. 147). Heynen also stresses the social
role of the architectural avant-garde and criticizes the “autonomous domain” of architecture that has “no real impact on the social system” (Heynen, 2007, pp. 50-51).

Similar to Tafuri and Heynen, Hays, by referring to Bürger’s *Theory of the Avant-Garde*, defines the aim of the avant-garde in the early twentieth century as “an attack on the ‘highness’ of high art and its separateness from everyday life” (Hays, 1988, p.154). To Hays, “removed”, “inward”, “self-referential” architectural practice in favour of “strict formal analysis” comes from the “ideology of high art”. By quoting Tafuri’s writings, Hays comments that the “autonomous formal operations” of contemporary architecture shut down “certain social functions that architecture had previously performed” (Tafuri, 1998, p. xiii).

Although Tafuri considers that under the totalizing power of capitalism, the avant-garde’s strategies of resistance and critique would inevitably be compromised and be absorbed into consumer society (Tafuri, 1976, p. 181), Heynen appreciates the “avant-garde impulse in architecture” as it deals with everyday life and environment instead of aiming to erect prestigious buildings (Heynen, 1999b, p. 223) while Hays acknowledges the effort of resistance by architects against the commercialization and consumerism (Hays, 2010, pp. 11-12).

Based on the above discussion, apart from the fundamental condition to “break with the past” as mentioned by Tafuri, the architectural avant-garde should have a “real impact on the social system” in Heynen’s term, and perform “certain social functions” according to Hays. Before applying these criteria — oppositional strategy against the past practice and strategy of social critique — to examine the selected contemporary Chinese architects, it is noteworthy to discuss the significance of the Chinese translation of the term “avant-garde”.

**AVANT-GARDE AND XIANFENG**

The Chinese translation of the term “avant-garde” can be *xianfeng* or *qianwei*. Both *xian* and *qian* have the sense of “advance”, while *feng* and *wei* can express the meaning of “guard”. The term *xianfeng* can be traced back to 285 CE with military connotation (*Old Chinese Dictionary*, 2000, p. 381), similar to the original French phrase *l’avant-garde*; while the term *qianwei* was considered as a new term in China in the 1930s (*Dictionary for New Terms*, 1932, p. 71). In addition, the word *feng* can also represent the meaning of “cutting edge”. As such, *xianfeng* does not merely refer to advance guard, but also pioneers taking cutting-edge approach. Therefore, it is more appropriate to use the term *xianfeng* rather than *qianwei* or avant-garde to discuss the cutting edge approach of the selected Chinese architects within the context of contemporary China.

**OPPOSITIONAL STRATEGY AGAINST THE PAST PRACTICE**

Yung Ho Chang in “Learning from Industrial Architecture” (2000) states that “basic architecture” involves connection of materials, logic of construction, quality of workmanship, relationship to the site and spatial experience to the users, instead of any added-on decoration or interference of ideology (Chang, 2000, pp. 22-23), implicitly opposing the Beaux-arts tradition, socialist realism in the 1950s-70s and post-modernism in the 1980s-90s.
As a first built work in Beijing by Chang after teaching in US for more than ten years, Xishu Bookstore (1996, Fig. 1) incorporates elements of bicycle, an ordinary object in China, into the bookstore design. The provision of bicycle wheels allows the bookshelves to rotate, providing spatial variety within the rectangular store. The insertion of neon lighting into walls and floors establishes the inter-relationship between translucency and opacity, light and shadow. Even though this is merely a small project using simple materials, it has a pivotal role in contemporary Chinese architecture, signifying the emergence of architectural pursuit of individual architects in China in the mid 1990s.

Liu Jiakun’s use of materials is closely related to his “low-tech strategy” (Liu, 1997, pp. 46-50) which emphasizes the methodology of “coping with reality”. Paying attention to the use of available materials and local conditions “right now and right here” under the influence of critical regionalism, Liu aims to strike a balance among architectural quality, buildability, and financial viability, which can be illustrated in his Luyeyuan Stone Sculpture Museum (2002, Fig. 2). Due to the lack of skilled labour, Liu adopts a combined construction method of having bricks as inner face of the layered walls, which can serve as a formwork for the exterior in-situ concrete, to ensure the verticality of the walls. Besides, the highly textured concrete walls can conceal any defect in the pouring technique and evoke a carved appearance which can echo with the theme of the sculpture museum. Besides, Luyeyuan Stone Sculpture Museum can illustrate Liu’s concern for spatial arrangement and sequence of space. The entrance ramp from a bamboo wood invites visitors to walk over a lotus pool, symbolizing purification before entering the first floor of the exhibition hall. The descending journey from the first floor to ground floor within the museum corresponds to the concept of “underground palace” which exhibits the archaeological collection of historical sculptures. The provision of glazed vertical slits facilitates the interplay of light and shadow and provides glimpses of the natural landscape outside.

Akin to Chang and Liu, Wang Shu also demonstrates his persistent interest in materials and construction in his works. In his Top Floor Art Gallery (2000, Fig. 3), the catches and latches are made by local ironsmiths rather than being selected from commercial catalogues of mass-produced industrial products. Concerning with simple handcraft and folk building techniques, Wang prefers to stay on site to discuss construction details with craftsmen and workers. He also allows different materials: steel panels, concrete, glass and timber to be juxtaposed without transition or concealment, intentionally expressing materiality in the interior space.

As expressed in their architectural works, Chang, Liu and Wang share similar concern for materiality and spatiality which are detached from any ideological connotation and the “national form” in Mao’s era as well as distinguished from conventional commercial approach and postmodernism in the 1980s.
STRATEGY OF SOCIAL CRITIQUE

Apart from exploring materiality and spatiality as an oppositional strategy against the past practice, Chang, Liu and Wang also attempt to produce social criticism through their works. Chang’s early work, Qingxipodi Housing (1995, Fig. 4) is a critique of the phenomenon of extensive villa development in China, which basically follows the western suburban development approach of constructing detached houses surrounded by yards, resulting in ineffective use of valuable land resource. In contrast, the introverted courtyard design of Qingxipodi Housing enables the residential units to be attached together in a comparatively higher density manner, while at the same time allows the users to have easy access to outdoor activity space in the courtyards.

Liu Jiakun’s social response is best manifested after the Sichuan earthquake in 2008. As an architect working in Sichuan, Liu erects a small structure, Hu Huishan Memorial House (2009, Fig. 5), by his own funding, for an ordinary secondary schoolgirl who died in the Sichuan earthquake. Using a common refugee tent as the shelter, the interior of this memorial house is painted in pink, the girl’s favourite colour, and exhibits the girl’s personal belongings. Although this memorial house is small in scale, Liu considers that this is the most meaningful work of his professional career because to Liu, “the concern for every single ordinary life is the foundation of revival of a nation” (Liu, 2009, pp. 131-133).

Facing large-scale speedy urban development in China, Wang Shu comments the current situation in China as “collapsing cities” (Wang, 2007, p. 45) and the original Chinese tradition of building cities in compatible with natural landscape has been lost. In his Xiangshan Campus (2004, 2007, Fig. 6) of China Academy of Art, Wang Shu aims to design the campus as a new model for cities and brings urban dimension to his architectural works. This campus is not designed in isolation, but is based on his thinking between nature and city. Although the buildings in the campus around the mountain, Xiangshan, seem to be loosely dispersed, their alignment and positions follow sensitively the undulating profile of the mountain. More than seven million pieces of old discarded roof tiles and bricks salvaged from demolition sites all over Zhejiang province are used in Xiangshan Campus. The random pattern of bricks of different sizes, colours and shapes on the facades not only revitalizes traditional craftsmanship, but also exemplifies Chinese vernacular sustainable construction approach, in opposition to the massive demolition and consumption phenomenon in Chinese cities nowadays.

These works demonstrate the strategy of social critique of Chang, Liu and Wang to the issues in the contemporary Chinese society regarding the extensive villa development, post-earthquake disaster and massive destruction phenomenon.
TRADITION IN TRANSFORMATION

Exercising oppositional strategy against the past and providing social critique of the society, Chang, Liu and Wang act as xianfeng architects and demonstrate their cutting-edge approach in contemporary China context compared to their predecessors.

T. S. Eliot (1888–1965) states that:

_Tradition is a matter of much wider significance...It involves, in the first place, the historical sense...the historical sense involves a perception, not only of the pastness of the past, but of its presence...what happens when a new work of art is created is something that happens simultaneously to all the works of art which preceded it. The existing monuments form an ideal order among themselves, which is modified by the introduction of the new (the really new) work of art among them. The existing order is complete before the new work arrives; for order to persist after the supervision of novelty, the whole existing order must be, if ever so slightly, altered; and so the relations, proportions, values of each work of art toward the whole are readjusted; and this is conformity between the old and the new. (Eliot, 1982, p. 37)_

According to Eliot’s theory of dynamic tradition, the tradition is conceived not statically, but dynamically under constant transformation. From this perspective, the architectural breakthrough of the works of Chang, Liu and Wang has transformed the tradition of contemporary Chinese architecture. Under marketization and building boom in China, their challenge ahead is how to maintain their oppositional strategy and criticality of architectural practice in the commercialized society nowadays.

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SOURCES OF ILLUSTRATIONS

Fig. 1 http://www.fcjz.com

Fig. 2 http://chinese-architects.com/projects/detail_thickbox/1790/plang:zh?TB_iframe=true&width=850&%3Bheight=570

Fig. 3 http://www.ccabbs.com/designer/00/designer_ws/works/b39.jpg

Fig. 4 Shi jie Jianzhu. [World Architecture.] (1996), no. 2, p. 57.

Fig. 5 http://chinadigitaltimes.net/wp-content/uploads/2009/12/1.jpeg

Fig. 6 © Hing-wah Chau

REFERENCES


ABSTRACT

Examining the existing management structures that are internal to architectural practice, as well as the historical formation of the discipline of architecture, this paper will investigate the relationship between collaboration, multi-disciplinary teamwork and creativity in the organization of architectural practice. Focusing on the important model of Skunk Works, and with a particular emphasis on the design practices of Diller, Scofidio + Renfro in architecture, this paper will examine the horizontal and vertical management of organizations and the opportunities for innovation and invention that are enabled within it. The paper opens onto a broader argument about the disciplinary constraints of architectural production and the enabling perspectives offered by cross-disciplinary collaboration.

KEYWORDS

Diller, Scofidio + Renfro, Skunk Works, architectural management, creativity, collaboration.

INTRODUCTION

In one of their early texts, Elizabeth Diller and Ricardo Scofidio observe that a “deviant” is, by definition, a crossing of lines and, by implication, the internal collapse of edges (Diller & Scofidio, 1996). Writing in the preface to a 2007 monograph on the work of Diller, Scofidio + Renfro, Martin Reinhold discovers that “[t]here is a small marker that recurs with astonishing regularity in the work of [Diller, Scofidio + Renfro…] sometimes explicitly, sometimes implicitly. Call it a crosshairs, an ‘x’—or really, a ‘+’—marking any number of spots, whether they are occupied by buildings and/or parts of buildings, or by viewers and/or
users.” However, for Reinhold, this intersection is not only graphical but structural, “[t]o the extent that this sign also marks the collaborative space between partners and thus the space of the architectural firm itself” (Martin, 2007). Elaborating on this in the conclusion to the piece, Martin argues that the “+” constitutes “something like a world view […] in the sense of a view of the world seen from within architecture.” The cross marks the hinge, or the collision of horizontal and vertical. In an architectural sense, this becomes plan and section. In corporate management terms, it is the intersection of horizontal and vertical organizational structures. However the “+” can also be read as an additive element, implying the addition of both techniques and critical knowledge that are traditionally extraneous to architectural production but also profoundly relevant to its conceptualization. Martin’s starting point in positioning the work of Diller, Scifidio + Renfro is instructive and enables a reading of the additive nature of their practice as well as its connection with issues of management and innovation.

ARCHITECTURAL PRACTICE AND DESIGN MANAGEMENT

The scholarly exploration of architectural practice and “design management” is a relatively new scholarly field that has only recently attracted academic interest and the emergence of a discernible critical discourse. As Emmitt, Prins and den Otter (2009) have noted, prior to the 1990s the management of architectural practice was of interest to professional bodies and engaged practitioners (Bennett, 1981; Coxe, 1980; Kaderlan, 1991; Oakley, Clipson & Borja de Morzota, 1990) but virtually absent in scholarly writings within the discipline. The first inter-disciplinary conferences and edited publications on architectural practice and management in the early 1990s were instrumental in setting up an academic forum for the exploration of practice and management (Nicholson and Prins, 1993; Nichloson, 1992) as well as adding legitimacy to architectural practice as distinct from other management structures. While these publications and events have been influential in establishing a scholarly interest in the subject, they have generally focused on the operational and internal pressures that limit architectural production and with a discernible bias towards the United Kingdom and European economic conditions. Within this expanding discourse, the relationship between creativity and architectural management has been a submerged (but recurring) theme, tied to the recognizable peculiarities of the design process and the associated risks that pertain to the built environment. While this discourse has established architectural practices as an independent, and highly idiosyncratic, organizational structure, the significance of cross-disciplinary and extra-disciplinary management structures in influencing architectural practice has been relatively under-represented or overlooked. Through an examination of engineering and management practices outside of architecture, this paper will look at the role of inter-disciplinary collaboration in architectural practice and the impact this has on creativity and innovation.
Even though the relationship between creativity and organizational structure has been a central theme in the discourse of management (Bilton, 2007; Julier & Moor, 2009), it is not as widely researched in the field of architecture. Given the transformations that the profession has undergone in the last two decades, the specific issues of practice management are becoming more critical to the production of architecture and indelibly linked to its conceptualization (Sebastian & Prins, 2009). Equally, with the growth of technology in the design and documentation of architecture, practices find themselves working in extended multi-disciplinary environments that often require the coordination of vast amounts of technical information within very short frameworks in time. The pressures placed on creativity in this scenario are significant and require new models through which architects are organized and engage with the world.

While a number of practices have explored creative avenues in the organization and management of their practices in the last two decades (Gimeno, 2002), there is still an overwhelming emphasis on vertically structured design and decision-making teams that work directly with consultants as part of an extended network of responsibility and risk. One of the practices in this period that has (consciously) sought to explore more deeply the opportunities for horizontally structured organization is Diller, Scofidio + Renfro which, as well as embodying the creative issues of inter-disciplinary collaboration, have sought to rethink the modes through which organizations are structured, interact and are managed. Embodied in the “+” that Reinhold observes in the naming of their practice, the “+” is also representative, in this context, of the adding of disciplinary knowledge, configured through a studio process that enables: architecture + art + theatre + performance. The determination to blur these disciplinary boundaries is fundamental to the practices of Diller, Scofidio + Renfro, as well as providing the framework through which their work can be read in the context of management and experimental studio practice.

ORGANIZATIONAL STRUCTURES IN DILLER, SCOFIDIO + RENFRO

Diller + Scofidio began as a partnership between Elizabeth Diller, architect and theorist, and Ricardo Scofidio, artist and architect. The two began their collaboration in the early 1980s completing a number of installation and gallery works that received a large amount of critical attention and curatorial praise. In the mid 1980s the pair became heavily involved in set design, dance performance and collaborated on a significant adaption of Marcel Duchamp’s *Large Glass* into a theatrical form. This last project was undertaken in collaboration with Susan Mosakowski (as director) and was first performed in the Philadelphia Art Museum (the home of the *Large Glass*) to celebrate the centenary of the death of Duchamp in 1987 (Diller
& Scifido, 1988). While these projects were received more favorably amongst architectural theorists (Hays, 2003; Hays & Kogod, 2002; Teyssot, 1996; Friedman, 1991; Betsky, 2003; Vidler, 2003) than with art critics (Foster, 2007; Rothkoff, 2003; Philips, 2004), the projects garnered an array of critical attention and established the reputation of the practice as an innovative and dexterous creative team.

In the 1990s, the concerns of the practice shifted from gallery installations to built architectural works that, embodying the critical currents that underpin their art installations, saw a migration of their key ideas from explorations in new media, towards critical insertions into the built environment. While architecture was an underlying theme in the early works of the practice, the migration into architecture saw a renewed emphasis on buildings and the growth of the practice to facilitate an expanded and intensive design studio culture. This transformation also saw the dramatic expansion of the practice and a restructuring of its organization and management. In the middle of 2004, Diller + Scifido changed the name of their practice to Diller + Scifido (+ Renfro) acknowledging that Charles Renfro had been made a partner. Shortly after the name became Diller, Scifido + Renfro and the two are sometimes used interchangeably (Incerti, Ricchi & Simpson, 2007).

The recent mainstream success of Diller, Scifido + Renfro—built upon the revered Blur project (Diller & Scifido, 2000; Diller & Scifido, 2002) and subsequent commissions for demanding and constrained gallery and performance spaces (Foster, 2007) as well as tightly considered contextual insertions (Diller & Scifido, 2003)—has seen the nature of their practice change as the themes embedded in their early work have shifted to the margins of their productive output. The most high profile projects from this period are the Boston Institute of the Contemporary Arts (2006) and the Juilliard School of Ballet in New York (ongoing), however the un-built Eyebeam institute (Diller & Scifido, 2003) is one of the most widely published projects and has attracted a lot of attention in the popular and architectural media. This popular attention has coincided with the growth of interest in their architectural projects from the perspective of architectural theory and the practice’s increasing alignment with architecture as the predominant medium in which it operates (Vidler, 2003). In a number of ways, this process has seen “traditional” architecture replace their earlier concerns with experimentation and the dematerialization of architecture. Using a methodological approach that draws comparisons between the discourse of management theory and the pragmatism of architectural practice, this paper intends to examine the work of Diller, Scifido + Renfro as an emerging model of cross-disciplinary collaboration. With this in mind, the remainder of this paper will focus on the transformation of the management structure of Diller, Scifido + Renfro in this period and the extent to which it diverged from contemporary architectural practices.
That Diller, Scofidio + Renfro’s work is esoteric is already well established in the disciplinary studies of their practice in architecture. It is no doubt a result of this esoteric structure that K. Michael Hays and Lauren Kogod (2003) locate their work “at the boundaries of the architectural discipline”. In Anthony Vidler’s (2003) summation of the practice, he argues that the work of the practice is paradigmatic in shifting the concerns of architecture away from the autonomous status of the architectural object and towards a re-engagement with the functional requirements of program. Vidler argues that this approach “points to the way in which critical theory, new media and the inventive reconstruction of space and time can imply programmatic invention that is neither functionally determinist nor formally autonomous”. The work of the practice is inseparable from broader discussions of autonomy and the extent to which their process liberates them from the functional burdens of architecture and its limits. By traversing the boundaries between disciplines, Diller, Scofidio + Renfro are able to interrogate aspects of architectural agency: firstly, in their productive capacity as architects and, secondly, as interlocutors, questioning the institutional and functional preconditions of modernism through their installation work. In each case, they have undertaken to expand the creative potential of architecture through an investigation of the structures that organize its production.

As well as its clear affiliations with the hermetic world of the gallery installation, the work of the practice is characterized by its radical departure from the conventional means of architectural practice and the blurring of the boundaries between art and architectural organization. Theorists such as Aaron Betsky have positioned their work as an elaborate form of visual “engineering” which interweaves the commercial tactics of display with an inbuilt exploitation of architectural craft. However the practice is equally influential for the radical management structure that it has deployed, that inverts the traditional edges of design practice (and management) and blurs the roles pertaining to it. While Diller, Scofidio + Renfro continually refer to their practice as “deviant” from the traditional modes of architectural production (Diller & Scofidio, 1996), they also make clear the dependence that they place on the organizational theories of creativity and innovation (Philips, 2004). Of most importance to this deviant model is Skunk Works; the innovative creative arm of the American aeronautical giant Lockheed Martin.

The blurring of disciplinary edges is an important aspiration in the integrated management schema pioneered in Skunk Works, which revolutionized the nature of engineering design by dismantling the emphasis on a linear production line of manufacture and establishing interdisciplinary teams that tackled design problems in an inclusive and holistic way. As the research and development arm of Lockheed Martin, Skunk Works was set up as an independent (and autonomous) unit that had to balance the need for creativity and innovation
with the burdens of institutional, political and time-based pressures that tend to limit innovation in design scenarios (Steiner & Steiner, 2003). In this organizational model, there was a horizontal and vertical integration of studio culture deployed in order to ensure a cross-disciplinary transfer of knowledge in both directions. Having recognized that the linear design model concentrated expertise into isolated pockets within a process with little or no communication between the separated parts, the Skunk Works approach saw a horizontal interconnectivity of knowledge (Rich & Janos, 1996), so that their was not only an accumulation of knowledge between disciplines, but also the opportunity for knowledge in one sphere to have an impact on the design of the whole.

While the achievements of Skunk Works in engineering have been extremely influential in the narrow field of aeronautical design, the management structure has had a disproportionate influence on the field of management, and particularly in regard to the strategic organization of commercial and business-oriented workforces. The premise of Skunk Works—where “highly talented people are given the time and freedom to let creativity reign”—has become a catchphrase of management protocol, evolving into a terminology frequently used to describe small and intensive design units in all manner of strategic organizations and networks (Daft & Marcic, 2011). The term “Skunk Works” was first used as a strategy of innovation in corporate management in the early 1980s in Peter & Waterman’s (1982) influential text, In Search of Excellence and, in the 1990s, became synonymous with the financially-saturated and jargon-laden fields of “Effective Corporate Entrepreneurship” (Dess & Lumpkin, 2005; Stopford & Baden-Fuller, 1994), “Operational Expert Systems” (Eom, 1996) and “Strategic Human-Resource Management” (Colbert, 2004). The correlation between this idiosyncratic organizational structure and corporate notions of “innovation”, “creativity” and “excellence” is firmly entrenched in this discourse (Newstrom, 2002), which positions skunkworks as an effective strategy in the efficient practice of capitalism. While there is a clear differentiation between Skunk Works (the organization) and skunkworks (the corporate strategy), the seamless interchangeability of these terms has ensured that the innovative engineering experiment is now firmly established as an inevitable prerequisite in the various textbooks for corporate management practice, despite the clear slippage that occurs in this translation and the competing trajectories that are in play.

Not coincidentally, this popularization of the Skunk Works model, and its idolization as a model of innovation and invention (Van de Ven, 1986), coincided, to a large extent with the expansion of Diller, Scofidio + Renfro’s practice and its transformation from an intellectual collaboration to an economic and financial strategic brand. The first major historical accounts of Skunk Works (Miller, 1995; Rich & Janos, 1996) were released in the year before the first monograph of Diller, Scofidio + Renfro’s work (1996) and this marks a significant shifting in both the work and organization of the practice. That both Diller and Scofidio were aware of the precedent of Skunk Works is evident from interviews undertaken in the 1990s through until the present. In 2000, for instance, Scanlon had referred to Diller, Scofidio + Renfro’s
studio as a “skunkworks: a laboratory where they play with ideas about space and culture” (Scanlon, 2000). Elizabeth Diller has directly cited Skunk Works as a model for their creativity in conversations since 2003 (Simpson, 2007) and, in the words of Ricardo Scofidio, their working practices resemble a “skunk-factory” (Davidson, 2007) where their studio becomes a “walk into the inside of our brain” (Davidson, 2007). Based on this influence, Deane Simpson develops an argument relating to “vertical” and “horizontal” management structures and organizational models that have enabled Diller, Scofidio + Renfro to operate independently of the mainstream pressures on architectural practice and to explore creative and often artistic avenues for architectural production. This results in a blurring of the traditional roles of architectural practice and an emphasis on the themes of management, collaboration and creativity. Simpson’s analysis of their work focuses on the “disciplinary status of architecture”, referring to the “common perception of the architects as outsiders to the discipline”, describing “their indifference to disciplinary structures”, their project to “create an alternate organizational model of disciplinary production” and their “declared disinterest in the disciplinary regulated boundaries of architecture.” Positioning their work outside of the dominant “strains of criticality” in architecture—the textual, epitomized in Manfredo Tafuri and the architectural, epitomized in Peter Eisenman—Simpson argues that Diller, Scofidio + Renfro’s work is “extra-disciplinary” in that, rather than engaging in the formalist exercises aimed at preserving the autonomy of architecture, they provide a “spatial” critique that “addresses aspects of the contemporary everyday”.

Simpson’s application of the Skunk Works model to the design processes of Diller, Scofidio + Renfro, while supported through statements directly from the practice, is not without its problems. Simpson draws from an understanding of Skunk Works that is heavily indebted to management theory and has a focus on corporate organizational structures. The definition of skunkworks in the various management texts from the 1990s emphasizes a number of critical elements that are essential to its implementation as a management strategy. Critical amongst these are the emphasis on autonomy—talented employees are taken out of their normal office environment and isolated from the broader umbrella of the company (Dess & Lumpkin, 2005; Schneider, 1987)—teamwork (Hart, 1992)—individuals work in small teams with a range of specializations—and innovation—the group is encouraged to innovate and experiment in ways that corporate culture can not normally tolerate or encourage. While each of these aspects was a condition of Skunk Works, the application of the term in a generic sense, neglects the contextual pressures that saw Skunk Works come into existence. The intensive studio was a way to subvert the mainstream pressures of manufacture as well as the inherent cultural repetition that this indoctrinated. The original “14 Point” objectives of Skunk Works, outlined by Kelly Johnson (Miller, 1995) makes this aspect explicit. In this manifesto there is an emphasis on “strong but small” studio teams, “simple drawings with great flexibility for making changes”, a minimizing of reports (but emphasis on documentation) and complete and strategic autonomy from the outside world. Skunk Works was designed to operate within a military environment with great efficacy and so the streamlining of the design process and personnel—“the number of people having any connection with the project must be restricted...
in an almost vicious manner”—not only simplifies decision-making but also enables rapid
development of ideas and strategies.

For Lockheed Martin, Skunk Works was never a financial model but an organizational tool
that enabled greater collaboration (with both governments and the private sector) as well as
establishing the work conditions through which complex problems could be quickly and
effectively solved. The autonomy of the organization meant that it could collaborate
effectively with a number of other organizations and establish strategic partnerships without
losing its organizational impetus, giving it a competitive advantage in complex financial and
technical projects (Coffmann, 2002). While the management texts stress the importance of a
corporate elite, in Lockheed and Martin it was a strategy for connecting various models of
specialization emphasizing not the vertical management structures but the horizontal modes
of communication. This placed the emphasis on “a small number of good people” but
removed the bureaucratic and institutional hurdles that prevented performance or
collaboration. In this sense, it was intended to subvert the linear industrial process by
conflating the various moments of design into a singular and simultaneous creative team.

CONCLUSION: PLUS (+) OR MINUS (-)

Given the limitations of the Lockheed Martin model, when applied to the structures of
architectural practice at play in Diller, Scofidio + Renfro throughout this period, a number of
incongruous aspects emerge, especially in regard to the primary elements: autonomy,
teamwork and innovation. While Skunk Works was always a subsidiary of Lockheed Martin,
as Diller, Scofidio + Renfro have grown, they have retained the pressures that accompany
large to medium-sized practices and, to a large extent, are organized accordingly. While there
is an emphasis on breaking down the vertical and horizontal networks that underpin an
architectural studio, the model doesn’t preserve autonomy in the same way as a skunkworks
laboratory. Equally, in relationship to teamwork, the growth of the practice—nearly fifty in
2007 (Davidson)—has not seen a splintering of the organization into smaller independent
groups or a distribution of decision making away from the lead partners. On the contrary, the
recent history of the practice has seen the concentration of decision making into the hands of
the three lead partners and in an increasingly public way. Both Diller and Scofidio
acknowledge their role in not only coordinating the creative direction of the practice (Phillips,
2004) but also positioning themselves as the centre of the marketing, financial and
managerial direction of the practice. Equally, where Skunk Works is based on the strategic
inoculation of expertise, Diller and Scofidio have acknowledged that architects, in the last
decade, inherently operate as generalist consultants and that their grasp of expertise is
increasingly compromised (Phillips, 2004). They also acknowledge the importance of
engaging “experts” at critical stages. In their mapping of the management structure for the Blur building, they effectively position themselves as agents in the choreography of expertise, as vast teams of specialists are organized horizontally and connected, to a large extent, through communication networks managed by the architect. This temporal structure, which controls when “experts” are introduced into the process, is the antithesis of the Skunk Works model, which is built on the concentration of expertise through which unexpected outcomes may occur.

One final point that is of significant in this regard is in relationship to secrecy. Without doubt, the significant innovations of Skunk Works were attributable to the inherent secrecy of their operations which allowed experimentations behind-closed doors and with relative anonymity within the organization. As Diller, Scifidio + Renfro have expanded, their work has achieved an immense level of international exposure and scrutiny, to the point where innovative projects—such as the Blur building—are published several years before they are ever implemented. This reality of architectural practice inevitably means that an image must be produced that “stabilizes” the creative process and automatically limits its potential. The emphasis on images as a primary drive in the process is verified in the management network diagram which shows the communication with a “publisher” as equivalent in importance to the role of engineers, technical consultants and clients.

This is not to suggest that the structure of Diller, Scifidio + Renfro’s practice is not innovative or, for that matter, dependent upon Skunk Works for its creative impetus. It is a recognition that the transformation of architecture in the last two decades, and the concentration on marketing and reproducible images, has limited the opportunities for creativity and innovation in the built environment, and truly radical creative practices would necessarily need to establish the autonomy from these systems in order to engage non-linear models of working which can draw from expertise and collaboration outside of the pressures for marketability. While Diller, Scifidio + Renfro’s practice has been praised in recent architectural theory for its ability to escape the pressures of autonomy on the form and production of buildings (Hays, 2004; Vidler, 2003) it is becoming increasingly clear that its trajectory is bound up in the networks of success that have limited innovation in architecture and complicated the avenues towards multidisciplinary collaboration. Even within the discourse of management, skunkworks, as an idea, has retained the necessity of autonomy from institutional structures and a freedom to behave outside of the expected models of practice and experience. The migration of skunkworks into architecture retains only the romantic connotations of the idea: embodying its innovative laboratory characteristics but without the conditions of autonomy or teamwork, except at the senior levels. As Davidson concludes from his experience of the practice, despite their creative intentions, they belong to “a business that costs a quarter million dollars a month to run and that depends heavily on its partners’ ability to bring in new commissions” (Davidson, 2007). More importantly, however, as the practice has become more established, so have the opportunities to refute the
intrinsic management structures specific to architecture, resulting in a gentrification of creativity and a deliberate reduction of its tactics.

The current discourse on management and creativity has placed a considerable emphasis on the operational aspects of architectural practice, the pressures of the building industry and the role of the architect in coordinating disciplinary knowledge within a framework of economic rationalism. While, from the outset, Diller, Scofidio + Renfro describe themselves as a “deviant” practice, operating outside of the traditional constraints of architectural production, the research reveals that, the more their organization aspires to the freedom of Skunk Works, it comes to resemble the economic rationalism of skunkworks: a financial, rather than radical, strategy that delimits architectural practice rather than empowers it. When Elizabeth Diller describes the importance of a “money-losing division” of research and development as the backbone of their practice, she is equally acknowledging the limitations of creativity in architecture and, even for creative practices, the pressure for financial and managerial rationalism. The cross-hairs, that feature in Martin’s (2007) analysis of the practice are not only an acknowledgment of the multi-disciplinary intentions, but the economic and political pressures that have positioned architectural practice as a site of production, rather than innovation, in building. They also mark the practice as an organization positioned at the edge of the hegemonies of architectural production.

REFERENCES


SESSION 4A - @ the Edge: Adapting Traditions
ABSTRACT

Home gardens and climate change are little researched but represent a major aspect of urban settlements and urban live-ability that have capacity for adaptation. This research considers this significant low-key aspect of adaptation as it relates to climate change theory and practice. The methodology of this research draws upon critical reviews about contemporary garden history, architecture, environment and climate change knowledge and practice. A mixed method was employed that involved paper and on-line surveys, interviews with practitioners, literature reviews, field observations with the guidance and support by professionals and academics in landscape architecture and climate change science.

The research has demonstrated that home gardeners are inclined to accept and think positively about the impacts they perceive will occur as a result of anthropogenic climate change. However, their capacity to plan for, and implement change in their gardens is limited by their plant knowledge and the ready commercial availability of a range of suitable plants.

With some 6 million residential dwellings in Australia, a large number of which have gardens attached, the potential impacts of climate change on the appearance and amenity of such spaces and street-scapes in general appears to be under threat. While active home gardeners expressed feelings of confidence about adapting their gardens to climate change the research raises the question of how climate change will impact upon the well-being of the general community should the end-point of the changes be as severe as current projections envisage.

Previous research suggests the links between gardens and feelings of well-being are significant. The present research suggests the question of what happens to feelings of well-being when the parameters for self-actualisation and satisfaction are altered by climate change. The research highlights the implications of climate change for home gardeners, horticultural industries, garden designers and landscapers, and suggests the need for some new directions and programmes to be developed by tertiary educators in those fields.

With the focus of governmental and tertiary educational agencies firmly set on promoting and producing climate change research in high profile areas such as energy, mining, finance, agriculture and food security, transport and coastal development the author proposes that there is a need for parallel research that builds resilience at the individual level such as instanced in the case of home gardens and urban live-ability.

INTRODUCTION

The relationship between climate change and depression has recently been acknowledged by The Climate Institute in a discussion paper entitled A climate of suffering; the real cost of living with inaction on climate change – mental health and community well-being in the wake of extreme weather. (The Climate Institute, 2011). This research project was prompted by the author’s deep interest in understanding the impacts of climate change on community well-being and individuals mental health as expressed through the relationship that gardeners have with their gardens and plants.
In part the research is an effort to be proactive ahead of climate change creating urban environments that may be virtually un-liveable.

As the realisation that climate change is happening gradually takes hold in the consciousness of the public, gardeners are being challenged to re-assess their practices to meet emerging imperatives. Widespread water shortages and restrictions to water use are being experienced everywhere from the UK and southern Europe to California and Australia. Whether for crop irrigation, public landscapes or domestic gardens the effects of cuts to water entitlements and caps on use are being felt. In Australia, the imminent collapse of the Murray-Darling river system threatens the environment, the economy and the population. The situation, having been rapidly politicised, is presented as a problem to which individual consumers must address themselves as a priority. Gardeners have questioned the role that has been imposed on them to resolve the problems raised by over-allocation of extraction licenses and the relative cheapness of water to heavy industrial and large scale agri-business users. The imbalance is viewed as a significant threat to the water resource, and to the future of the horticultural industries and home gardens alike, including historic landscapes and heritage gardens.

Water restrictions have been imposed on many significant gardens and landscapes without apparent reference to their unique contribution to cultural heritage, conservation and ecological systems. With the increasing likelihood of further permanent restrictions being imposed on domestic gardeners in Australia, in particular, it is timely to express concern about the future of gardens, as well as for the liveability of the urban landscape in general made up as it is of numerous domestic gardens.

The domestic gardens of the Adelaide Plain offer some particularly interesting features that make them an attractive proposition for research about the impact, and perceived risk of impact, of climate change. The region has a number of significant historic and heritage listed gardens that could be negatively affected by climate change. The whole Plain is covered with housing and domestic gardens, so any significant change in watering by tap-water and garden maintenance would have an impact on the visual amenity and ecology of the region.

Community apprehension about the future of domestic gardens on the Adelaide Plains is growing as the levels of restrictions on water use are raised. The trend to abandon domestic gardens as an integral component of residential environments is apparent in the outer suburbs, and is growing as more severe restrictions, and higher water costs, are imposed. The potential impact of this phenomenon will be to place additional pressure on public parks and gardens remaining to act as the ‘green’ lungs of the city, as well as to represent the cultural development and diversity of the city. The potential impact of significantly reduced and degraded landscapes and gardens due to climate change on lifestyles and well-being of citizens, including gardeners, is a concern that should be considered by community planners, landscape architects, garden designers and home gardeners. In fact it should also be of concern to health, education and welfare professionals.
THE RESEARCH BACKGROUND

Initial research of literature and web-based sources showed a paucity of material related to domestic gardens and climate change. Books on the subject are in the main directed at Northern Hemisphere readers while those few published in Australia were found to be lacking any specific reference to the expected nature of the change thus rendering the plant choices described as virtually meaningless. Some research is published on web-sites operated by professional and institutional agencies such as botanic gardens and herbaria specific to them. In terms of information for domestic gardeners there is only the Royal Horticultural Society’s web-based discussion group which by its unmediated content is more about the heated exchange of sceptical opinion and pro-climate change advocacy than it is about discourse, practice and information exchange.

Table 1. Electronic sites related to gardening.

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Web address</th>
<th>Date accessed</th>
<th>Comment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royal Horticultural Society, Vincent Square, London</td>
<td><a href="http://www.rhs.org.uk/learning/research/climate_change/climatechange.asp">www.rhs.org.uk/learning/research/climate_change/climatechange.asp</a></td>
<td>23/01/2008</td>
<td>site relates to domestic gardens in the UK but is not moderated; there is much opinion and few facts.</td>
</tr>
<tr>
<td>National Trust (UK)</td>
<td><a href="http://www.nationaltrust.org.uk/">www.nationaltrust.org.uk/</a></td>
<td>21/05/08</td>
<td>site relates mostly to built heritage.</td>
</tr>
<tr>
<td>English Heritage (UK)</td>
<td><a href="http://www.english-heritage.org.uk/">www.english-heritage.org.uk/</a></td>
<td>7/03/2008</td>
<td>site relates to built heritage.</td>
</tr>
</tbody>
</table>

RESEARCH METHODOLOGY

The project was based on mixed method research including an electronic survey, one to one interviews, transcription and data entry, a literature review and a professional peer reference
group. The professional peer reference group was utilised to develop a list of potential respondents and to develop and review the survey questionnaire. Respondents were selected on the basis of being active and keen domestic gardeners representing a cross-section of residents spread over the Adelaide Plains. Forty five potential participants were circularised by a formal invitation to be included in the research of whom twenty-two replied affirmatively thus enabling the research to proceed. The survey questions were submitted to, and approved by the academic ethics committee of the University of Adelaide. The information gained was analysed using a commercial/ professional electronic statistical tool. (www.surveymonkey.com.au)

Figure 1. Distribution map for domestic gardeners on the Adelaide Plains.
Table 2. Details of survey implementation

<table>
<thead>
<tr>
<th>Date survey sent:</th>
<th>Electronic survey response:</th>
<th>Hardcopy response:</th>
</tr>
</thead>
</table>
| Electronic and postal surveys all sent March 24th 2008. | April 3rd 2008 3  
NB Follow-up reminder emails sent April 30th 2008. | April 30th 2008, collection from School postgrad. mailbox 3 |
| July 3rd 2008 8  
NB Further reminder sent 31st May, 2008. | 31st May 2008, collection from School postgrad. mailbox 2 |
| July 14th 2008 6 | | |

Table 3. Long terms change strategies for home gardens on the Adelaide Plains

![Bar chart for Table 3](chart.png)
Table 4. Sources of ideas for managing home gardens in times of climate change.

<table>
<thead>
<tr>
<th>Source</th>
<th>Number of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own ideas</td>
<td>6</td>
</tr>
<tr>
<td>Neighbours &amp; friends</td>
<td>4</td>
</tr>
<tr>
<td>Print media</td>
<td>3</td>
</tr>
<tr>
<td>Garden clubs</td>
<td>2</td>
</tr>
<tr>
<td>Radio</td>
<td>2</td>
</tr>
<tr>
<td>TV</td>
<td>2</td>
</tr>
<tr>
<td>Local nursery</td>
<td>2</td>
</tr>
<tr>
<td>Specialist growers</td>
<td>2</td>
</tr>
<tr>
<td>Travel</td>
<td>1</td>
</tr>
<tr>
<td>Open Gardens</td>
<td>1</td>
</tr>
<tr>
<td>Study tours</td>
<td>1</td>
</tr>
<tr>
<td>Local designers</td>
<td>1</td>
</tr>
<tr>
<td>Local landscape archs.</td>
<td>1</td>
</tr>
<tr>
<td>Garden historian</td>
<td>1</td>
</tr>
</tbody>
</table>
The small number of participants means that the research cannot be validated statistically. However, it does provide a snap-shot of attitudes and insights into the perceived impacts of climate change on domestic gardens on the Adelaide Plains at the outset of a period of significant climatic uncertainty. The research represents a first step in establishing a basis for further research and discourse as an important facet of an emerging academic discipline: ‘sustainable urbanism’.

CLIMATE CHANGE RESEARCH AND PROJECTIONS

Taking as a given that climate change is occurring an abbreviated summary of projections for the future is necessary to introduce the need for change in domestic gardens.

*It is expected that further rises in temperature from global warming will be associated with increased evaporation and decreased soil moisture. This would exacerbate the consequences of a drying trend.*

*A range of extreme events is expected to occur under conditions of climate change and may already be evident, including unusually violent storms, high winds, extreme storm surges, more intense heatwaves, bushfires, drought and flooding.*

and   *All climate models show an increase in the frequency of droughts in Australia towards the end of the century.*  (Rebbeck and Egan 2007 p.19)

LOSING THE PLOT

Figure 2. collection, David Jones, showing a garden before the introduction of tap-water.
The advances that enabled the development of reticulated town water supplies and irrigation were matched by technological advances in printing, publication and mass distribution. Garden design ideas made fashionable by Royal patronage and aristocratic fashion were spread across the British Empire by illustrated magazines such as The Gardeners Chronicle and newspapers such as The Illustrated London News. The same publications, amongst numerous others, also publicised the arrival and distribution of new ‘novelties’ from botanical expeditions then scouring the globe for plants with commercial and decorative potential. Thus in a very short period, from the 1880’s until the 1910’s old dry-grown plants gardens were replaced by plants and gardens with high water needs.

Figure 3. collection, David Jones, showing the changes to the garden after tap-water was available.

CLIMATE CHANGE AND CULTURAL CHANGE

The impacts of climate change on society and culture will be just as significant to humans as the changes that will be wrought on the environment and the economy. Maslow et al have written extensively on the psychology of change and perceptions of well-being, satisfaction with life and self actualisation. More recently McMichael has stated in reference to the disruptive impact of climate change on society and the psychological condition of mankind:

We will face much more than frequent heatwaves and weather disasters. There will be food shortages, malnutrition, increases in many infectious diseases, wide-spread mental depression, anxiety and rural misery, and tensions and conflicts over resource shortages, population displacement and refugee flows. (McMichael, 2011)
Obviously these projections sound dire and of great negative consequence for the human race. While the focus of governments and world agencies such as the United Nations are clearly on food security, sovereignty, health, displacement and resources such as water in disadvantaged and developing nations the impacts on urban populations in developed countries are, as yet, of relatively little concern. Apart from asset protection along coastlines, reducing the use of fossil fuels, developing new energy sources and water conservation - harvesting, allocation, use, recycling and re-use, consideration of many other issues which while appearing to be of lesser concern in the scheme of things, are none-the-less likely to play significant roles in how urban dwellers cope with the changes ahead.

Among the changes that lie ahead are those attached to culture and cultural practices, in particular urban cultural practices such as domestic gardens and landscapes, streetscapes and park-lands. Doctoral research conducted by Ely (Ely, 2011), Peter (Peter, 2010) and Cockerill (Cockerill, 2011) at the University of Adelaide has investigated the impacts of climate change on urban trees in streets and park-lands. This has been complimented by the researcher (Nottle, 2011) who has investigated to perceived impacts of climate change on domestic gardens. Result indicate that while active gardeners are aware that change is occurring their decision making in planning for change is uncertain and based on expectations of a positive outcome rather than any sound basis of understanding of the relationship between plants, climate and design.

THE EDGE: ADAPTING TRADITIONS

In order to provide some guide to managing climate change in domestic gardens consideration must be given to:

- A warming, drying environment.
- Reduced water allocations for domestic consumption, including gardens.
- Changing design parameters to adapt to changes in climate.
- Integration of water conservation and recycling measures in domestic settings.
- Selection of plants for garden making that have inbuilt characteristics that make them adaptable to the projected changes.
- Long change periods in design of urban settlements and housing.
- Establishing a portfolio of options for design and planting domestic gardens.
- Enabling cultural transition while minimising psychological trauma.
- Establishing a positive view of the new parameters for domestic gardens as they develop.
- Creating accessible and live plant resources.
Some of these criteria, those that are of a technical nature, have already been solved e.g. the harvesting, more efficient use, treatment and recycling of water through more than one cycle of use. As climate change brings about increased pressures on water resources there will be a subsequent pressure for change not only on how water is used but also on what water is used. Thus stormwater and ‘black’ water from sewerage works, currently thought of as ‘waste’ water, will be increasingly utilised in recycling and reuse processes. Indeed, already such waters, having been thoroughly treated and tested, are used in food production, horticulture and parklands maintenance in Australia. Likewise, irrigation technology already available will be increasingly demanded by legislators and the community, to cut water wastage evident in old technologies such as flood irrigation and open-ditch water delivery in some irrigation schemes. The technologies already exist and are proven, what remains to be achieved is more widespread technological transfer from researchers and developers, and faster uptake by end point users. This will be achieved by a combination of the usual government agricultural subsidies and more stringent controls of access to water and the ways in which it is used.

Plant resources adapted to warming and drying climates (Nottle 2011a) are gradually being introduced by forward thinking nurseries taking as their point of reference plants from climate zones similar to those experienced here that were used in the colonial era when ‘dry’ gardening was the norm before reticulated water supplies were introduced in the late 1800’s (Nottle, 1984, 1988, Jones and Payne, 1998).

What has not been addressed to date is the impacts climate change will, undoubtedly, exert on the psychology of the human population. While McMichael refers to ‘widespread mental depression’ within the scope of his address he does not elaborate on how, or who will deal with this threatening situation. Thus far, no national strategy seems to have appeared.

One possible strategy lies in utilising community based resources such as home gardeners to assist in coping with depression induced by climate change. Horticulture has long been used as one means of treating depression in clinical settings. Research conducted by the author (Nottle, 2011) suggests the possibility that such a low-key approach could be further investigated and developed for more widespread deployments. The research showed that keen, domestic gardeners:

1. Accept that climate change is occurring.
2. Are planning ahead to manage the impacts of climate change on their gardens.
3. Have a positive expectation of their engagement with climate change.
4. Believe that their home gardens *i.e.* ‘domestic environments’ are crucial to their health and well-being, and will remain so in times of climate change. (Steven, 1997)

These attitudes are focussed on acceptance of, and dealing with the impacts of climate change, to develop good outcomes from what looks to be a very difficult situation for the bulk of the Australian population who are urban dwellers. While government and institutional priorities lie elsewhere such grass roots commonalities as gardening could be harnessed with minimal intervention, to existing gardeners networks together with imperatives for change within the horticultural industries of wholesale production, retail promotion, and design and construction services.

A bottom-up proactive approach based on community development and action is the recommended pathway to adaptive change as the owners of domestic gardens make the necessary adjustments to their gardens in a warming and drying climate regime.

![Image of abandoned garden](image)

Figure 4. ‘Is that all there is to look forward to in a changing climate?’ Author’s photograph, abandoned garden, Gawler, South Australia, 2010.

REFERENCES


THERMAL COMFORT ADAPTATION IN OUTDOOR PLACES

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\(^2\) Deakin University, Australia, hisham.elkadi@deakin.edu.au

ABSTRACT

The level of international migration has been growing in the last decades creating a plurality of cultures and inspiring a multicultural nature in global cities (O'Byrne, 1997; Short and Kim, 1999; Hawkins, 2006). This created new challenges in urban planning or the management of the coexistence of different people that are having different characteristics shaping their unique identity and needs in shared places. Being the urban stages where the social interactions happen, public places are considered important parts of cities (Thompson, 2002; Varna, 2009). These places can contribute to enhance the quality of life within cities, or contrarily increase isolation and social exclusion (Lo et al., 2003).

As agreed by researchers the users’ state of comfort gives a good indication for how successful is the public outdoor places (Rosheidat et al., 2008; Kwong et al., 2009; Aljawabra and Nikolopoulou, 2010). In order to create a successful open space usable by all members of a community, urban designers need to satisfy their thermal comfort needs in its wider meaning according to a variety of users (Knez and Thorsson, 2006; Thorsson et al., 2007). While assessing the thermal comfort, in addition to the strong influence of the microclimatic parameters, the term thermal adaptation seems to becoming increasingly important. The thermal comfort adaption is then a considerable issue in design guidelines of outdoor environments (Nikolopoulou and Steemers, 2003).

The main aim of the research is to examine the influence of thermal adaptation and environmental attitude on participants’ thermal requirements in outdoor public places. It focuses on understanding the effect of adaptation on the thermal comfort perception of immigrants. The research methodology of the research is provided through quantitative analysis of a case study. The findings of thermal comfort investigations could be applied into improving the quality of urban areas in order to increase the outdoor activities of citizens and use of outdoor places.

Keywords: Thermal comfort, Outdoor places, Thermal adaptation, Cultural diversity.
INTRODUCTION

The public realm is believed to have a critical role in creating the intercultural city as the built environment both influences the development of cultural life and is in turn influenced by the culture of the inhabitants, builders and decision makers. The public places where greatest amount of human contact and interaction takes place, are seen as the focal point for communities. They provide potential social, ecological, health and quality of life benefits (Thompson, 2002). Especially in the multicultural cities, researchers recognized that those public places need to be inclusive, inviting and accessible so that everyone come in, understand and experience the space as theirs (Bloomfield & Bianchini, 2005; Janssens et al., 2009). The success of an urban open space is influenced by many factors. The myriad components of the physical (i.e. environmental comfort, urban morphology, etc.), social environment, and the location of the space within the structure of the city all play primary roles (Herrington & Vittum, 1977). Users’ state of comfort gives a good indication for how successful are the public outdoor places and influence the attendance and the behavior their users (Aljawabra & Nikolopoulou, 2010). Understanding the richness of environmental conditions in outdoor urban places and the comfort implications for the users open up new possibilities for the development and improvement of urban spaces (Panagopoulos, 2008).

Nikolopoulou and Steemers (2003) argued that although microclimatic parameters strongly influence thermal sensation, they cannot fully account for the wide variation between objective and subjective comfort evaluation, whereas, users’ adaptation seems to become increasingly important. The term adaptation can generally be defined as the gradual decrease of the organism's response to repeated exposure to a stimulus, involving all the actions that make them better suited to survive in such an environment (de-Dear & Brager, 1998 a; Nikolopoulou, 2004). In the context of thermal comfort, this may involve all the processes that people go through to improve the fit between the environment and their requirements. The adaptive hypothesis states that one’s satisfaction with an indoor climate is achieved by matching the actual thermal environmental conditions prevailing at that point in time and space with one’s thermal expectations of what the surrounding climate should be like. Within such a framework, adaptive opportunity can be separated into three different categories: physical, physiological and psychological (Nikolopoulou et al., 1999). This means that the satisfaction with the thermal environment of the space doesn’t only depend on the space, but also on personal variables people bring to the area with them. An awareness of these issues would be valuable to architects, planners and urban designers, not by the way of limiting possible solutions, rather by enriching the design possibilities.

In this study, we are concerned with the concept of physiological adaptation. This kind of adaptation implies changes in the physiological responses resulting from repeated exposure to a stimulus, leading to a gradually decreased strain from such exposure. Any physiological responses of the human body in a given thermal environment can be viewed as being within the comprehensive definition of physiological adaptation (de-Dear & Brager, 1998 b). There are two sub-categories included in physiological adaptation in the context of thermal
environment; genetic adaptation (from generation to generation) and acclimatization (within one generation). Perspiration is a common form of physiological adaptation, which can play a significant role in the maintenance of the core temperature of the human body at a reasonable level (Wyndham, 1970).

METHODS

Two different ways are used to estimate the human thermal comfort. The objective way to estimate the thermal comfort conditions is through calculating the human thermal comfort indices from the meteorological data measured on the site. Social survey with questionnaires is the subjective way to enlarge the knowledge about the complicated relationships between the thermal environment and the evolved subjective human reactions. This survey will be performed using both objective and subjective assessments, where thermal comfort related parameters will be measured using electronic sensors and the outcomes will be analyzed concurrently with results from questionnaire.

Study area:

To meet the objectives of the study, the selected site had to be in a global multicultural city. Australia is a place having a long history of migration. As a result of the long-term immigration 24% of Australia’s population was born overseas. The study area is an outdoor place located in Geelong City in Australia (144 22’ E, 38 10’ S, at an altitude of 23 m), during a cultural festival on a typical summer day. In this festival, the activity level of people is typically walking, standing or sitting.

Physical measurements:

The major weather parameters (air temperature, relative humidity, wind speed and solar radiation) are measured using a portable weather station that contains meteorological sensors. The weather station is set to record the measurements at a 15 minutes interval during four hours (typically from 10:00 am to 02:00 pm local time) at a height of 1.6m above ground.

Table 1: The Range Of Weather Measurements from 10:00 am to 02:00 pm
<table>
<thead>
<tr>
<th>Parameters</th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Temperature</td>
<td>22.7 C</td>
<td>29.7 C</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>40%</td>
<td>62%</td>
</tr>
<tr>
<td>Mean Radiant Temperature</td>
<td>48.8 C</td>
<td>59.6 C</td>
</tr>
</tbody>
</table>

Questionnaire:

In order to assess the thermal comfort, the questionnaire ask the people to report their thermal sensation, preference for better conditions, and satisfaction with the actual thermal comfort conditions, perceptions, and attitude. In this study, the questionnaire collected demographic information (e.g., age, gender and cultural background), the numbers years spent in Australia; investigated the people’s perception of the overall thermal comfort and their perception of individual weather parameters (air temperature, humidity, wind speed and solar intensity). Thermal comfort was rated on ASHRAE 7-point thermal sensation vote scale (-3, cold; -2, cool; -1, slightly cool; 0, neutral; 1, slightly warm; 2, warm; and 3, hot), adding to it (-4 very cold, +4 very hot). Four different groups were targeted in the questionnaire in order to assess the influence of physiological adaptation on the thermal sensation of outdoor places’ users.

Table 2: The four different groups of people according to the years spent in Australia.

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>More than 1 year to 5 years</td>
<td>More than 5 years to 20 years</td>
<td>More than 20 years</td>
</tr>
</tbody>
</table>
Thermal comfort indices:

Current human bio-meteorological methods used in assessing outdoor thermal comfort rely on rational indices determined by solving the human energy equation. Although there remain problems in the assessment of outdoor comfort indices, SET*, PMV and PET have proven to be suitable for application at the current state of the art (Honjo, 2009). In this study the PMV index will be used in assessing the thermal comfort. The mean radiant temperature and the PMV were calculated as using Rayman program.

Table 3: The PMV calculated by Rayman from 10:00 am to 02:00 pm

<table>
<thead>
<tr>
<th>Time</th>
<th>10:00 am</th>
<th>11:00 am</th>
<th>12:00 pm</th>
<th>01:00 pm</th>
<th>02:00 pm</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMV value</td>
<td>1.1</td>
<td>1.6</td>
<td>2.4</td>
<td>2.9</td>
<td>2.6</td>
</tr>
</tbody>
</table>

The comparison between overall comfort votes against calculated PMV is shown in figure 2. Although there is a great dispersion in the graph, correlation ($R = 0.53$) is significant.
Figure 2: Overall Comfort Vote versus calculated PMV values.

Results:

The distribution of surveys responses to the overall comfort for each group is shown in figure 3. It is noted from the figures that among a total of 100 questionnaire, 37% of the responses rated the overall weather as warm (+2), 23% of the responses rated it as slightly warm, 21% of the responses rated it as hot and only 11% of the responses rated it as neutral.
Figure 3: Overall Comfort Vote versus calculated PMV values.

From this figure we can see the different voted overall comfort for each group. It is noted that 45% of the users who have been in Australia for more than 20 years were feeling warm. On the other side 18% of the users who have been in Australia for less than one year are feeling slightly cool. The relation between the percentages of overall comfort vote for each group is shown in figure 4.

Figure 4: Overall Comfort Vote for each group

The graph shows that the groups (from 5 to 20 years) and (more than 20 years) can be fitted by two very close lines. For the other groups, we can notice that the less the group is thermally adapted, the more the line with the best fit is far from the first group (more than 20 years).
The cross correlation coefficients between the voted comfort for each group and the group who spent more than 20 years in Australia are calculated in table 4.

Table 4: The cross correlation coefficients between different groups and group of people who spent more than 20 years in Australia

<table>
<thead>
<tr>
<th>Less than 6 month</th>
<th>From 6 month to 1 year</th>
<th>From 1 year to 5 years</th>
<th>From 5 years to 20 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.07948</td>
<td>0.25873</td>
<td>0.29338</td>
<td>0.67335</td>
</tr>
</tbody>
</table>

As demonstrated by the highest cross correlation coefficient, we can notice that among the four different groups, the more the people spend time in Australia the more they have closer votes to the group spending more than 20 years in Australia. These results prove the existence of the thermal comfort adaptation.

**SUMMARY**

This work has shed light on the complexity of issues involved in thermal comfort in outdoor urban spaces. The study presents some of the initial findings on thermal comfort in multicultural cities, working towards understanding the influence of the thermal adaptation on users’ thermal perception. Preliminary analyses were obtained of the sample of subjective and objective data over one day in a festival on a summer day in Geelong city, Australia. The findings indicate that the time spent in a place is influencing the perception of thermal comfort and support that a purely physiological approach is not enough in assessing the human thermal comfort in outdoor places. The physical environment is important in assessing the outdoor thermal comfort; however, psychological adaptation is also an important factor influencing thermal perception. The findings are also in accordance with other previous studies (Nikolopoulou and Steemers, 1999; 2003; Lin, 2009). It is important that the urban planner takes into consideration the two complementary parameters of physical environment and psychological adaptation in order to create comfortable urban places. The consideration of this duality can increase the use of these open places, and thus strengthen the social interaction between citizens.

**REFERENCES**


STRATEGIC FACILITIES MANAGEMENT SYSTEM IN RELATION WITH BUILDING PERFORMANCE; THE SIGNIFICANCE AND RELATIONSHIP

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Healthcare design frequently involves complex concepts that are difficult to measure and evaluate because the building require a modern, quality, functional and therapeutic environment. For this specific reason, facilities management has become a very important support system to ensure smoothness in healthcare business. Facilities management in healthcare building is a complicated system involving multiple layers of administrative division and sub-divisions. Building performance such as building impact, function and quality prove to have significant impact on strategic facilities management. This paper will do an extensive review of strategic healthcare business management as a holistic approach and examine how facilities management can effectively manage their division with consideration and understanding of building performance. The correlation between strategic facilities management and building performance will be identified and a framework for strategic FM system with regards to building performance will be developed.

INTRODUCTION

Facilities management (FM) operation is usually set after the building has been completed. An organisation like healthcare is involved with complex and dynamic buildings with multi operations. The daily critical operation in healthcare demands the maintenance to be done continuously as well as to be planned ahead periodically. In early era, in regards to business performance FM was viewed only as a financial indicator (Tucker and Pitt 2009). However, FM has moved from being simple maintenance activities to corporate investment initiatives reflecting the provision of desirable and relevant work space to required demands of end-users (Edum-Fotwe, Egbu et al. 2003) Building performance such as building impact, function and build quality prove to have significant impact on strategic facilities management. Even, some maintenance work does not appear to be effective because of the building performance itself. Hence, building structure will be deteriorated due to so many factors such as unplanned services and aging fast. Effective maintenance system is known as an art to prevent and delay the rate of deterioration but that does not always solve problem. Design and facility still use the incorporated FM requirement in traditional ways; design the facility, and then design its management after the facility has been constructed (Edum-Fotwe, Egbu et al. 2003).
Noor and Pitt (2009) believed that in order to establish FM organization into business strategies, management team need to provide adequate resources, ample working space and practical guidelines to the FM operational system. By knowing, and being expert in how buildings perform, FM operation can become more strategic in its management.

To develop a business function, Atkin and Brooks (2000) have highlighted three stages. First, analysis stage is to incorporate business objectives, needs and policies. Then, review of resources, processes, system and the physical assets in terms of space, function and utilisation. Second, solution stage, whereby it involves judging options, evaluating the organisation’s objectives and developing the FM strategy. Third, implementation stage completes the strategy development process through the establishment of an implementation plan through procurement, training and communication. The author then ensures that, upon completion, the FM strategic management should form part of the organisation’s strategic and operating plan. FM is capable to carry out the strategic roles if FM division have a distinctive knowledge-base on how to source and evaluate between intra-firm administrative governance and inter-firm contractual arrangements (Yiu 2008).

The objective of this paper is to explore the significance of building performance associated with FM service delivery in regards to large healthcare organisation. The critical analysis on building performance is then being reviewed in regards to FM service delivery. A public healthcare organisation will be chosen in order to test the significance. The correlation between strategic facilities management and building performance was identified and a framework for strategic FM system with regards to building performance was developed.

BUILDING PERFORMANCE IN RELATION TO FM

Building has always been an important physical aspect to life. It develops in tandem with human civilization development. Nevertheless, facilities management can be excellent in its function if buildings are built in generously diligent way with acceptable quality. The cost of quality can be understood in terms of “economics of the design quality” or “economics of the conformance quality” (Kazaz and Birgonul 2005). The continuous quality of a building then depends on facilities management repair and maintenance exercises. However, quality has many meanings, but in the final analysis it is a “bottom line” issue. It might be erroneous to think of quality as only aesthetics, or gold painting, or as a” degree of excellence (Kazaz and Birgonul 2005) and design fault cannot be rectified by genius facility manager team. Williams, Purdey and International Facilities and Property Information Limited. (2005) highlighted that one of the important features in assessing FM performance, which is the contribution that facilities make to organisational effectiveness

Research done by Ornstein et. al., (2009) found that the causes of incompatible reality of the use of the building is due to the technical standard and the regulation requirement. The same authors concluded that there is a lack of information and knowledge of how best design can
support the well-being of patient in hospital and more time should be dedicated to planning and preparation, and proportional resources. Space is an important element where it represent how big the scope of building maintenance. Standard space is important in the organisation because it is related to structure of organisation, people and type and amount of work space occupied (Edum-Fatwe, 2003) as spatial attributes reflex the behaviour (Alalouch & Aspinall, 2007). Five significant advantages of space standard highlighted by Alalouch, Aspinall and Smith (2009) are;

i. To increase facilities performance and responsiveness to users’ requirements.
ii. Controlled or reduced costs;
iii. Functional and equitable office assignments
iv. Assurance of worker health and safety code and regulatory compliance
v. Simplified work space modifications and expansions.

Certain spatial properties have been shown to be connected to people’s movements in space, functional use of space, and other aspects of behaviour (Alalouch & Aspinall, 2007, pg. 346). However, as for now there is little research considering how building performance can bring a very significant impact to the effectiveness of the FM operation, especially on the effectiveness that involve functionality, impact and built quality. Users should be viewed as central to the building instead of being engineered out (Atkin and Brooks 2009).

Adapted from United Kingdom National Health Service (UK NHS) Toolkit, Achieving Excellence Design Evaluation (AEDET) Toolkit Evolution is an assessment to provide comprehensive evaluation of the design of healthcare environments. It is one of BREEM toolkit by Department of Health, United Kingdom. Originally in 2002, NHS Environment Assessment Tool (NEAT) was a self-assessment tool. It was then replace by Building Research Establishment Environmental Assessment Method (BREEM) Healthcare (B4H) when NEAT was considered not suitable to be a credible standard the NHS as public sector bodies. BREEM at a glance is an environment bodies that engage with environmental issues for building in United Kingdom (www.dh.gov.uk).

AEDET is a benchmarking tool to assist in measuring and managing the design of their healthcare facilities in regard to the building performance such as functionality, Impact and build quality (Figure 4.1). It was developed to encounter the complexity of healthcare design which is difficult to measure and evaluate. This toolkit will enable the user to evaluate as design by posing a series of clear, non-technical statements, encompassing the three key areas of impact, build quality and functionality (www.dh.gov.uk). AEDET is sometimes supported by other measurement tool which is called ASPECT (A Staff and Patient Environment Calibration Tool), but since this study did not involve patient, this tool was omitted and only used AEDET as a stand-alone tool.
Once the building is occupied, concerns with quality become even more important. Facilities management is responsible for management and maintaining quality in buildings range from technical maintenance to user’s satisfaction to ecological sustainability (Vischer & Preiser 2005, p. 13). The measurement is in regards to the components of the building are of high quality and fit for their purpose (www.dh.gov.uk).

THE SIGNIFICANT RELATIONSHIP

Performance measurement has to be meticulous in a way it is practical to FM operation and technique, otherwise it seems to be superficial (Amaratunga and Baldry 2002). Chan, Lee and Burnett (2001) concluded that performance measurement is subject to sensitive users’ requirement that need a variety of engineering system to operate due to different areas that are dynamic and complex. With effective utilisation of all corporate resources, the FM function emerged as an important corporate discipline (Edum-Fotwe, Egbu et al. 2003). On the other hand, Goyal and Pitt (2007) viewed that innovation in FM is an enabler adding value to the organization. FM that has streamlined core focused approach to service management tends to naturally produce its own innovative solutions. However, the same author found that FM process receives most attention within the FM field only. In contrast, Tucker and Pitt (2009) viewed that any performance measurement tools will not only apply to FM but establish strategic business processes that will be embedded into organisation business culture. However, these authors commented that accessibility of FM benchmarks within the industry still remain scarce.
Alexander (1996) concluded that there is evidence of inadequate service delivery and recognition of the adverse consequences of undervalued and under-utilised facilities for corporate performance. He added organisation needs concept of excellence, teamwork, total quality and service. FM must link to corporate mission and objectives to enhance their service delivery. Almost every strategy that is chosen to satisfy the organisation’s stated needs ultimately has some impact on business, buildings and the building users (Vischer and Preiser 2005). FM theory in organization lies in three elements that can be associated with, namely process, place and people (Alexander 1996). First, process in regards to FM strategic management is FM business operation. It is a support service to core business operation by the organisation. Second, building is place, where the core business runs by FM service delivery support and third is building users is people. Third, people are users and a human factor involved in the core business operation as well as FM support service operation.

Due to the complexity of healthcare functions and needs and their multi-faceted characteristics, the healthcare system needs a progressive and periodic review such as benchmarking, key performance indicators (KPIs) and other types of performance measurement on its building performance to develop a strategic FM system. The application of specific FM system has to be suited to the nature of healthcare business operation. Process of FM then must be defined for FM to “orchestrate” activities and events, in order to create stronger sense of purpose and value in FM (Rogers 2004). The same author advised that FM division must implement rigorous and disciplined measurement. However, misdirect objectives occur when external benchmarking does not fit internal process in organisation (Tucker and Pitt 2009). Thereby, building performance needs to cater very specific function of the core operation in those particular buildings and in regards to the FM service delivery. Huge organisation such as healthcare may have many different buildings and those serve the difference purpose. In addition to that, sometimes changing or merging in terms of building functions occur due to expanding in core services. The changing process internally or externally may reflect how the building performs. Thereby, any innovative moves that lead to strategic management should be reviewed periodically and hand to hand with building performance measurement to ensure validity. Increasingly, process of managing facilities has now become more challenging due to the complexity of healthcare building itself. Explicit statements of performance requirements and effective performance management can support changing needs of the building per se (Robathan 1996). He then highlighted three appraisal of building performance, namely representation, measurement and evaluation. These include identification of users needs, their conversion into performance requirements of building and services and development into performance-based specifications.

Cooper (1996) claims auditing facilities provides an external datum against which to measure performance. However, he also argued that the disadvantage is that this datum is not geared to an organisation’s specific needs and requirements. Especially in regards to various organisations with wide range of stakeholders such as healthcare. Similar view by Booty (2009) claimed that many organisations do not record sufficient performance-related information. Large organisation such as healthcare need extensive insights on the various
approaches available for measuring the performance of such facilities as well as identifies the building performance. The result of any Key Performance Indicators (KPIs) will leads to best practices in facilities management operation financially. Indeed, high correlation between financial and performance prediction occurred by applying integrated healthcare facilities maintenance management (Lavy and Shohet 2009).

How can FM process be innovative with business strategic management if the accessibility of FM benchmarks remains scarce? FM is not about reducing running costs of building or maintaining cost but business as a whole. Performance measurement is a vital tool (Zairi and Sinclair 1995) and needs uplifting tools for balancing multiple measures across multiple levels (Hlavacka, Bacharova et al. 2001). Tucker and Pitt (2009) believed that the scarcity of FM holistic approach in business solution may cause ineffective performance measurement application. Periodic task by expertise may be needed to handle the validity and continuation of performance measurement, such as space planning. These tasks are required if organisation have merged, enlarged or had an extension or renovation works.

PROPOSED STRATEGIC FM FRAMEWORK

A building performance framework according to AEDET Toolkit will be developed. First, types of buildings under the healthcare organisation in relation to healthcare core services for example hospital, aged care and community health centre will be identified. From these types of buildings, FM service deliveries in the chosen buildings will be determined. AEDET toolkit then will be applied to identify the effect of building impact, function and build quality for every type of building. From the results, the KPIs of building performance in relation to healthcare core business activities will be developed.

Figure 4.2 – Building performance framework

The results will be used to develop a Strategic FM system (Figure 4.2). This framework can offer significant KPIs in relation to process, place and people. Process of FM service delivery can be based on KPIs that has been achieved. Place such as space and planning integrate with building and people that occupied the building integrate with vast kind of users. The elements of FM, buildings and users then can be integrated to develop a holistic strategic FM system. The integration comes through the existence of performance measurement system. The application of performance measurement may ease decision making processes and ensure strategic FM system aligned with business management especially on whether to be maintained or changed, buildings reused or built new, merged or outsourced.
CONCLUSION

In order to achieve better understanding in building performance, periodic assessment should be based on such operation that involve people (users) and process (business operation) that are engaged in the specific building (place). This assessment should also consider types of facilities service delivery involved in such core activities. Past literature has proved that building performance assessment has brought significant enhancement in healthcare operation but it was practically neglected by high cost of maintenance. To ensure healthcare business organisation (core operation) and FM service operation (non-core operation) is effectively manage, management of both should be aware of cause and the effect by building performance. This awareness and efficient measures can bring additional value to the core and non-core operations. Therefore, such redevelopment or renovation on building, merging, adding or eliminating core operation process should be carefully and periodically reviewed. This can ensure buildings performance at the best level.

This paper demonstrates that performance measurement theories may lead to significant changes and value the organisation towards achieving holistic approach in strategic FM business. The existence of strategic FM then will lead to supporting the healthcare business objectives. Finally, KPIs on building performance can assess and guide FM division in understanding the cooperated business objective together with physical ability of the buildings. Further research can demonstrate the generic KPIs to benchmark the FM service delivery and align with business objectives strategically. Finally, this study is significant because it presents a theoretical framework for interpreting how building performance can be benchmarked significantly when applied to FM service delivery.
REFERENCES


BUTTERPAPER, SWEAT & TEARS: THE AFFECTIVE DIMENSION OF ENGAGING STUDENTS DURING THE ARCHITECTURAL CRITIQUE

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ABSTRACT

Considering how dominant a feature of architectural education the critique has been, and continues to be, little has been written about the affective dimension of engaging students during this key final stage of the design or documentation process. For most students, the critique is unlike any previous educational or life experience that they have ever confronted, and the abrupt change in the instructor’s role, from tutor to judge, can be disconcerting at a time when the student is feeling their most vulnerable. The fact that the period immediately leading up to the critique habitually entails not only a focused and sustained effort, but also sleepless nights of intensive work, further exacerbates this. The purpose of this paper is to recognise the affective phenomena influencing student engagement, during the critique.

The participants of this research were second to fourth year architecture students at a major Australian university. Following the implementation of trials in alternative modes of critique in architectural design and technology studios, qualitative data was obtained from students, through questionnaires and interviews. Six indicators of engagement were investigated through this research: motivation and agency, transactional engagement with staff, transactional engagement with students, institutional support, active citizenship, and non-institutional support. This research confirms that affective phenomena play a significant role in the events of the critique; the relationship between instructor and student influences student engagement, as does the choreography and spatial planning of the critique environment; and these factors ultimately have an impact on the depth of student learning.

INTRODUCTION

The studio has a long history as a preferred environment for architectural education. With that history come a range of traditions and cultural expectations about the relationships between student and teacher. This historic relationship bears heavily on the design, development, and implementation of the activities and procedures with which the student engages (Glasser, 2000; Stevens 1998). Typically, within the studio environment, the academic takes the role of mentor and master to the student’s apprentice. The student, in response to a brief/assignment set by the studio leader, will produce architectural designs, and the academic will review those designs. Such review might include critical comment, suggestions for modification, the offering of design direction, and the discussion of supporting theoretical propositions and theories. Much of this studio activity can be pedagogically framed as dialogue; all be it dialogue in which one of the parties speaks from a position of authority.
This privileged position of authority comes with a strong aspect of social acculturation in which the teacher models a range of acceptable architectural behaviours, both consciously and subconsciously (Nicol and Pilings, 2000, p. 8). There is a ‘hidden curriculum’ of unstated values, attitudes, and norms which stem tacitly from the social relations of teacher and student or from master and apprentice (Dutton, 1987, p. 16). This hidden curriculum, which operates so freely within the structure of the architectural design studio, is in many ways just as significant as the formal curriculum within the process of students becoming architects (Stevens, 1998). Research by Sadker and Sadker identifies this hidden curriculum of exclusion, intimidation, isolation, and condescending behaviour, ‘so elusive that most teachers and students were almost completely unaware of its influence’ (in Vogt, Hocevar, & Hagedorn, 2007, p. 340). This paper seeks to explicate the affective dimension of these ‘hidden’ behaviours during the emotionally charged activities of the design critique.

THE AFFECTIVE DIMENSION

The relationship between student learning, engagement and emotional experience is well recognized and well documented. The Australian Council for Educational Research’s (ACER, 2010, p. ix) research into learner interactions and student engagement highlights a number of indicators of engagement, leading to improved student learning. These indicators include the socially constructed relationships between staff and student, with particular attention given to feelings of support and legitimation within the academic community.

The individual and situational characteristics of learning environments, such as anxiety and self-efficacy, play an important part in the motivation to learn. Furthermore, such motivation is directly related, along with cognitive ability, to learning outcomes and skill acquisition (Colquitt and LePine, 2000). Research into the favourable psychological states that enhance engagement shows that safety is one of the significant conditions for enhanced learner motivation (Kahn, 1990; Noe, Tews & Dachner, 2010). In this context, safety refers to a situation that can be characterized as trustworthy, secure and predictable in which the learner is able to express oneself without fear of negative repercussions (Noe, Tews & Dachner, 2010, p. 283), or a situation that is nonthreatening and secure in which a learner may express various parts of self (Kahn, 1990, p. 705). The perception of trust and fairness is also a significant determinant in the emotional response to a social situation and the student’s ability to learn (Noe, Tews & Dachner, 2010, p. 295). As we shall discuss later, such safety and trust are seldom characteristics that a student feels during the traditional architectural critique.

Research has shown that negative emotion, especially anxiety, can be demotivating and distracting (Bell and Kozlowski, 2008) and indeed that such negative emotions can actually hinder learning (Kanfer and Ackerman, 1989).
From a thorough review of the literature, and from their own empirical research, Leach and Zepke (2010) propose a model for the conceptual organization of the differing perspectives of student engagement. This ‘conceptual organiser’ highlights a number of indicators, many of which, as will be discussed later, relate to the socially constructed relationship between tutor and student; a relationship that typically changes dramatically from one of guidance, academic challenge and constructive collaboration during the design process, to confrontation and judgment during the critique. What we will show later in this paper, is the significance of the ‘transactional engagement’ with academic staff. In particular, how the transactional engagement with staff during the critique influences student’s emotional responses, which in turn affects their potential to use the critique as a learning experience.

THE CRITIQUE

The traditional model of the critique is that of a formal presentation by the student of an architectural design project, at which time the project is usually assessed by a team of academic staff. This typically involves a rigid and hierarchical arrangement of furniture and participants, timetabled presentations, a structured program of presentation by the student and feedback or comment by the academic staff, followed by a formal summative assessment. The critique, as a learning environment, offers a somewhat unique activity with significant opportunity for dialogue and conceptual exchange between teacher and student. As such it is a highly useful pedagogical tool that can expose architectural design process, model workplace behaviours and professional practice, and allow students to develop the ability to verbally and visually critique their own work (Dannels and Martin, 2008; Webster 2006). As we will show however, it does not always achieve this potential.

If emotions may help or hinder the potential for learning, then the heightened emotional environment of the architectural critique requires further consideration. Within the studio learning environment, based so heavily on dialogue and the constructed relationship between teacher and student, the critique becomes in many ways an anomaly in which the instructor and guide becomes the judge and juror. The constructive environment and team like relationship of the tutorials gives way to a strongly segregated relationship of authority and judgement. ‘The jury system of evaluating design work in schools of architecture is abusive, undermines teamwork, and should be reconsidered’ (Mitgang, 1999, p.4). This somewhat antiquated activity, as it is traditionally performed, is no longer aligned with recognized good educational practice.
Fredrickson’s (1990) research into design juries shows that during the critique there are significant barriers to open dialogue; largely associated with perceived, and at times hidden, systems of power and authority. Social prejudices and power games often interfere with the free interchange of ideas as students experience feelings of anxiety and defensiveness (Stevens, 1995; Webster, 2006). Such emotionally restricted dialogue limits the learning opportunities of the student during the critique (Melles, 2008). Students are not open to feedback at this time and are not achieving quality learning outcomes (Percy, 2004).

Using Foucault’s writing on power and education, Helen Webster’s analysis of the design studio and the critique identifies a range of ‘microtechnologies of power’ (2007, p. 21) that are used, both consciously and subconsciously, to socialise or acculturate students into architects. Students are coerced into conforming to expected models of behaviour through a critique process that is ‘profoundly de-motivating and competitive’ (Webster, 2006, pp. 286-7). Webster is just one of a number of researchers and academics (Wilkin, in Nicol and Pilings, 2000) who have found the architecture studio and the critique to be ‘a very incomplete system of education’ (Mitgang, 1999, p. 4). This outdated environment and its hidden curriculum inadvertently promotes an emotional response that hinders learning, rather than a cognitive response that assists learning.

Lawrence (2008, p. 75) notes that ‘learning is a holistic process that involves cognitive, affective, somatic, and spiritual dimensions’. While emotions effect motivation which effects learning (Bye, Pushkar and Conway, 2007, p. 153-155), it is specifically creative people (such as architecture students) who do their best work when they tap into their emotions, through transformative learning and emotional learning (Lawrence, 2008, p. 67). This connection between reasoning and emotional intelligence is one aspect of a supportive learning environment that architectural education and the critique in particular does not deal with well (Gonczi, 2004, p. 26). The power game of such critique juries removes control from the learner and leaves the student in an emotionally vulnerable state. If the interplay of thinking and feelings (cognition and emotions) gives rise to intentions and motivations and behaviours (Buvoltz, et. al. 2008, p. 27), then such de-motivation will not result in good learning outcomes.

As well as the interpersonal interactions, the spatial pattern of the critique can also work to limit the learning opportunities as the formal arrangements of furniture, students and staff can reinforce the symbolic power of the academic during the critique (Salam and El-Attar, 2006, p. 189; Satherley, 2010; Webster, 2006, p. 12). The traditional arrangement of the critique in many ways imitates that of a court house with judges, jurors, the public, and the accused; a situation in which the student feels the need to defend their design in what is a traumatic and intimidating experience (Blair 2006; Webster 2006).
METHODS AND ANALYSIS

Over 500 undergraduate architecture students enrolled in second, third and fourth year design and technology classes completed a survey about their levels of engagement in these classes. Using a qualitative grounded theory approach, the data were coded and four key indicators for engagement emerged: student attendance, participation, performance, and learning. Following the surveys, the researchers worked with unit coordinators to facilitate the implementation of alternative critique approaches within some of the units. These alternative critique formats focused principally on modifying relationships or the choreography of the critiques. The alternative formats can be summarised as follows: Theatrical performances to the whole class and within a public environment; Three day design exam with no oral presentation; Formal board-room table client presentation format; PechaKucha 20x20 presentation format; Informal board-room table client presentation format; and United tutor and student jointly presented work to the critique jury.

Following the end of semester critiques and using the four indicators for engagement as an organisational structure, the researchers conducted in-depth interviews of small focus groups with over 20 students and staff. The interviews focused specifically on the affective dimension of student engagement during the critique. Participants were asked to discuss their feelings regarding attendance, participation, performance and learning during the critique.

In recent research into the varying dimensions of student engagement, Leach and Zepke (2011) have proposed a model for conceptually organising the complex process of engagement into a number of discrete but interrelated perspectives: Motivation and agency, Transactional engagement with staff, Transactional engagement with students, Institutional support, Active citizenship, and Non-institutional support. This conceptual organiser was used to code and analyse the data collected during the interviews. Particular attention was given to perspectives that related to Transactional engagement. Active citizenship was not explored, as there was no evidence to suggest that it had any direct bearing on the critique process.

FINDINGS

Motivation and Agency [students are intrinsically motivated and exercise their agency]
When discussing the critique, participants identified 32 emotions relating to motivation and agency, as a perspective of engagement. A major hindrance to this perspective was when students felt *overwhelmed*: ‘the complexity ...and the amount of themes that we had to respond to in one design project at times just felt overwhelming ...and it took me quite a lot of research and extra work to come to grips with how to marry all of those things together ...they just stacked up. Definitely at times I was terrified about that ...it's like it just stepped up exponentially’ [7.22]. *Fear* also presented a significant hindrance: ‘it was just terrifying ...I almost tuned out for most of it. I would stand there and nod vaguely and want it to be over’ [1.49]. *Frustration* was also a substantial finding: ‘the structure, although it was there, it was just frustrating to get through’ [8.02]. Finally, *hopelessness* was a recurring theme: ‘I have done it now ...can't do anything about it ...and they will say stuff and ... a lot of the time you just want it to be over’ [1.43]. Other significant negative emotions inhibiting Motivation and agency included confusion, lacking confidence and anxiety.

On a positive note, many of the students found the critique process very *satisfying*: ‘extra rigour creates a better equality project ...it's really healthy to have discussions with people about an idea ...you might get negative feedback but that just helps you to refine that idea ...when I was younger it was harder but as I have gotten older it's become easier’ [7.14]. Several students also said that they found crits enjoyable: ‘crits are my favourite part of [design] ...I love getting up and sharing with someone my ideas and my favourite part is answering the questions ... even if it is not the right decision ...or if they think it's wrong and you could have done something better, it's having that discussion which I like ...[fear] works as adrenalin which makes me more focused’ [6.26]. Other significant positive emotions aiding Motivation and agency included confidence and reassurance.

Transactional Engagement with Staff [students engage with teachers]

Participants noted 30 emotions relating to transactional engagement with staff, as a perspective of engagement. A major hindrance to transactional engagement with staff was when students felt frustrated: ‘the most frustrating criticism I have ...is [when] the person can't direct you to text/exemplar. If you aren’t getting substantiated feedback, that's very frustrating; particularly when you have put work up that is researched, that has some kind of basis, that's very frustrating’ [7.25]. Another common negative inhibitor was that students feel exposed: ‘when it comes to a design, it's all subjective and that's when you have to open yourself up ...I find it hard to deal with criticism ...it's awful ...it is easier when someone likes it’ [1.33/9]. Further significant negative emotions inhibiting Transactional engagement with staff included boredom, disappointment and intimidation.
Positive emotions were more noteworthy when discussing this perspective. *Satisfaction* of students is a significant aid when engaging students: ‘I enjoyed the panel because you get so much more from it …basically, I find that with the whole constructive criticism …if someone says something and …it could be taken personally …you will see the tutor or another person trying to explain what they mean, if it seems that the actual student isn't getting the point’ [7.26]. *Reassurance* was also cited as a major contributor to engagement: ‘she encouraged us and she pushed us and she let us go and the results showed in the end’ [2.27]. Additional contributors aiding Transactional engagement with staff included *enjoyment*.

A specific component of Transactional engagement with staff that the researchers further investigated was the theme of interpersonal relationships. Three key negative emotions inhibiting engagement were evident; firstly *intimidation*: ‘he said something …to a couple of girls who have weren't participating and one of them got really scared and backed off completely and didn't say anything for the rest of the class …sometimes people will say something to deliberately get people involved …sort of shutting someone down to encourage them’ [8.11]. The second key emotion identified was *frustration*: ‘the week before our actual assignment was due, we were still having to change the design and I just got incredibly frustrated by that …I didn't feel like I was being supported by …my group members and …my tutor was supporting me and giving me feedback …but frustrating me …so I was getting frustrated from both ends’ [6.22]. The final key emotion was *disappointment*: ‘but the disappointment from the tutor, when you don't have anything …that makes you feel so guilty …why have I not done something? …I have let them down …I always felt that’ [7.10]. One key positive emotion aiding engagement through interpersonal relationships was evident; *reassurance*: ‘I turned up even if I didn't want to …my tutor was really good and …asked …where I was stuck and talked me through it …good at crystallising my thoughts’ [1.06].

A second specific component of Transactional engagement with staff that the researchers further investigated was the theme of choreography; modification of the physical setting. Two key positive emotions were evident; firstly, *satisfaction*: ‘people presenting their work in front of other people, it was less stressful …or out of the way it's been done the last few years …it was refreshing and [students] engaged with the challenge’ [3.26]. The second key positive emotion aiding engagement during the critique was *enjoyment*: ‘I loved the performance thing because it was such a contrast and it was another creative outlet …it was so different, more exciting, added more adrenalin’ [7.28].

**Transactional Engagement with Students**

18 Emotions relating to transactional engagement with students as a perspective of engagement were identified during the interviews. By contrast with transactional engagement
with staff where positive emotions were generally more apparent, transactional engagement with students had a more negative focus. The most substantial emotion hindering engagement was that of intimidation: ‘there are some people …who have quite big egos when it comes to themselves within their field and you don't feel like they appreciate anyone else's work but their own …you are doubting your own because you feel that they doubt you … [you] do feel judged and [you] don't feel equal’ [7.19]. Students also spoke about lacking confidence as an important contributor to reduced engagement: ‘I think it is because you are open not only to the tutors …you are open to all the students … someone is going to pull me up on this … once they say something, they don't think it will work, I believe it won't work’ [1.52]. Additional negative contributors which emerged included awkwardness, disappointment, distraction, exposure, fear and withdrawal.

From a positive perspective the emotion of satisfaction, stood out: ‘every student needs to do a critique …it was brilliant because all of a sudden my confidence came back because …I realised there is a lot …that I know’ [2.22]. Other positive perspectives included confidence, reassurance and reduced inhibited.

Institutional Support [institutions provide an environment conducive to learning]

By contract with the other perspectives of engagement, only 9 emotions relating to institutional support were identified during the interviews. Fear stood out as a significant emotion: ‘If someone told me two or three days out of a critique that it was going to be different than what I planned for, I would freak out’ [1.36]. Another noteworthy emotion was frustration: ‘that's a lot to do with how much time we have …when we don't have that much time …we can't communicate whatever we are passionate with …it comes back to contact hours’ [3.22]. There were no notable positive emotions concerned with institutional support.

Non-institutional support [students are supported by family and friends to engage in learning]

Only one significant emotion emerged when considering the perspective of non-institutional support; overwhelmed: ‘[we] are extremely tired because we do work and we have got the pressures of the office …so up early, you are at work, you are working back long hours to make up for the fact that you are out of the office for a day or two …sometimes by the time you actually get to uni …I hate to say it, you are exhausted’ [2.08]. It is important to note that every instance of students feeling overwhelmed or overloaded within this criterion, related to external work commitments and pressures.
CONCLUSION

While the value of the design critique as a learning environment is clear, it is also clear that it is an emotionally charged environment in which many students experience a heightened affective dimension, especially to the interactions between student and staff. It is also evident that when such interactions are unmanaged and students experience excessive negative emotions, that their capacity to learn from the critique can be significantly affected. It is not the purpose of this paper to discredit the critique but to highlight the affective dimension such that academics may better manage that aspect of the environment. Feelings of frustration, intimidation and being overwhelmed, the most frequently mentioned negative emotions, need to be minimised, while feelings of enjoyment, support and satisfaction, the most frequently mentioned positive emotions, need to be reinforced. The first step in dealing with this affective dimension is recognition, and in particular recognition by all academic staff, especially casual tutoring staff and guests at the critique, of the significance of emotions in this learning environment.

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REFERENCES


Blair, B. (2006) ‘At the end of a huge crit in the summer, it was ‘crap’ - I’d worked really hard but all she said was ‘fine’ and I was gutted’. Art, Design & Communication in Higher Education, Vol. 5, No. 2, pp. 83-95.


IS THE DESIGN CRIT WORTH KEEPING? TESTING THE VALIDITY OF THE TRADITIONAL CRIT AND POTENTIAL ALTERNATIVES

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ABSTRACT

The Design Crit has been subject to strong criticism and little tweaking. Criticisms focus on asymmetrical power relations and extreme experiences of student anxiety and feelings of intimidation. Some studies identify the inability of student feedback to be effective because of student anxiety, stress and often exhaustion. This paper reports on an investigation in 2010 into the possibility of replacing the traditional crit with alternative crits. It reports on a study which reviewed previous findings about the traditional crit, and trialled four new crit types which variously explored the use of peer-learning, models from popular culture, and varying degrees of public/private context and student/staff agency. Focus groups and a pilot internet survey were the key methods of gaining student feedback. The research demonstrated that all the trialled crits performed as good or better than the traditional crit in terms of perceived crit productivity and student engagement, but simultaneously revealed the cultural significance and value of the traditional crit for the students.

INTRODUCTION

The design crit is the prime mode of providing feedback to students on their design projects in architecture and design schools. It dates from nineteenth-century Beaux Arts architectural education, though it appears that it was not until the mid-twentieth century that the public form of critique, manifest in today's design crit, was formulated (Anthony 1991, 9-11). It has long been realised that the design studio and its primary mode of public assessment, the crit is "considered the backbone of all design degrees" (Wallis & Greig 2009, 189). It is promoted as: "an important opportunity for an assessment dialogue ... and for teachers to bring together and share, in a group environment, points of clarification or discussion, which may arise as areas of concern, weakness or strength during the development of the studio project. The crit allows the student an opportunity to practise and develop presentation skills and a verbal articulation of their thoughts to an audience" (Blair 2006, 83). It has been described as both a "highly emotionally charged experience," and "educationally flawed" (Anthony 1987, 7; Chadwick & Crotch 2006, 145). These extremes are persistent from Kathryn Anthony's
ground-breaking 1987 research through to more recent publications in the 2000s. Issues of power, lack of student comprehension of feedback, student anxiety, the prioritising of professional aculturation over learning and teaching and the crit's significance as a cultural ritual have been identified.

Design crits are a widely accepted teaching and examination technique in architectural and design education, even though as early as 1979 it was proposed that "there is very little literature which supports their use" and other research has found that the crit is "a poor vehicle for students to demonstrate their understanding of the context of their practice" (Ilozor 2006, 53; Peterson 1979, 64; Percy 2003, 143). Anthony's research has comprehensively documented the issues, and noted that 63% of the students she interviewed "do not think that they had learned much from the jury comments they had just heard" (1987, 6). Students are typically exhausted (from weeks of all-nighters), and nervous. Dannels and Martin refer to "a climate of fear, defensiveness, anxiety, and stress ... associated with the feedback that occurs within critiques" (2008, 136). Similarly Blair described "students [who], for the major part of their presentation, are literally frozen with fear. They do not hear or remember what they have said or what has been said about their work" (2006, 89). The evidence is clear that students who are exhausted, anxious, and often academically disengaged, are not able to benefit from feedback (Anthony 1987, 2-3, 7-9; Blair 2006, 84-85, 90, Chadwick & Crotch 2006, 147; Frederiksen 1990, 23, 25; Webster 2006a, 12,15).

The crit though is also venerated, and is recognized by staff and students as an important part of the culture of a design education; "a heightened moment of exchange between staff and students in the new landscape of learning ... a powerful vehicle for the induction and enculturation of students into the dominant mores and beliefs of a programme and its discipline" (2003, 143). It is one of the "most important ritual events in the life of any architectural school" (Webster 2006b, 287). In the best cases a vigorous public debate about the state of the discipline occurs. Some students find the crit invigorating and enjoy its challenges, but it is fair to say that a significant number of students do not find the crit a productive learning experience.

Despite several projects with aims to reform the crit, such negative issues are repeatedly raised (Anderton 1990, 28; Anthony 1987, 7; Blair 2006, 87-88; Chadwick & Crotch 2006, 145-148; Frederikson 1990, 22, 24-25; Long 2008, 25; Webster 2006a, 10, 15). There is significant cultural and traditional support for the current model of the studio-crit, which is underpinned by both traditional power-relationships (the studio critics being vested with power; while the student is placed in a vulnerable position), and the desire to provide students with opportunities to practice presenting work, as they might in front of prospective clients in architectural practice.
METHODOLOGY

This paper reports on research undertaken in 2010, funded by Ako Aotearoa. The project used focus-groups and a questionnaire-based survey to evaluate learner's perceptions of five studio-crit techniques (which included the Traditional Crit). These crit-types were as follows:

**The Performance Review Crit** (one-on-one interaction, and marking): In the Performance Review Crit, staff mark each student's work individually in front of the student. Marking sheets (with criteria) are distributed to the students prior to marking. Students are allocated 15 minute sessions, and the marking proceeds in the studio space, during a studio session, with visual connection but acoustic privacy (achieved by distance from other desks). Issues about how a student works may also be discussed but are not marked. Students are given the opportunity to ask questions about the marking.

**The Judging Panel Crit** (peer-evaluation and design criticism of work): In the Judging Panel Crit, students are put into groups of five or six in which students present their work one-by-one to other students, and the group allocates each project to a pre-determined category (e.g. Strongest Drawing, Best Planning, Best Response to Site - depending on what aspects staff would like focussed on), and to a student, who is not the project's author. After this stage, students re-group according to the categories, taking the project they have been allocated to with them. In this second stage the students present the work they have been allocated to the new group, and the group decides which project is the best in the category. Written feedback about each project is recorded and given to the project's author. Each group then presents the winners and explains why the group has made this decision. Staff are not involved in the discussions, and administer, rather than participate in, the crit.

**The Open Marking Session** (fly-on-the-wall marking): In the Open Marking Session, students place their unnamed work on a long table (possibly made from several tables joined together), and sit on either side, ensuring room for staff to move in the space between the table and the student seats. Staff then quickly organise the work in rough grade order from E to A+. Staff then begin at the fail end of the table and mark the work, discussing why the work should get a specific mark, and debating any disagreement, loudly enough for all students to hear. At about halfway through the marking there is a break for students (who have been watching in silence) to ask questions, or make comments, which might include if there are specific aspects of the brief they would like the markers to comment on when they are marking. A short coffee break follows, and then marking recommences. When all the work is verbally marked (there is no written record, and no work is named in the process of marking), the markers make general comments about the work.

**The Speed Crit** (short student presentations, coupled with repetition to enable students to trial, and refine presentations): In the Speed Crit, students are paired on either side of a long table (possibly
made from several tables joined together), and have 30 seconds each to explain and get feedback on their project. After each student has presented their project they move seats into a new pairing and repeat. Staff are not involved in the discussions, and administer, rather than participate in, the crit.

FOCUS GROUPS

The Focus Groups confirmed previous research regarding the Traditional Crit. Negative aspects of the crit of student nervousness, tiredness and the dependence on the ability to present in front of the class, rather than to design, was noted (e.g. "you can't really articulate properly then you get more nervous, and if you get nervous you're not going to get anything out of a crit,"3 "it's something you kinda have to conquer as you go through uni," "they say something, like, half-bad, and you're sort of instantly freak out and get sort of a little bit offended, and then you sort of stop hearing what they're saying"). Simultaneously students reported the importance of the crit as a distinct disciplinary ritual, which set architecture and design disciplines apart from other students' university experiences (e.g. "It's a really nice ritual, and it's a nice bonding ritual and that for everyone as well, even if you are all flopping about exhausted in your chairs"). Students also described the power of the anticipation of the Traditional Crit as a motivator to get work done, and as an exciting finish to a project (e.g. "it can be exhilarating sometimes because like your chance to show what you have been working on for the entire semester and it's like you've given this moment in this certain time that's just for your project, it can be quite exciting," "there's a great deal of anticipation in preparation for one moment," "it helps us design is in the anticipation of it"). These results both reinforced previous research and indicated additional aspects of the student learning experience (both positive and negative) in the traditional design-studio crit.

Like the Traditional Crit, the experimental crits generated positive and negative comments from the students. The aim of the focus groups was to find out the likely range of answers and in order to design an internet survey that enabled students to express positive or negative responses to aspects of the crit. In addition, the Focus Group responses revealed other (sometimes contradictory) values held about crits. Feedback from a "qualified" person appeared to be valued (e.g. "the best thing [about] the traditional crit is that ... you get it [criticism] from a qualified person who's had a lot more experience"). The Judging Panel Crit was criticised by some students for not being serious enough ("For the end of ... a project it was a bit too light and humorous"), even though at no time did students (in response to the Focus Group question: "Did you feel you/your work were/was taken seriously?") consider that their work was not taken seriously in response to any of the crit types (e.g. "I think that's common throughout the school ... when it comes to your actual presentation ... your work is always taken seriously").

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3 The following student quotes are excerpts from the focus groups.
The Performance Review appeared to offer both a level of formality and intimacy. The anticipation of it was intimidating, but the experience of the crit was not ("everyone was stressing out before it, because you’re just like "Oh my god – it’s soo intense – you’re getting your grade right then and there," and then when you’re in there, you’re kind of like "oh, it’s not as bad"," "felt a lot more relaxed and it was a lot more, less daunting," "One fact also is that, the fact that you were sitting, you were sitting on the same level as them – usually you, you know, kind of up on a podium in a spotlight, so…”)

The feedback from the Speed Crit indicated that peer feedback was valued, because of the quality and the variety of viewpoints, as these comments from third year architecture students suggest: "when you're seeing the tutor you're seeing the same person each time and I s'pose just having that different perspective from different people ... if they connected with what you were doing and giving feedback and then the quality was good;" "it's not a critique itself it's more "Look at this" and "Have you looked at that?" you're actually looking at ways in which you can help in the design develop, whereas the formal crits ... it tends to be "What is this? Where is that?" [it] seems to be on a slightly different level." Disciplinary and year differences may explain the different reception of student feedback, or the different levels of skills students develop through their course.

Students valued seeing other students' work. This was apparent in the consideration of the Performance Review where students saw the staff/markers/critics separately. An important aspect of seeing other students' work was helping students understand how their work compared. Students also valued seeing staff discuss the work in the context of the Performance Review, and the Open Marking Session, both of which involved staff deliberating over students' marks. An unexpected response from the Speed Crit Focus Groups, was the consciousness, among the students, of social hierarchy within their class cohort and an appreciation of how the Speed Crit challenged this hierarchy. In a similar way the Judging Panel Crit encouraged fellow students to talk.

INTERNET SURVEY

Ultimately, the key aim of this research was to ascertain whether these crit-types are valid in comparison to the Traditional Crit in terms of student-perception of learning via an evidence-based review of current and potential teaching practices. The results of the statistical analysis demonstrated that the experimental crits performed equally or better than the Traditional Crit in terms of any significant differences found using Paired Sample t-tests. They also demonstrated that some crits were better at aspects which could be considered to be different to, rather than better than, the Traditional Crit, and so the results indicate that different crits might better suit different teaching situations and contexts or learning outcomes.

Aspects where the alternative crits performed better than the Traditional Crit were in the areas of insight into the marking process (the Open Marking Session), individualised focus
(the Performance Review), and as interim crits (the Open Marking Session, and the Speed Crit). Both the Open Marking Session and the Speed Crit were more likely to be considered informal and relaxed than the Traditional Crit, with the Traditional Crit being more likely to be considered "a formal and special event" than the Open Marking Session. The Speed Crit was the only crit where the greater percentage of students considering it to be productive was statistically more significant than the Traditional Crit. There was no significant differences found when comparing the Judging Panel Crit with the Traditional Crit, and there was no statistically significant difference which indicated that the experimental crits were of lesser value in any aspect surveyed than the Traditional Crit. This finding validates the hypothesis that the alternative crits are viable teaching techniques.

The results of the statistical analysis of the internet survey (Appendix A) also showed that students who had a negative experience of the crit (i.e. who felt "nervous, frightened, intimidated," "bored, unengaged, disinterested," "tired, sleepy, exhausted") were, in many instances, statistically less likely to conventionally benefit from a crit (e.g. gain an understanding of the marking process, feel that they received good feedback, and learn from seeing other students' work), particularly in the Traditional Crit. They indicate that redesigning the Traditional Crit to reduce student anxiety (reflected in students feeling "nervous, frightened, intimidated") is perhaps the most important ways of achieving learning outcomes. Given the result that 45% of students in the Traditional Crit chose "nervous, frightened, intimidated" as the word set which best described how they felt during the crit, aspects of: feedback reception, learning from other students and understanding how their designs are evaluated would likely improve significantly in crit contexts if the mechanisms which cause student anxiety in the Traditional Crit were mitigated. The alternative crit types demonstrate ways in which this might be achieved.

The reduced involvement of staff and use of peer feedback in the Judging Panel Crit and the Speed Crit most obviously re-balanced the power dynamics. The role reversal of presenter in the Open Marking Session reduced the pressure felt by many students presenting in front of their class in a context which cannot be argued to be relevant to practice preparation, nor productive for learning. In addition, the requirement for staff to publicly mark the work gave the Open Marking Session a level of accountability, and enabled students an insight into a part of the process they are usually excluded from. The Performance Review also made staff marking accountable, as the rationale for marking is presented to the student. While it can be argued that the student is marked in isolation from the class, the provision of a private and levelled space (both students and staff are seated) appeared to reduce the exposure and vulnerability of the students. They had to address their markers but were not susceptible to

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4 In practice such presentations are unusual (excerpt perhaps for Landscape Architects who work primarily in the public realm) being only usual in competition contexts or for large public schemes requiring public consultation. In these situations the power dynamics are different as the architect or designer is in a position of authority as an expert, which is very different to presenting infront of staff who are responsible for determining marked outcomes.
the pressures of performing in public. The Judging Panel Crit and the Speed Crit prioritised peer feedback. While not intended, the Performance Review provided a context where students informally sought peer feedback and comparisons of marks.

All four alternative crits were designed to either reduce the total time of the Traditional Crit, or the total time of critting and marking, or to reduce the requirement for staff input. The Performance Review took 10-15 minutes per student and included marking, making the total time similar to that required for the Traditional Crit, but incorporated marking. The Judging Panel Crit minimised required staff input and, because multiple crits occurred simultaneously, reduced the total time taken overall. The Open Marking Session included formative marking, and reduced the overall time taken for critting. The Speed Crit reduced the requirement for staff participation as well as reducing the time taken overall for critting.

CONCLUSION

The research results are positive and demonstrate the potential for new ways to engage students in the context of the design crit. While the Traditional Crit is a source of anxiety for a significant number of students (45%), it is also highly valued by students, almost as an initiation ritual, and a part of their identity as architectural and design students. While the Speed Crit was perceived as being the most productive crit, all of the experimental crit performed as good or better than the Traditional Crit.

Further areas of research include validation of the study over time to monitor whether newness of crit types impacted on results. Lack of familiarity may have impacted on student perception of the crit. This perception may have impacted on whether students consider the crit type to be better fitted to an interim, final or either interim or final crit, because the full potential of the crit may not yet be apparent. Formal evaluation of staff perception of the crit types as teaching tools will also add to an understanding regarding the validity of the crit types. Comparative work regarding the quality of student work and different crit types was also not part of this study.

REFERENCES


Blair, B. "At the end of a huge crit in the summer, it was "crap" - I’d worked really hard but all she said was "fine" and I was gutted" *Art, Design & Communication in Higher Education*, (2006) 5(2):83–95.


Long, Kieran "Yale crits: what can the UK learn from one of the most prestigious schools in the US?" *Architects' Journal* (31 January 2008) 227(4):24-29.


Wallis, Jillian and Joan Greig "Foundation knowledge? The case for an accretive studio model" *Curriculum Development in Studio Teaching: STP Case Studies of Effective Practice*


APPENDIX A: STATISTIC ANALYSIS

The results were analysed to test whether there was a significant difference between the way students answered questions within crit types and across crit types.

**Within Crit Types:** Testing results from questions 2 (how students felt) and 4 (what students learnt) found no significant differences for the Traditional Crit, the Performance Review, the Open Marking Session and the Speed Crit. A significant difference was found (Chi-square: $\chi^2(25, N=36)=49.55, p<.01$) but there were insufficient responses to confirm what the difference was. It appears that people who felt "interested, engaged, actively involved" were more likely to think that they "learnt how to improve the presentation of their design" than people who felt "nervous, frightened, intimidated." Testing results from questions 2 (how students felt) and 6 (agreement/disagreement with various statements) found no significant differences for the Speed Crit. Significant differences were found as follows:

<table>
<thead>
<tr>
<th></th>
<th>Traditional Crit</th>
<th>Performance Review</th>
<th>Judging Panel Crit</th>
<th>Open Marking Session</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>&quot;I gained insight into the marking process&quot;</em></td>
<td>$F(5,139)=3.25$ $p&lt;.05$</td>
<td>People who felt &quot;exhilarated, excited&quot; were more likely to agree with this statement ($M=1.89$, $SD=0.78$) than those who felt &quot;tired, sleepy, exhausted&quot; ($M=3.38$, $SD=0.71$) or &quot;nervous, frightened, intimidated&quot; ($M=3.07$, $SD=1.13$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>&quot;It was an informal and relaxed</em></td>
<td>$F(5,139)=5.34$ $p&lt;.01$</td>
<td>People who felt &quot;interested, engaged,&quot;</td>
<td></td>
<td>$F(4,29)=2.81$ $p&lt;.05$</td>
</tr>
</tbody>
</table>
I received good feedback

\[ F(5,139)=2.41, p<.05 \]

People who felt “interested, engaged, actively involved” \((M=1.78, SD=0.75)\) were more likely to agree with this statement than those who felt “nervous, frightened, intimidated” \((M=2.45, SD=0.99)\) or “relaxed, at ease” \((M=2.33, SD=1.03)\) were more likely to agree with this statement than those who felt “bored, unengaged, disinterested” \((M=4.00, SD=1.23)\).

Across Crit Types: All questions were compared across the different crit-types with the Traditional Crit. Significant Differences were found as follows:
## Performance Review

Paired Sample t-tests (N=25)

"It had a concentrated one-on-one time/individualised focus", t(24)= 3.12, p<0.01. Respondents agreed with this statement more for the Performance Review crit (M=1.96, SD=1.08) than they did for the Traditional crit (M=2.79, SD=1.22).

## Open Marking Session

Paired Sample t-tests (N=31)

"I gained insight into the marking process", t(30)= 3.59, p<0.01. Respondents agreed with this statement more for the Open Marking Session (M=2.03, SD=1.19) than they did for the Traditional crit (M=3.10, SD=1.17).

"It was an informal and relaxed atmosphere", t(30)= 4.00, p<0.01. Respondents agreed with this statement more for the Open Marking Session (M=2.19, SD=1.14) than they did for the Traditional crit (M=3.42, SD=1.15).

"It was a formal and special event", t(30)= -3.21, p<0.01. Respondents agreed with this statement more for the Traditional crit (M=2.58, SD=1.06) than they did for the Open Marking crit (M=3.39, SD=1.05).

"The (.....) crit is best used as....", t(30)= 4.63, p<0.01. Respondents thought the Open Marking Session (M=1.30, SD=0.68) was better as an interim crit and the Traditional crit (M=2.13, SD=0.70) as a final crit.

## Judging Panel

Paired Sample t-tests (N=40).

No significant differences

## Speed Crit

Paired Sample t-tests (N=18).

Students were more likely to feel "interested, engaged, actively involved" in the Speed crit than they were in the Traditional crit.

"Overall, how would you describe the QUALITY of the TIME you spent in the .... CRIT?", t(16)= 3.77, p<0.01. Respondents thought the Speed crit (M=1.06, SD=0.24) was more productive than the Traditional crit (M=1.51, SD=0.51).

"It was an informal and relaxed atmosphere", t(17)= 5.81, p<0.01. Respondents agreed with this statement more for the Speed crit (M=1.72, SD=0.67) than they did for the Traditional crit (M=3.56, SD=1.10).

"The (.....) crit is best used as....", t(17)=0.72, p=0.01. Respondents thought the Speed crit (M=1.22, SD=0.15) was more suitable as an interim crit than they did for the Traditional crit (M=1.94, SD=0.15).
ARCHITECTURAL EDUCATION AND BEHAVIOUR CHANGE: THE ROLE OF CRITICAL SELF-REFLECTION

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ABSTRACT

The natural environment and the profession of architecture have been brought to an edge. For the natural environment, this is the edge of its capacity to accommodate the rate of anthropogenic greenhouse gas emissions. For the profession we are on an edge that requires us to reconsider our design approach and our responsibilities. To move from this edge requires change. As sustainable technologies are increasingly integrated into architecture, the value of environmental design has increased. Yet this has not affected lifestyle and everyday activities, and the behaviour change required to mitigate and adapt to climate change is not occurring.

This paper outlines a pilot study that investigates the opportunity to promote change towards environmental design and lifestyle through a transformative learning experience. Participants of this study are third year architecture students at Curtin University. An ethnomethodological approach is taken to determine a method of qualitative interpretation of changes in attitude, behaviour and design approach. Students are participating in a number of activities to encourage critical reflection of their learning experience and everyday behaviour. Analysis of the data collected will be used to develop a model of transformative learning as part of a larger research project.

This study builds on previous investigations into models of architectural education which have found that transformative learning experiences require opportunities for self-awareness of learning and change. At the time of writing, data collection is not yet complete and therefore this paper outlines the proposed methods of analysis and discusses expected outcomes.

INTRODUCTION

Architecture and the typical outcomes of architectural education, built projects, are often perceived as having the capacity to transform the lives of those who will inhabit the designed spaces. But does this
transformation extend to the inhabitants’ everyday life, or that of the designers? The focus of this study, using architecture students as participants, is to develop a method of interpretation of everyday behaviour and to consider how this may be related to learning experiences. All students participating in this study are currently working on design projects that have different briefs, but require the same learning outcomes to be met. Within this cohort, a smaller group have focussed on ‘responsibility in design’ and are investigating how building science knowledge and skills might be applied in design. The students have also been asked to undergo a number of critical self-reflection tasks. This paper outlines a method for promoting critical self-reflection in teaching activities in second semester 2011 at Curtin University as a means to support a transformative learning experience.

BACKGROUND

Environmental education, in general schooling and architectural education, has been a part of teaching practice and the curriculum for decades, and many tertiary students form their environmental attitudes and values in school. Environmental education began in schools in the late 60’s where nature studies were taught as part of science. This has developed over the years, supported by groups such as the Australian Association for Environmental Education in the 70’s and the Australian Governments National Conservation Strategy, released in 1983 (Prietto, 2011). However, recent trends have indicated that the nature of this education is changing and that a need for the learning experience to cross over into everyday practice is required (Department of Education and Skills, 2006). There are many current examples of long running programs where this is attempted. At Narrabeen Lakes Primary School award winning environmental education activities run across the curriculum, and cover wide range of topics (NSW Department of Education, 2011). However, it is recognised that some students and their families remain unwilling or unable to continue such activities in their everyday life outside of school. This has also been seen in programs external to the formal school environment, such as those at Taronga Zoo, where the lifestyle of those who have participated has not significantly changed, prompting Taronga’s Social Learning Research Project to investigate this further (Taronga Conservation Society Australia, 2011).

This difficulty in applying environmental skills and knowledge learnt in a formal program to everyday behaviour occurs elsewhere. In architectural education, the nature of environmental issues in architectural programs has become increasingly implicit. Recent analysis of Australasian architectural programs identified that of the six key curriculum areas typical to all programs, two are seen as focussed on environmental issues - the Environmental Curriculum, and the Technology Curriculum. It is in these areas that many of the aspects considered critical to passive design are taught and where there exists the best opportunity for promoting sustainable behaviour. Yet there has been a noticeable trend in curriculum development that has seen the dilution of the sciences in architectural education (Ostwald, 2008). When analysing curriculum development in nine architecture schools which, in 2006, did not identify environmental issues as named, Ostwald notes that that most of these schools merged the environmental content with the technical area. “While there is nothing intrinsically wrong with this approach, a close comparison of the combined technology and environmental statistics leads to the identification of potential differences in level of commitment to the environment” (Ostwald,
This, combined with the observation that of these nine schools, many have a technology component of less than 10%, supports the concern that environmental issues have become either an elective or are missing altogether from the core of some architectural courses. This may affect the attitude towards environmental design and research in practitioners.

When discussing the role of design and research in environmental (architectural) education, Dave notes that as a social science, there are many arguments for what constitute core or foundation skills. He refers also to Herbert Simon’s characterisation that “design is concerned with how things ought to be. And what ought to be in environmental disciplines is intimately tied with human choices and values …” and in doing so notes that “Spatial disciplines … not only reflect but also manufacture new values in anticipating changes and times ahead” (Dave, 2004, p.89). It is this creation of new values through reflection and application that is of interest when arguing for a program that supports behaviour change and encourages different methods to developing modes of thinking that support innovation, resilience and encourage change. (Dave, 2004). As a core skill, critical reflection is seen to be one way in which students can be encouraged to re-evaluate, assess and respond to changing needs of society, environment and the discipline. This is considered to support the development of a transformative learning experience in architectural education, in which learning can be applied to everyday behaviour.

Transmissive / Transformative Learning Experiences

An investigation into the teaching of building science in the architecture program at Curtin University found that, using the principles of Motivational Hierarchy of Needs (Maslow, 1943) and Levels of Thinking (Krathwohl, 2002), if the self-awareness of learning in the students is increased, a transformative learning experience is more likely (Karol and Mackintosh, 2011). While high levels of thinking and understanding are required for transformative learning, it must be noted that the motivation to meet higher order needs arises once lower order needs are met (Maslow, 1943) (Krathwohl, 2002). The learning experience must be successfully transmissive in the first instance and the learning experience must include development of information and knowledge, acquisition of skills and recognition of learning. In most architectural education programs in Australasia this occurs as the accreditation process ensures that in the programs students obtain core skills and meet minimum levels of competency (Ostwald, 2008).

To promote academic transformation, a number of activities have been identified as ways of achieving this, such as cross curriculum teaching, use of exhibitions, and peer review sessions (Karol and Mackintosh, 2011). Recent research indicates that critical self-reflection is another way of promoting transformative learning.

Critical Self-Reflection
Embedding critical reflection opportunities in an academic education program is not new, and is a method that has been used in many disciplines, such as allied health and other applied sciences to develop a broader understanding of the professional context (Canning and Callan, 2010) (Findlay et al., 2010) (Ballantyne, 1995). This supports the identification of critical self-reflection as a core skill in architectural education. However, responses to exit surveys of architectural graduates have indicated a dissatisfaction with the development of core skills, including skills of inquiry, action and reflection (Ostwald, 2008). As the curriculum becomes more crowded in response to numerous pressures from the profession, practices, community and university, less time is able to be spent on the development of these core skills. Therefore, there is a need to find alternative opportunities for students to develop these skills. By encouraging reflection and critical enquiry of not only their academic practices, but also their everyday actions, it is hoped to develop these skills in students. Mezirow defines self-reflection as a “critique of a premise on which the learner has defined a problem”, and identifies that critical reflection of assumptions (CRA), can result in “significant personal and social transformations” (Mezirow, 1998, p.186)

A measure of the change in attitude, values and behaviour is needed to determine the extent of these transformations. Ethnomethodologically this can be achieved through observation and accounting of everyday life and actions. In order to better understand this within the context of an environmental education program, this study has been designed to identify how to capture students understanding and values, and how these may change over time.

FRAMEWORK TO SUPPORT CROSS CURRICULUM CRITICAL REFLECTION

This study has been implemented to investigate the use of a critical reflection as a means of prompting change, and takes advantage of the opportunity to observe and record actions of final semester students in the Bachelors of Applied Science (Architectural Science) program at Curtin University. A number of activities have been used to record student’s attitudes to learning, design practice and position, and everyday behaviour in a range of contexts. Students of the Architectural Design 302 unit have been used as a control group, as this typically represents the entire cohort. A single tutorial group
within the Building Science 302 unit comprise a focus group within it. Activities in the science unit focus on “Responsibility in Design”, and students are required to consider the development of relevant theory and principles and how they may be applied in design. This requires the students to consider what responsibility in design could mean within architecture, define a focus and explore this within their Architectural Design 302 project. The diagram below, figure 1, has been developed to describe the relationship between the control group and the focus group, the different data collection methods, and to reinforce the overall intention of investigating how learning can MAP 2 LIFE (Making meaning, Applying to LIFE).

Figure 1: MAP 2 LIFE Pilot Study
Semester 2, 2011.

Making meaning - determining attitudes and values

At the start of the semester a survey has been conducted, aimed at assessing attitudes and values of the students towards a specific topic. The questions posed required students to consider how skills and knowledge developed in the science stream could be applied in other areas of their academic work, and future professional life. They also assessed the confidence of students in their use of these skills. Members from this control group completed the same survey in 2009 when, as first year students, they were asked to consider their learning experience in the Ecologically Sustainable Design 102 unit. The data collected from both the 2009 and 2011 surveys will be used to assess any shifts in attitude and the transformative nature of the learning experience. These surveys use a 5-point Likert Scale of Agreement.

At the conclusion of the semester, to assess general student satisfaction with unit content and learning experience, responses to the Curtin University eVALUate unit survey will be collected. In particular two questions of the generic university wide survey are of interest as they relate to student perception of motivation, and the students’ ability to identify how they might use their learning experience. This survey is conducted at the end of semester, and data will be collected from the control group. This survey uses a 5-point Likert scale of agreement.

At this time, a group of students will be selected from the focus group. It is anticipated that within this study different degrees of transformation will be identifiable, and those students who have displayed evident transformation will be interviewed. Students will be asked to discuss in more depth the questions that were raised in the survey, and whether cross curriculum opportunities or constraints existed. Transcripts of the conversations will be analysed to determine the structure of the language used when describing their experiences.

Application – Assessing Design Outcomes
In the control group all students are working on a similar project, a multi storey moderately complex building in an urban context. While one studios has as its focus the relationship between the built and natural environments, and the other is focused on the relationship between the social and built environments, the learning outcomes and the way in which the students are assessed will be consistent for both classes. These include the ability to develop a project to a high level of resolution, and apply principles of design, structures and science.

As students of Building Science 302, the participants in the focus group are required to consider and demonstrate application of ‘learning’ in building science to their design. The assessment criteria for this component include the definition of topic and statement of position; the depth, breadth and level of critical analysis of research; and application to design.

At the end of the semester, the experience and background of academic staff will be relied upon as their assessment of students’ performance will be interpreted to determine the ability of students to meet the stated criteria and the application of principles to the design project.

Critical self-reflection – everyday experiences

In order to gain a general overview of view of perception and personal position, students of the control group will be asked complete three tasks. The first two, posed at the start of the teaching period, required them to consider their current knowledge and skills, and to identify areas in which they would like to develop. At the end of semester they will complete the survey, reflecting upon what they have learnt.

With the focus group, weekly reflective exercises will be used to focus students’ reflections and application of science to design. Over a 6 week period, in addition to information delivery and discussions centred on assessment tasks, students will be asked to conduct a 20-30 minute critical self-reflective exercise. The focus of this exercise will differ each week, and will be pre-determined, but will not relate specifically to their everyday behaviour.

A coding matrix will be used to analyse the content of these reflections which is expected to include descriptions of everyday events, and accounts of experiences and observations.

MEASURING CHANGE – METHOD FOR INTREPETATIVE ANALYSIS
The three methods of data collection, and corresponding data analysis, used are based on the three-step method of ethnomethodology (Francis and Hester, 2004). The conversational mode of analysis will be applied to data collected from surveys and interviews to determine how students make meaning with knowledge and skills developed in their studies. The analysis of the outcomes of the complex action of application of these skills and meaning to specified problems requires ‘acquired immersion’. To do so, the teaching staff’s assessment of students’ performance will be analysed as a way to assess application. Critical reflective exercises will be used to determine how the educational experiences of the students affect, and possibly change, their everyday behaviour. This triangulation of data collection is being used to support the development of a method of qualitative measurement of change in student behaviour. It is expected that the analysis of the critical reflective exercise will offer the greatest insight into the transformation. However it is recognised that a method is required to account for factors such as unstated assumptions and bias, exception to ‘rules’ and a variety in the magnitude of the outcomes (Garfinkel, 1967).

Research in other programs of applied sciences, such as allied health, has identified methods of content analysis that could be used to inform the interpretation of data collected. The Newcastle Reflective Analysis Tools (NRAT) have been developed as broad and deep analysis tools. They are used to assess levels of critical reflection in journals kept by Radiation Therapy students at Newcastle University (Findlay et al., 2009). The findings of the study indicated that students were good at low levels of reflection, but not at high levels (Findlay et al., 2010). The students were able to attend to feelings, but unable to reflect critically upon these. This seems to correlate with the findings of the ESD investigation conducted at Curtin University, where students were able to see value in their learning, and identify the skills learnt, but their self-awareness of how this learning may be applied is less developed (Karol and Mackintosh, 2010).

The NRAT tool has been further developed into the Newcastle Reflective Inventories (NRI) a series of short, guided exercises, design to promote reflective writing in students (Findlay et al., 2011). As this is similar to the reflective exercise to be completed by the focus group, this will be used as a guide to developing a coding matrix for content analysis of the reflections and comments made in interviews.

LIMITATIONS

As the data is collected through activities which are embedded within the usual teaching activities, the intention is to ensure that this will be seen as part of their educational experience. However, anecdotal evidence indicates that in similar exercises, students respond in ways that they think the lecturer / researcher wants, and this influences the results. There is also evidence of this occurring when critical self-reflection exercise have been applied in other disciplines (Findlay et al., 2010). This must be recognised in the content analysis.
In discussing Mezirows’ theory of transformative learning, Mälkki suggests that “reflection is more than a rational process and that it is not always easy to carry out” (Mälkki, 2010, p.43). There are challenges to reflections related to the way in which meaning-making takes place. The social context, prior experiences, and the emotions supporting, and resulting from, the reflections add another dimension to reflections recorded. This may influence the language used and the success of the exercises themselves. In addition, as these reflections are not assessed, students may lack sufficient motivation to overcome these challenges. These also must be acknowledged in the analysis.

When arguing for the support of qualitative research methods in the social sciences, Berg makes the following distinction. “Qualitative research thus refers to the meanings, concepts, definitions, characteristics, metaphors symbols and descriptions of things. In contrast, quantitative research refers to counts and measures of things” (Berg, 1998, p. 2). In doing so, it seems clear that the use of qualitative methods in architectural research is valid. In assessment of architectural student work, the high level of subjectivity has been long recognized. In response to this, assessment methods have become increasingly reliant on rubrics and compliance with marking criteria, which while providing a level of objectivity, are viewed with distrust (Ostwald, 2008). Critical reflection and methods of qualitative analysis is offered as an alternative to this.

**CONCLUSIONS**

Critical reflection has been identified as one of the core skills architecture students are required to develop. It is also a skill that can encourage the students to engage in a transformative learning experience, which can shift their values and attitudes and prompt a change in behaviour. The study currently underway at the time of writing is investigating methods that allow this to happen. It is expected that, upon the conclusion of this study, the ethnomethodological approach taken will allow the transformation of students to be captured. The findings of this study will be used to inform further research into environmental education and sustainable behaviour. The skills in methods of analysis developed will be used to investigate change as a result of existing educational programs. Three case studies have been identified as part of a larger research project, which requires additional research through literature review and fieldwork. This research project aims to enable a better understanding of the environmental education learning experience in order to develop a pedagogical framework.

**REFERENCES**


SESSION 5A - @ the Edge: Adapting Traditions
ONE ROOF: MULTICULTURALISM AS ALTERATIONS AND ADDITIONS

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ABSTRACT

Until the 1950s, new arrivals to this country could only enter through its edge, through its coastline. While most new arrivals now do so by air, those who now arrive by boat are subject to a telling and very noisy attention in which we act out our national guilt about invasion and colonialism. At the same time, there is the acknowledgement that those who bring different ideas and customs with them have enriched the host Anglo-Celtic culture. This paper proposes to discuss an architectural image – a fictional design by the author - of this complex condition where the edge of the continent is ever-present as a paradigm. Some of the issues to be discussed include the use of design to clarify and represent cultural matters, the use of a symbolic type – the suburban block – as an analytic engine, and the suburban block as a microcosm of the continent of Australia.

INTRODUCTION

Australia is unusual in being a continent which is a single physical entity as well as a political entity. Its coastline is its international threshold, or rather, is so for those who have arrived by boat in the past, and those who continue to do so today. The coast is also a kind of threshold for those of who live here. We huddle along the east and southern coasts. Our conscious gaze is out to the world from which we came and which we intermittently visit as tourists and plunderers. But we also turn around and become pilgrims to our subconscious interior, to the outback and desert. This description of the continent is echoed in the way we structure our suburban block, through its front yard/house/backyard. Through this echo, an architectural image of border, edge, admission and absorption is explored in one of my architectural projects, One Roof. Completed in 2007, it is one of five projects, collectively titled FIVE DECADES. These five projects use an Australian suburban block as the template to chart, decade by decade, how a post WW2 European refugee can become an Australian (Selenitsch 2007, FIVE DECADES, separate folder). All the schemes use the house in which I grew up (or rather a reconstruction of it from memory), and each decade is made specific by the way the remembered house is transformed. One Roof, representing the decade of the 1990s, attempts a built image of what is commonly called multiculturalism: the successive mainstream inclusion of cultures other than those from Great Britain.
THE PROJECT

While the suburban block is the arena for this project, its governing idea is a synthesis of two images. The first is a historical trope which comes from Melbourne architect Robyn Boyd, and the second is the acceptance of the hip roof as a form worthy of architectural consideration. In introductory notes to this project, I have outlined this synthesis in this way:

“...In his 1952 book *Australia’s Home*, Robyn Boyd noted the hierarchy of size, finish and location of the rooms in the 19th century Australian house, to the point where the kitchen and bathroom were “so lowly that they...could not be entertained under one main roof”. He went on:

*The story of the development of domestic planning is primarily an account of the democratization, as the 1940s would have called it, of this arrangement. Gradually the front parlour began to share some of its good things with rooms of the second rank. At the same time the service rooms began moving in. The bathroom drew towards the bedrooms, the kitchen towards the living-room... After World War I, which made the world safe for the kitchen, the living-room lost its more elaborate trimmings and the service rooms became the most expensive rooms in the house. All rooms were at last literally on the same footing.”*

Boyd’s description is of the house absorbing its own organs, but in recent years, the Australian House has accepted transplants of new equipment and new kinds of spaces. This is ongoing: every young architect will attest to a plethora of commissions for alterations and additions, but it is also part of the vernacular, under the rubric of home improvement.

The hipped roof is still the main kind of roof you see in suburbia. Capable of intricate extensions and modifications, it allows all rooms to have the same ceiling height, putting them “on the same footing”. If the collection of rooms is complex, the roof shows it. How far can the hipped roof be tweaked before it disappears or transforms into something else? There are always rooms waiting to be admitted, always the tension between embrace and rejection produced by the unpredictable arrival of exotic roofs, the discovery of previously overlooked spaces, and the magic of composition where $1 + 1 = 1$ *(Selenitsch 2007, FIVE DECADES, separate folder).*

The project exists as a number of drawings, models and written texts, including a ‘walkthrough’ text which describes the intended associations of each alteration and addition (in this case) through their sequence of perception and through their names. An edited version of the walkthrough for *One Roof* follows, with the numbers and letters in parenthesis locating those features in the plan (Fig 1):
Figure 1: Alex Selenitsch *One Roof* (plan and model) 2007.
“To the right of the **sentry box** (A) at the front boundary, you step over a series of concrete boat-shaped slabs moored in a sea of lawn. To the left of the slabs there is a dense plantation of ti-tree. Walking on, the last boat presents you at the front door of the house. This house was once a simple, post WW2 vernacular house, that is, a timber-framed, weatherboard clad, concrete-tiled, hip-roofed, four-room house… Since then, the house has been altered, and added to many times, each time incorporating something new, or re-establishing a condition in a new way.

The first of these alterations (or incorporations) (1) concerns the master bedroom, which has become the **Dome of Eden**. It now has a flat domed ceiling pushed into the roof space… painted to represent the night sky as it was over the Garden of Eden.

The second alteration (and addition) (2) is the kitchen, laundry and carport, extending into the back yard at an angle, creating the **Gold Mountain Kitchen**…The granite and quartz striped paving of the carport extends to the back boundary where a large mirror of stainless steel reflects a view down the side driveway.

The third alteration (or extension) (3) takes a hip-roofed wing parallel to the side boundary, and is the children's wing. It has three rooms in a row. The first is the **Kellogg Room** (3a), which has a barrel vault with narrow full-width skylights at its ends. It marks the influence of the USA on our affairs. The second room is the **Sony Room** (3b): this has a mandala-like ceiling with a skylight at its centre…The third room is the **Dante Loggia** (3c), an outdoor room with a barbeque at its hipped end. In this Mediterranean-style room the roof structure is left exposed and then interlaced with bronze and polyester vines, creepers, fruits and flowers.

The fourth alteration (or incorporation) (4) is a re-modeling of the interior of the main house into **The Room for All**. Three rooms have been opened up into an L-shaped space, with the fireplace being left as a credenza (4a). This has a special drawer for a copy of the land title, and all records of alterations and additions. To imply that its shape is a whole, even if incomplete, a flat oval ceiling(4b) is dropped off the original ceiling level, with its focus points directly below the two ridge points of the main hip roof above. The attic above this has been hollowed out into a cast of Uluru, with a rectangular skylight in glass replacing the form of the previous chimney. This room is known as the **Referendum Room** (4c).

The fifth alteration (so far) is the **Water Tank** (5), a re-vision of the bathroom in the old house…The bathroom is now a large corrugated galvanized tank with a continuous horizontal mirrored slit at eye height. The outside of the tank bursts into the en-suite bedroom on one side and one end of the living space on the other.
Two pairs of rooms and spaces are in waiting, in the back yard. Waiting Room #1 (6a) has a folded roof, and Waiting Room #2 (6b) has a truncated sugar-cone roof. These rooms wait to be admitted into the main house although it is obvious from their construction that they have been there for some time. The pair of Potential Rooms (7) outside the front boundary are awkwardly placed on the nature strip, as if dumped or delivered. They are exotic, possibly too exotic for the House to consider. One (7a) is a folded, crinkled object made of cardboard and other recycled sheets, the other (7b) is a blob made of some unidentifiable synthetic material.

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If you enter past to the left of the sentry box (A), after the boom has been raised, you can see – at the end of the driveway - a reflection of the carport. As you approach the reflection (B), you can see that instead of a car, the carport houses a gilded chariot (C), either abandoned by or still waiting for its heavenly horses. The carport leads into the laundry and the Gold Mountain Kitchen; then into The Room for All (4)…

Walking down the side arcade of the children's wing (3), you can see out and in, as the first two rooms have sliding doors that can open up to the arcaded side. At the end of this wing, from the Dante Loggia, you can view the back yard. The gilded chariot is over on the left, on grey and white striped paving, in which you might notice specks of gold. Straight ahead are the two Waiting Rooms, which function as sheds. They rest on a concrete slab cast as The Shadow of the Tampa (D)...At the back of the block and turning back at the right hand corner, you can see a Monumental Paling Fence (E), a slightly enlarged version of the real timber one a few metres behind it. This gap, the Beyond the Pale (F), hides the leftover materials from the various absorptions in the main house, and also the remains of some rooms that were never accepted.

Back in the main house, you can walk through the Room for All and into the lobby, past the steep stairs which rise up to the Referendum Room, past the Water Tank and under the Dome of Eden, then out onto the deck overlooking the lawn. In front, on the nature strip, as eye-catchers, are two objects, which may be rooms one day, which may be taken away by others as hard rubbish often is, or may just stay there, as embassies of the rejected. (Selenitsch 2007, FIVE DECADES, separate folder).”

A TAXONOMY OF ALTERATIONS?

Through its names, the project suggests specific hermeneutic tasks. But the alterations can also be grouped semantically, or rather, semantic potential emerges when they are grouped according to their forms.
The first group concerns arrival, of which there are two kinds. The more ‘formal’ one, associated with the front door, is unprotected, and relies on distance and exposure for security, as well as the awkwardness of negotiating the boat-shaped stepping stones. The informal back door entry is by vehicle, which must go past a checkpoint with a boom, and then along a straight paved road or runway. The two entrances parallel two entries to Australia: by plane and by boat, the former being the friendlier ‘back door’ and the latter being the highly symbolic ‘front door’, which is exposed in the extreme.

The second group of alterations concerns the added wings in the back yard. One of these is a continuation of the driveway. This is the carport and service rooms (laundry, kitchen), with a double associations of Gold and Chinese influence. National influences also make up the other wing extension: American, Japanese, and Italian. This other wing is not connected to the street at all, and is a safe haven as befits any extension into a back yard. The safety is there also for the host values of the main house: things slightly foreign are kept out of the Room for All, or rather, the non-English (in this analogue, the children and servants) are themselves when in their rooms, but not so when accepted into the host culture. They move in and out of it. So does the host culture: in a kind of reversal, it too can visit the ‘interesting’ rooms, but only visit and not truly occupy.

The third group of alterations concerns changes to the main house, ie the host culture. As these alterations are of the interior, they also concern the imaginative realm of the host culture. The big oval is national unity. It is anchored through its geometry to old roof, but is also incomplete, being cut away by the bedroom and bathroom. The bedroom ceiling holds on to our European myth of the Garden of Eden; the rainwater tank is the reality of attempting to recreate that Garden here. Both of these alterations are either in progress or perhaps impossible to resolve. While the rainwater tanks is all wall – an object in lateral space – the bedroom and Uluru attic use the roof space to be realized. Here, dreaming is invoked, in two senses: the dreams we have while sleeping, and the dreamtime associated with our indigenous past. The brain-like shape of Uluru, the ceiling as headspace, suggests a central or coordinating power for the attic – but it is also hidden away. It requires an effort to go up into it. Going up into the roof is still not a common feature of our domestic spaces, unlike the status given it in Gaston Bachelard’s study of poetic spaces (Bachelard 1969, 3-37).

The fourth group (those which don’t fit any of the previous categories, to echo that famous Chinese encyclopedia) is a conglomerate of leftovers. They are the most provocative, probably because they deal with the unknown, the compromised and the failed - but not absolutely so. The two pieces on the nature strip are outcasts AND new arrivals. The two sheds have roofs that cannot be absorbed by the mainstream roof, but they are on site, and useful, like the Aussie bloke’s shed, which is separate from, but contributes to the sanity of the main house. The leftovers and fragments hidden in the side spaces have not been totally evicted: these are materials, or values, which were once on site, and once valid, but not so today, and which may in the future be useful again.
NEVER MIND THE IMAGERY - FEEL THE RELATIONSHIPS

While the alterations could be seen as a partial taxonomy of a sole practitioner’s job history, or as the growth of a house to fit the life cycle of a family, they are, at their core, images of the existential issues of inclusion and rejection of a host culture. Each of the alterations and their placement on the block of land and its periphery is presented as a bundle of relationships for interpretation. Anyone who has engaged in altering or adding to a house will be able to unpeel the relationships structuring the image and bring individual experience to them. While the built culture of this country continues to alter and add, One Roof will continue to ‘make sense’.

But it also makes sense for those involved with the discipline of architecture. That the continent is echoed in the way we structure our suburban block has already been mentioned. This kind of resonance is an old one. The house as a small city, or economy, is a Greek idea, taken up by the Italian Renaissance and continued into the estates of the English gentry. The Australian suburban block is its southern democratic manifestation. The jumps in scale from city to house go the other way too: city to state to nation and even further if you wish. Here one can describe these jumps as cosmic (to use a traditional term) where each cosmos behaves in a similar way to the others. A mathematician might now describe these scale jumps as fractal.

Cosmoses, or wholes, to use a more modern term, are different to fractals in one major respect: whatever is revealed or given value in one whole is there in another, but not in exactly the same materialisation or form. It’s a matter of relationships, but achieved in different materiality and expression. Poets will recognize this as the operation of analogues which resonate harmoniously through abstracted relationships and dissonantly through their materialisations.

Jumping from whole to whole, back and forth, is a powerful tool for interrogation. In this task, the material properties of the wholes must be examined and relationships discovered. It’s a commonplace in semiotics that the relationship of a sign to its referent is arbitrary, and not based on the material properties of either. This axiom, while plausible for semantic pixels such as single words or platonic forms, obscures how a complex bundle like a whole, a composition or design, is created, and also how it is interpreted. In fact, the work of composition is to reduce or eliminate the arbitrariness of the sign/referent relationship. How this is done is different from composition to composition, as the strategies to link sign and referent use the complex of relationships in the composition itself and these are pre-established by the artist or designer. It’s here that the interrogation takes place – in establishing the syntax, so to speak, of the composition and in the construction of relationships between its parts. This is a pattern-seeking activity. It means backgrounding some parts of the given data, and foregrounding other parts, and perhaps even providing data to establish the coherence of the pattern being perceived.

Such an interrogation can produce many interpretations, some of them contradictory, with each of them true to the occasion of that interpretation. When such patterns are discovered, they can be
compared to similar patterns in completely different contexts, or be brought to other compositions. The coherence of a composition in this regard is its ability to withstand strange readings, and more importantly, to strongly suggest where strange contexts might be found. In *One Roof*, the long tradition of the house to nation comparison, and the shorter tradition of the suburban block typology, are strategies for contextual suggestion, and also limitation.

EVEN DEEP READING HAS A SURFACE

The exegesis of alterations presented above goes from history to culture, to suburban type, to building procedures, to occupational strategies, back and forth and between them. But the project also contains a number of images which, though proposed as built form, are not derived from building as such. These include, weakly, the boat pavers, but more strongly, the Uluru attic and the Shadow of the Tampa paving in the back yard. These are different to the other alterations in a fundamental way: they are signs which point to a bundle of meanings and associations arbitrarily connected to them, and which have no structural connection to their form. They cannot be read in the same way that the ‘ordinary’ alterations can, and because their meanings are independent of their forms, they may be incomprehensible to non-Australians, who do not have access to these associations. In a decade or so, the Tampa may even be lost to the popular memory of an Australian audience. This highlights an aspect of using contemporary events to make art for the long-term: the work based on such events persist as formal gestures while their associations fade and may even completely disappear. In the spirit of the conglomerate that informs the project, *One Roof* also includes signs. And Uluru and The Tampa are important in this project in a purely functional way, functional for interpretation, that is, not utility of intended occupation. Their strangeness as building features indicates that something other than a renovated house is being proposed and that the project is a high-grade, maybe even toxic, semantic zone.

BIBLIOGRAPHY


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1 * translator’s 1799 note: Enlargement of knowledge, in contradistinction to exactness; extension opposed to intension (Kant 1799:96)


iii later Commonwealth War Graves Commission (CWGC)

iv Headstone measures: 38.5” x 15” x 6.75” (99.06 x 38.1 x 7.62 cms). This design not used in Turkey [Gallipoli], and other sites prone to earthquake or extreme weather.

v At the end of WWI: 1,115,000 dead; 584,000 identified graves, 530,000 dead and missing, and 180,000 unidentified graves.

vi limestone coffins in Greek sarcophagi lithos: sarx = flesh, phagien = to eat, lithos = stone

vii Rufus Castle 1300, Portland Castle,1539. The navy left Portland in 1995, ending a 500 year military presence.

viii Originally an army garrison the Verne was converted to a prison in 1949

ix Note that the first person is used for presenting the project, third person for the commentary on it that follows.

x The five projects are: The Halfway House, representing the 1950s and giving a built image of relocation, nostalgia and hope; Das Englische Haus, representing the 1960s and a confrontation with English Language; Journey North, representing the 1970s in which the house is simultaneously modernised and treated as a British Imperial archaeological site; Four Ways, representing the 1980s, in which the four corners of the house are transformed into pavilions accommodating four ways of transforming a Wog into a Dag; and One Roof, representing the 1990s and multiculturalism, and which collages all kinds of renovations, alterations and additions, all covered by a single complex hip roof.

xi The Boyd quotations are from Robin Boyd. 1961. Pp are still being located.

xii This project is not an illustration of his historical or social research. It is an architectural composition where the trope of successive alterations and additions are put forward firstly as a wholistic image of the conglomerate nature of our culture, and secondly, an image of how that conglomerate may have been made. The latter suggests a narrative, but is not derived from any historical study or historical paradigm. Instead, it is draws on first-hand experience of 25 years of private practice as a sole practitioner, from 1970 to 1995xii.

Over that time, as Melbourne’s inner suburbs were reclaimed by the middle class, the characteristic project for young architects began to be the domestic renovation and extension (Barker 1980). This kind of commission quickly spread to the suburbs and has now erupted as a pop-media virus.
ABSTRACT

Objective: this study aims to find out how adolescents in Australia identify themselves culturally, and how adolescents from different cultural groups differ in their assessments of their neighbourhood environments. Methods: one hundred and sixty-six adolescents in Sydney completed a self-administered questionnaire, which collected information of their neighbourhood environments and their cultural backgrounds. Results: adolescents reported a great variety (67) of different cultural backgrounds, clustered into three cultural groups: Australian cultural identity group, Heritage cultural group, and Biculturalism group. Although no significant difference was found on most neighbourhood environment factors between the cultural groups, adolescents from Heritage cultural group scored significantly lower on the factor Vegetation & Facilities. Conclusions: The results of this study suggest that the overall neighbourhood environments for adolescents from different cultural groups are satisfactory. However, ethnic minority adolescents live in neighbourhoods with less vegetation and facilities, which suggest that spatial inequity related to ethnic backgrounds still exist in Australia.

BACKGROUND

Urban Space Inequity

In the social sciences, space is conceptualised as a theoretical tool to understand power. Space is not just a context of social actions; rather it actively structures and mediates social actions. The use and control of space are continuously negotiated, and power is spatialized through this process (Jaffe, 2009). In order to understand the relationship between space and power, French philosopher Michel Foucault (1984) proposed the concept of spatial ‘technique’ of domination: those in power attempt to maintain their position through division and control of space, and through the separation of groups or individuals. Therefore, space is a vital part of the battle for control and surveillance of individuals, and it is a battle for domination. Foucault used the military camp as an example of spatial representation of power. In a military camp, the military hierarchy can be read in the ground itself, by the place occupied by the tents and the buildings reserved for each rank (Elden & Crampton, 2007; Foucault, 1984). Some other examples of spatial inequity related to power include the differences between ‘developed’ and ‘developing’ nations, ‘good’ and ‘bad’ neighbourhoods, and the uneven distribution of resources through space (Jaffe, 2009).

There is a rich body of research that investigated the inequities of urban space. There has been a particular interest in investigating how new migrant groups struggle to make a new home in cities and gain acceptance from the broader urban population. There are evidences worldwide showing that as newcomers attempt to become integrated into the urban fabric, they suffer varying levels of stigmatisation and socio-spatial marginalisation (Jaffe, 2009). For example, urban-rural migrants in developing countries often start their urban living in slums and squatter areas (La Greca, 1977; Richardson, 1977); and minority-ethnic
background immigrants and refugees to the developed countries are often segregated in low-income neighbourhoods (Ihlanfeldt & Scafidi, 2002).

In developing regions, cities are destinations of rural-urban migration. Estimated by United Nations Human Settlements Program (2003), 95 percent of the world’s population growth in the next 30 years will be absorbed by the urban areas of less developed regions, whose population will probably rise from approximately 2 billion in 2000 to just below 3.5 billion in 2030. The rapid urban migration in developing regions has been associated with poverty (Brockerhoff & Brennan, 1998) and a widespread proliferation of slum and squatter areas (Costello, 1987). A number of observers have suggested that slums and squatter areas function as the predominant first destination for rural-urban migrants (La Greca, 1977; Richardson, 1977). As a result, the United Nations estimates that somewhere between 835 million and 2 billion people now live in some type of slum, which can be found in many metropolitan areas in Asia, Africa and Latin America (Sheehan, 2002).

In developed countries, ethnic minorities’ limited financial and other resources, the prejudice and discrimination against them, and sometimes their own preferences have resulted in ethnic segregation in cities (Ihlanfeldt & Scafidi, 2002; Kumar & Leung, 2005). For example, in Canadian cities, new immigrant groups and visible minorities such as ‘Black’ Africans, are more likely than non-immigrants to live in poor-quality housing and in neighbourhoods with high rates of poverty (Kazamipur & Halli, 2000; Opoku-Dapaah, 2006). In the United States, racial segregation remains a prominent feature of the metropolitan areas, and there is growing isolation of poor minority households. For example, poor Blacks and Hispanics were far more likely than poor Whites to live in poor neighbourhoods (Squires & Kubrin, 2005). Cross-national research indicated that on ethnic and racial segregation is lower in European cities than in American cities (Musterd, 2005). However, as different European cities attracted people from different non- or late-industrialized countries or former colonies (Musterd, 2005), urban ethnic segregation has been the subject of heated discussions in Europe (Ireland, 2008). For example, the majority of the residents of Marxloh (a disadvantaged neighborhoods in Germany) are Turkish immigrants, who have a much lower housing and living standard than other resident groups (Hanhörster, 2001).

Multicultural Australia & National Identity

Australia was home to indigenous people for at least 40,000 years (“Indigenous Australians”, 2011), until it was established as a British colonial settler society in 17th century (“History of Australia”, 2011). Various policies of the Australian government had been trying to keep Australia “British and White”. For example, at the start of World War II, Prime Minister John Curtin said: “This country shall remain forever the home of the descendants of those people who came here in peace in order to establish in the South Seas an outpost of the British race” (Australian Government: Department of Immigration and Citizenship, 2009). As a result, the Australian population has been homogenous by the end of World War II. In the 1940s, 99% of Australian population had British heritage. Only 9% of Australians were born overseas, and 90% of them were from either UK or New Zealand (Mirjana, 2011).

After World War II, multi-ethnic immigration from Europe changed the homogeneity of Australian population. There were large numbers of immigrants from European countries such as Italy, Greece and Yugoslavia (Mirjana, 2011; “White Australian Policy”, 2011). As the immigration policy encouraged European immigration and sought to have non-white refugees deported, Australia was almost exclusively European in its population’s ethnic
origin (Poulsen, Johnston & Forrest, 2004). As late as the 1960, 51 percent of migrants to Australia were born in the UK and Ireland (Johnson, 2002). In 1971, approximately 87% of Australia’s population was Anglo-Celtic in origin, and the majority of the non Anglo-Celtic ethnic population comprised southern, central and eastern Europeans (Poulsen, Johnston & Forrest, 2004).

After the ending of the White Australian policy and the removal of any ethnic criteria from the Immigration Act in 1973, the ethnic mix of Australian society has changed dramatically. Concurrently, a ‘multi-cultural’ policy was developed (Poulsen, Johnston & Forrest, 2004; “White Australia Policy”, 2011). In the 1970s, most migrants arrived in Australia from South-East Asia. Then over the past decade, people from North-East Asia increased their representation from 1.7% in 2000 to 3.0% in 2010. Today’s Australians speak over 260 languages and identify with more than 270 ancestries. According to United Nation’s Trend in International Migration Stock, Australia had one of the highest proportions of overseas-born residents (27%), third highest behind Singapore (41%) and Hong Kong (39%) (Australian Bureau of Statistics, 2011).

According to Australia’s Multicultural Policy (Australian Government: Department of Immigration and Citizenship, 2011), multiculturalism speaks for fairness and inclusion, and aims to enhance respect and support for cultural, religious and linguistic diversity. It embraces shared values and cultural traditions; and allows those who choose to call Australia home the right to practice and share their cultural traditions and languages within the law and free from discrimination. Some scholars have argued that Australian identity is now multicultural, for example,

‘Today, Australia derive from more than 150 ethnic backgrounds…each wave [of immigration] extended the reach of our egalitarianism and tolerance, our understanding of what Australian democracy is…multiculturalism is not a threat to Australian identity and ethos – it is inseparable from it’ (Keating, 1995, p. 31)

However, many Australians have a different attitude towards ‘multiculturalism’, linked to issues of cultural privilege and national identity (Dixson, 1999; Johnson, 2002). The Media continues to reinforce the ‘white’ Australian culture through their under-representation and misrepresentation of ethnic minorities (Ley & Murphy, 2001). The preferential position of the host society remains, through its culture, language, institutions and laws (Marden & Mercer, 1998). For example, in 1999, a National Multicultural advisory Council argued that:

‘The British and Irish heritage, which includes our democratic system and institutions, our law, the English language, much of our humor and oft-quoted distinctive values of the fair go, egalitarianism and mateship, together provide the foundation on which Australian multiculturalism has been built’ (NMAC, 1999, p.4).

**Australian Adolescence’s Wellbeing: Comparing the Centre and Periphery Cultural Groups**

Studies that compare various well-being indicators between native and immigrant groups suggested relative harmony and lack of racial tension in the society. Unlike Europe and North America, the socio-economic and demographic profile of immigrants in Australia tend to be better educated, possesses a wider range of skills and enjoy higher overall levels of inclusion in mainstream society. Part of the explanation for this lies in the point system used in Australia to select applications for
immigration, which ensures that many successful applicants already enjoy relatively high levels of human capital upon arrival in Australia (Katz & Redmond, 2010).

Children younger than 18 years old represent around a quarter of the Australian population. They comprised 25% of the total population in 1997 and 23% in 2010. At June 2010 there were 5.1 million children aged 0-17 in Australia (Australian Bureau of Statistics, 1999, 2010). It is estimated that around one third of the children in Australia were born overseas or have at least one parent who was born overseas. According to a systematic review of Katz and Redmond (2010), immigrant children’s wellbeing in Australia differs somewhat from other countries. The wellbeing of migrant children appears to be relatively good compared to the general Australian population and migrants in other countries. The migrant children do as well as or better than native-born Australian children in various dimensions of well-being, including physical and mental health, education and participation in the labour market. In many dimensions, outcome indicators among children with English- or non-English-speaking backgrounds are similar. In addition, even the most disadvantaged immigrant groups do relatively well on some measures and immigrant children generally tend to fare reasonably well (Katz & Redmond, 2010).

Although the overall picture of immigrant children’s well-being is satisfactory in Australia, children from certain cultural groups face difficulties such as discrimination, racism, trauma of separation from the cultural and social networks of their countries of origin, and challenges to adjusting to the Australian culture and lifestyle (Katz & Redmond, 2010). For example, In Australian universities, Asian international students are experiencing discriminations from domestic students in that they are perceived to be less “trustworthy” (Guillen & Ji, In press). In addition, there are many evidences showing that indigenous Australian children and Torres Strait Island children are discriminated by the mainstream society. White adolescents acknowledge the existence of racism against indigenous Australians and recognize their own privileged “white” position (Hatchell, 2004).

Research Questions

There are studies indicating that immigrant children’s well-being is satisfactory in Australia, however, children from certain cultural groups face difficulties such as discrimination and racism (Katz & Redmond, 2010). Although Australia has embraced ‘multiculturalism’ for over 30 years, there are critiques of Australian multiculturalism in that some scholars believe that the ‘ethnic others’ are still considered by the government and the Anglo-Celtic majority as the passive objects of policies designed to benefit that majority (Hage, 1998). There is a suggested power imbalance between the Anglo-Celtic majority and ethnic others, and this power imbalance should be reflected in the urban space inequity. As previous studies on children’s wellbeing haven’t looked at urban space inequity, this study sets out to fill this gap.

In order to fill the gap in the literature, this study sets out to investigate the relationship between cultural identity and urban space. Using adolescents in Sydney as the participants, the research question of this study is: How is Australian adolescents’ cultural identities relate to their neighbourhood environment?

METHODS

Research Design, Instrument & Participants
This research is designed as a survey study, and Sydney was chosen as the research site. Sydney is the state capital of New South Wales, and has a population of approximately 4.1 million (Australian Bureau of Statistics, 2007). Over 30 years ago, Sydney, like the rest of Australia, was almost exclusively European in its population’s ethnic origins (Poulsen, Johnston & Forrest, 2004). In recent years, it has attracted around 40 percent of Australia’s immigrants (Burley, 1999). First- and second-generation immigrants comprised over 50 percent of Sydney’s total population, and the majority of the first-generation immigrants are from non-English-speaking background countries (Burley, 1999). Sydney is one of the most multi-cultural cities in the world, with its residents coming from about 140 different ethnic groups. In some areas of the city, more than 50% of the people over the age of five speak a language other than English at home. In some schools such as Campsie High School, up to 95% of the students are from a non-English speaking background (Tsang, 1995).

A self-administered questionnaire was designed to collect data. The respondent’s cultural identity was evaluated by an open-ended question on “cultural background”. Neighbourhood environment was assessed using a 20-item scale of children’s neighbourhood socio-physical environment. The scale was largely based on a pilot study that conducted prior to this project. All the items in the scale were developed from both the literature review and the interviews with children and young people. Each item was judged on a five-point Likert scale (range from ‘strongly disagree’ to ‘strongly agree’).

High schools in Sydney were approached by phone calls and letters, and nine schools were willing to participate in accordance with the research requirements. There were 249 copies of questionnaires distributed in these nine schools and 166 were returned, achieving a response rate of 66.7%. There were 85 boys and 80 girls (one respondent did not report the gender information). The school year of these respondents ranged from Year 7 to Year 12, and the majority (N=127) of the respondents were in Year 11 and Year 12. They lived in 95 suburbs such as Ashfield, Lane Cove West and Ryde.

**Data Analysis**

*Exploratory Factor Analysis.* After data cleaning (deleting two items with large numbers of missing data and deleting outliers), there were 18 items and 361 cases. An exploratory factor analysis (principal factor extraction) with varimax rotation was conducted allowing for corrections among factors. Evaluation of eigenvalues greater than 1.0 suggested five factors. An inspection of the scree plot revealed a break after the fourth factor, however, indicated a four-factor solution. Within these factors, individual items were retained if their loading was greater than .45. Items were eliminated if an item’s loading was greater than .30 for more than one factor. All remaining 12 items load strongly on their factor. The initial eigenvalues of these factors were 3.98, 2.64, 1.50 and 1.34. The variance accounted for by these factors was respectively 22.11, 14.66, 8.35, and 7.46 for a proportion of 52.58 of the total variance. After that, each factor was given a descriptive label. Factor one included items that were primarily related to ‘Location & Convenience’, factor two towards ‘Neighbours’, factor three towards ‘Vegetation & Facilities’, and factor four towards ‘Route to School’. Factor scores were then calculated through SPSS Compute, summing scores of the items loaded on each factor. The variances accounted by the factors revealed that Location & Convenience was the most important factor in children’s assessment of their neighbourhood environment, followed by Neighbours.

**RESULTS**
Cultural Identity. Not surprisingly, adolescents’ answers to the question “cultural background” had a great variety. There were 67 different answers, such as “mixed”, “Chinese”, “Anglo Saxon”, “Arabic” and “English/Philippino” (Figure 1). There is no universally accepted breakdown of the population by ethnicity or background. The ethnical, linguistic, country and regional categories used to classify population are not used clearly and consistently among research projects conducted in Australia. Some widely adopted categories include Migrant, Non-English speaking background, Language Other Than English, Culturally and linguistically diverse, and country and region of origin (Katz & Redmond, 2010). Drawing on the literature of acculturation, and in light of a study on the structure of cultural identity in an ethnically diverse sample of American young people (Schwartz, Zamboanga, Rodriguez, & Wang, 2007), this study divided the respondents into three groups: Australian cultural identity, Heritage cultural identity, and Biculturalism (Figure 1).

Adolescents in the Australian cultural identity group identified themselves as ‘Australian’ and ‘Aussie’, or they referred their cultural background as ‘English’, ‘Anglo-Saxon’, etc (Figure 1). These adolescents came from the majority, main-stream Australian culture. Adolescents in Heritage cultural group identified themselves as member of a specific ethnic group (e.g., Chinese, Lebanese, or Italy). They are the ethnic minority adolescents who chose to retain their heritage cultural values. Adolescents in Biculturalism group identified themselves as coming from mixed cultural background (e.g., English/Arab). These adolescents adopted Australian cultural ideas while at the same time retain some of their heritage cultural ideals and behaviours (Schwartz, et al., 2007).

ANOVA

In order to find the differences on the neighbourhood environment scores between the three cultural groups, analysis of variance was performed. As there are low correlations between the four neighbourhood environment factors, it was not suitable to run Multivariate analysis of variance (MANOVA). Therefore, four separate univariate analysis of variance (ANOVA) was run for each of the four dependent variables. In order to meet the assumptions for ANOVA, 14 univariate outliers (Pallant, 2007) were deleted (no multivariate outliers were identified). After that, there were 147 cases remaining in the data set.

The mean score on the Vegetation & Facilities was significantly different between the cultural groups (p<.05). Children from Heritage cultural group recorded significantly lower score (2.90) than the Australian cultural group (3.73) (p<.05) and Biculturalism group (4.20) (p<.05). More specifically, significant difference was found on the item ‘the vegetation in my neighbourhood is good’ (p<.05) and ‘my neighbourhood has sports and exercise facilities’ (p<.05). Adolescents from Heritage cultural group reported significantly lower score on ‘the vegetation in my neighbourhood is good’ than Biculturalism group (p<.05); and significantly lower score on ‘my neighbourhood has sports and exercise facilities’ than Australian cultural group (p<.05).

No significant difference was found on the mean score of Location & Convenience between the three cultural groups. However, children from Australian cultural identity group recorded higher score (5.27) than other two cultural groups (4.36 and 4.66) (Table 2). An ANOVA inspection on each of the four items in this factor did not reveal any significant differences between groups. Similar patterns can be found in the other two neighbourhood environment factors: Neighbours and Route to School, in that although no significant difference on the mean score was found, adolescents from Australian cultural group scored higher than the other two groups (Table 1).
DISCUSSION

This study has two major findings. First, Australia is a multicultural society and adolescents in Australia identified themselves as coming from a variety of cultural backgrounds. The 166 respondents of this study provided 67 different answers on the question ‘cultural background’. Among the respondents, 80 (48.2%) identified themselves as Australians (English, Australia, Aussie, English Australian, etc); 58 (35.0%) identified themselves as coming from a specific ethnic group (Asian, Chinese, Italian, etc); and 23 (13.9%) identified themselves as Australian of a specific cultural background (e.g., Australian/Aboriginal, Chinese Australian, English/Arab, etc).

No significant difference was found on the two most important neighbourhood environment factors: Location & Convenience, and Neighbours. This finding is consistent with the literature, in that the overall wellbeing of immigrant children and young people in Australia is
satisfactory (Katz & Redmond, 2010). In addition, no significant difference was found on the factor Route to School, which might suggest the overall satisfactory condition of Australian suburbs.

Table 1: Means plot showing cultural differences on the four neighbourhood environment factors

However, Adolescents from Heritage cultural group scored significantly lower on the factor Vegetation & Facilities and they reported significantly lower score on the item ‘the vegetation in my neighbourhood is good’ and ‘my neighbourhood has sports and exercise facilities’. In addition, although the difference was not significant, adolescents from Australian cultural identity group scored higher than Heritage cultural identity groups on all of the neighbourhood environment factors. This finding suggests that certain degrees of power and spatial inequity between main-stream cultural groups and ethnic minority groups still exist in Australia.

REFERENCES


MIGRATIONS: HOUSING AND POPULATION MOVEMENTS WITHIN PAPUA NEW GUINEA

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KEYWORDS

Papua New Guinea, settlements, globalisation, housing cultures, development, hauswin

ABSTRACT

Papua New Guinea (PNG) has many of the world’s last remaining communities unchallenged by globalisation. Its dense geography harbours the world’s greatest concentration of distinct tribes living close to subsistence levels. PNG’s variety of housing types is unprecedented. However in the squatter settlements of the second largest city, Lae, and many of the remote communities, engagement with mass produced consumables, new technologies, ideologies, finances and opportunities has begun a marked shift in the aspirations held by individuals and the community as a whole.

This research identifies the key ways in which communities are adapting to a set of influences that work to reshape the physical environment. Using architectural research strategies to investigate housing cultures and their inherent complexities this paper identifies typical housing systems in two case study locations within the Morobe Province – conducting interviews and using drawings and maps to record data. The research demonstrates the ways in which the existing housing types fail to meet the needs of the residents and outlines that this failure places the health of the residents at risk. Using the experience building two pavilions in these two communities the research tests possibilities for improving housing outcomes in marginalized settlements and makes the claim that there is potential for a sustainable housing system that addresses economic, social and aspirational needs.

INTRODUCTION

Papua New Guinea (PNG) has an unparalleled vernacular architectural heritage with a multitude of forms constructed predominantly with bush materials. While some house types, most notably the ‘long-house’ type, has parallels with house types in neighbouring Indonesian Islands there are also a variety of specifically Papuan typologies that reflect local cultural needs and practices. The wider influences of the region and the world have been tempered by the nation’s geographic isolation and its unusual ‘colonial’ status. Engagement with the industrialised world, and the types of economic and cultural development that accompany this, has occurred quite sporadically in the years leading to the Second World War and only in specific and limited locations while the vast majority of the people and landmass has remained isolated from external influence (Fowler 2004). The 1940s were quite tumultuous for PNG and its people with the rapidly expanding Japanese Empire identifying PNG as a stepping point for a possible invasion of northern Australia. The war brought new technologies, infrastructure and influence to PNG, particularly in the capital Port Moresby, and helped reshape the...
nation’s engagement with outside influence and peoples and much of the population’s acceptance of change. In the years after the Second World War Australia took on a paternalistic role guiding the nation to its independence in 1975 and contributing to a number of infrastructure and development programs (Hasluck 1976).

While the bulk of the country has seen very little development some isolated areas have embraced the technologies, economies and influences from abroad. Port Moresby is now occupied with multiple high-rise buildings and has some international corporate presence. Lae, the second largest city, has a more limited international profile but does include supermarkets comparable to those in industrialised nations. The remainder of the country is far less developed with isolated access to industrialised products. This means that the most significant proportion of the population lives close to subsistence levels and at the very fringe of the mainstream economy. Bartering between tribal groups is more common than cash transactions for goods and services. Hence the most common housing type throughout the non-urban areas is constructed from locally sourced bush materials. Closer to urban areas the timbers are sawn but further afield the timber is prepared by hand. Industrialized materials, most commonly in the form of items such as corrugated iron for roofing, metal panels to provide security for doors and windows, and glazing, are common in the urban centres. It is also quite common for prefabricated structures to be used in urban areas to store and sell consumables such as food and alcohol.

Unlike PNG’s neighbouring Asian countries there are no street stalls or food hawker stalls. A vibrant and safe nightlife, common in neighbouring countries, is close to non-existent. A poorly funded police force leads to perceptions of poor security. Social instability, linked with alcohol and drug abuse, has contrived to create a social structure and urban situation where people avoid being outside at night. As to be expected in a nation recognized with one of the world’s lowest development indexes per head of population the government cannot resource programs to protect its citizens and provide them with adequate healthcare, education and a stable economic future. Social unrest is rife when social networks and civil society are weak. This has led to the development of high profile privately run security firms hired to protect private business interests. Supermarkets, for example, are guarded by teams of security guards and are seen by the indigenous population as foreign owned by outsiders who do not share their wealth back into the community. Resentments form and during any social disturbance these symbols of outsider influence and control are typically ransacked and burnt. A high level of unemployment, only 48.4% of the population is employed in urban areas, (NSO 2003) leads to social instability.

GLOBALIZATION IN PNG: CHALLENGES FOR THE HOUSING SECTOR

Much of the unease facing PNG’s citizens as they make efforts to provide sustainable and relevant shelter has come about as the nation has begun opening its doors to the wider world that has been identified as transformative through the ‘intensification of global interconnectedness, suggesting a world full of movement and mixture, contact and linkages, and persistent cultural interaction and exchange’ (Inda and Rosaldo 2008: 4). Given that the effects of globalisation are now becoming entrenched in PNG, what challenges does the population face as it expands and the need for new housing intensifies? Globalization has forged contacts between the ‘center’ and the ‘periphery’. The
‘center’, as it relates to the Papuan condition, is best understood in the colonial context with the dominating European heritage being ‘laid’ over the native population. This was a common experience for PNG’s neighbours. However the isolation of PNG’s population at the periphery has diminished concentrations of colonial influence (Kaitilla, n.d., p 166). Mobility between tribal groupings has never been easy. While PNG has an abundance of natural resources it remained outside the established international trade routes until centuries later than its neighbouring counties (the exception being Australia). The mountainous topography and dense terrain kept settlements sparsely located and the natural abundance sustained life within tight spatial ‘pockets’. Consequently this led to one of the highest varieties of linguistic dialects ever-recorded worldwide and innumerable house types have been recorded.

PNG’s independence in 1975, after the colonial ‘occupations’ of Germany, England, Japan and Australia, led to the development of new institutional structures. A focussed nation building exercise, with both metaphorical and physical outcomes, coincided with the provision of formal housing policies and programs. The proposals were ultimately compromised due to a lack of funds leading to a ‘two-tier’ housing outcome (Fowler 2004: 7). Wealthy citizens, and the predominantly Australian expatriate community, typically lived in suburbs formed from lightweight houses set on stilts. The less fortunate urban dwellers found themselves in one of the squatter settlements located at the periphery of these cities. However the majority of the nation’s population remained in their ancestral lands in vernacular houses far from the development issues facing townspeople.

Nowadays there is much evidence of poor housing outcomes in squatter settlements and new challenges for those living in remote locations. A lack of land tenure, poor quality construction materials, inadequate quantities of materials, overcrowding, unsanitary conditions, poor water quality, encroaching seawater, floods – not to mention unemployment and food shortages – afflict squatter residents. The rural poor face similar threats but are somewhat alleviated of the economic burdens by maintaining their dependence on self-build systems and bush materials. In all cases the population is facing challenges not seen by their forebears. How could PNG’s housing culture develop to enhance the cultural, economic and technological sustainability of its marginalised communities?

RESEARCH DESIGN – THE 2010 HAUSWIN PROJECT

This paper investigates mechanisms that influence Papua’s contemporary housing culture and suggests strategies to improve its overall sustainability. It looks at the immediate effects of globalisation within two case-study communities and speculates on the future of the broader national housing culture. This is undertaken with a qualitative study that references architectural research ‘tools’ (see Groat and Wang 2002) and is influenced by Appadurai who identified a series of cultural flows that act as agents of change. Appadurai proposed five categories for analysis; the flow of ideological movements ‘ideoscapes’, the flow of images ‘mediascapes’, the flow of people ‘ethnoscapes’, the flow of money ‘finanscapes’, and the flow of technologies ‘technoscapes’. (Appadurai 1996: 33). The authors are aware of the complexity involved in a full study of these five scapes and their consequences. Efforts have been made to use research tactics available to architects to unravel some of these consequences upon the housing culture.
The authors have been involved in the ‘HausWin’ project conducted during 2010 in the Morobe Province. During two site visits and an intensive community based construction program, an analysis was made of the housing in two locations – one Bumbu a squatter settlement on the outskirts of Lae and the other Serongko in the remote hilly area to the east. Bumbu is located at the edge of Lae city but within an urban context. Serongko is located approximately 150km to the east and in the dry season requires a 6 hour ferry, two hours in a pick-up truck and an hour’s walk of transportation from Lae. The authors, and a dozen postgraduate student assistants from the Melbourne School of Design at the University of Melbourne, mapped and interviewed residents in the Bumbu and Serongko settlements. The University of Melbourne team worked with colleagues and students from the University of Technology in Lae.

In both locations architectural research tactics were adopted as outlined by Groat and Wang (2002). Maps were prepared, house plans were drawn and analysed, construction materials were recorded and open-ended interviews were undertaken. Additionally, the authors coordinated the construction of a HausWin (an open air pavilion) in both locations as part of a longer-term project that tests ideas for the development of a future sustainable housing system. Further discussion on this section of the project will be included later in this paper.

BUMBU

The village of Bumbu is located on the edge of Lae’s city area. It has been developed on a wide tidal plain that is adjacent to a freshwater river leading into the Solomon Sea. It consists of over 500 households, two to three nominations of churches, many HausWin pavilions, and a small on-site health centre. The population is ever expanding due to urban migration and approximately 2000 people lived there in 2010. Housing materials are obtained by various means. The few residents with an income can purchase materials from local stores, such as corrugated iron. Most scavenge materials as best they can and use a mix of materials that include driftwood, sawn timber, tyres, tarpaulins, plywood and steel beams. Houses are raised above ground level where possible to avoid tidal flooding.

Figure 1: One family group’s allotment of Bumbu Settlement where the second hauswin was built in December, 2010. (Image by Jessie Fowler) Figure 2: Bumbu Village Leader's house constructed of makeshift and found materials. (Photograph by Allison Stout)
SERONGKO

Serongko is located on a ridge surrounded by dense forest and within walking distance of a watercourse that is becoming polluted by settlements further upstream. The village has 25 households, a church, and a few HausWin pavilions. The population varies but 100 people is considered the average number. The housing materials are forested locally and sustainably. Highly durable hardwoods are used for the main house posts while less durable timbers are used for framing and wall cladding. The roof is made from palm thatch and is considered to be the least durable part of the structure needing to be replaced every three years.

Figure 3: Selongko Village Plan. (Image by Jessie Fowler) Figure 4: Typical Selongko Village House. (Photograph by David O’Brien)

TYPOLOGICAL PATTERNS FROM BUMBU AND SERONGKO

There is a range of both complimentary and contradictory typological patterns evident in a study of the housing cultures in both the Bumbu and Serongko settlements (Kaitilla, n.d. pp. 167). This section outlines similarities and differences with the aim to discuss the key patterns that are maintained across the two distinct locations and those that are ‘reinvented’ due to differences in geography, material availability and local economies. Most noticeably the houses at both Bumbu and Serongko are built on ‘stilts’ that raise them above the ground to provide increased protection from the protracted wet seasons. The residents are also further removed from snakes and other bush insects. Hence the houses are built with lightweight materials with a ‘post, beam and infill panel’ type construction as opposed to the ‘mass’ type construction obtained with bricks and concrete block work.

This ‘post, beam and infill’ technique lends itself to a construction system that takes advantage of prefabrication techniques and incremental construction timelines. The advantages of this system are more strongly evident in remote locations when households construct with bush materials but it can be used in urbanized locations given specific conditions. For example the residents planning a new house in Serongko can allocate time towards preparing the main structural elements of their house, the posts, floor and roof beams, and set them aside until other components such as wall and roof cladding have been prepared. The process of completing the full set of components might take years. However once the full ‘kit of parts’ has been obtained the assembly of the full house can begin. Planning for this full kit can be more difficult at Bumbu where construction materials are likely to be obtained more ‘opportunistically’ – perhaps when a household member ‘finds’ some likely construction material
being discarded by a local factory and brings it home to be used. This type of scavenging makes it hard for the household to plan for future house building or extensions to an existing house.

In both locations the houses are built by the owners themselves – perhaps with assistance from close friends and family. This self-build procurement strategy excludes the assistance of construction specialists who would require cash payment to complete construction work in a professional manner. Instead the work is undertaken within the household’s own technical capacities and means. At both Bumbu and Serongko the householders took responsibility for providing the construction materials. As the households have very limited access to the cash economy, they take it upon themselves to gather and salvage locally available materials rather than purchase materials from suppliers. This leads to the greatest distinction between the types of houses referenced in this research project. As has been detailed in the previous sections the construction materials in Serongko have been harvested from the local bush whereas those used in Bumbu have typically been scavenged from the discarded materials left from the factories in the industrialized parts of Lae.

THE HAUSWIN PROJECT

The research strategy driving the HausWin project has been two pronged. As described earlier in this paper standard ‘architectural’ research tools were used to create the maps, plans and the drawings of both the Bumbu and Serongko settlements. Interviews were used to incorporate the householder’s ‘voice’ to the data collection and our understanding of the two distinct locations. The strategy behind that work was to study the two locations – the two case-studies – to identify how this knowledge might be used to extrapolate a broader understanding of the housing culture in PNG. However the authors have also used ‘action research’ strategies to examine a possible future for housing procurement in PNG. Action research is a term used to describe research that ‘examines a concrete situation…. (with) an emphasis upon knowledge emerging from localized settings’ (Groat and Wang 2002: 111). Action research studies involve changes that have a direct and lasting consequence for people and aim to improve future actions through analysis of changes to the environment, policy and decision making processes (Zeisel 2006: 95-97).

The 2010 HausWin project was coordinated by the authors and with the assistance of the same team of postgraduate architecture and landscape architecture students who undertook the architectural survey. A HausWin is a simple timber pavilion where people gather to shelter from the sun or rain. It can be seen as the core shelter element and a building block towards more substantial shelters and houses. As part of this research project the combined team worked with locals from the communities to build a HausWin in both the Bumbu and Serongko communities. The HausWin reinterpreted some familiar typologies but also introduced new systems and construction materials as a way to stimulate discussion about the value placed upon specific aspects of the broader housing culture. The project was formed as a way to engage with the housing cultures in both Bumbu and Serongko – two vastly different communities both facing the effects of globalization through mechanisms of change that are sometimes similar but at other times quite distinct. The authors claim this project contributed to their understanding and analysis within a short period of time and allowed an understanding the needs and wishes of the local people in regards to their housing, their jobs, and their communities. The project team did not wish to specify how the HausWin would be used and view any longer term modifications
as a valuable contribution to the project’s aims. The construction team of nearly twenty students and staff spent two days constructing the HausWin pavilion in Serongko and another three days constructing another in Bumbu. Local timber was the main framing material and both HausWin were finished with a corrugated iron roof and a plastic gutter and water tank.

Figures 5 and 6: HausWin at Bumbu (left); HausWin at Serongko (right). Both were informed by traditional typologies and included timber post and beam systems. However they were built from a predetermined kit of parts and included water collection systems and other industrialised materials. (Photographs by Allison Stout)

This part of the project was initiated by academics from the Architecture and Forestry Faculties at the University of Melbourne and had several interlinking themes. Firstly it was designed to test methods of material procurement. Could it be possible for rural dwellers, with their sustainable timber farming techniques, to provide timber for the construction of housing in urban areas? Secondly it tested possibilities for rural communities to package timber prefabricated construction components to be sold for housing in the urban areas. Do rural workers have the capacity to become part of a production system that delivers components to urban areas? Thirdly it sought to identify how industrialized construction materials might be used to improve the longevity of houses in rural areas. Could any income generated by rural communities for timber sales be used to improve the quality of housing in rural areas? Fourthly it sought to identify if industrialized construction materials – specifically corrugated roofing and water tanks – could be used to harvest clean water for drinking? Could water collection and storage improve the health outcomes of people and reduce their reliance on poor quality water? Finally the project sought to identify how the community would view and use the HausWins once complete? What are the common aspirations held by residents in PNG’s marginalised communities?

SOME EARLY ANSWERS

Even before construction was commenced it was possible to identify some answers to the questions outlined above. A cutting list, specifying all the sizes and lengths, had been supplied to the local work team in Serongko and the community was contracted to supply the timber required for the HausWin from their own forests. Trees were selectively felled and milled to the requirements outlined by the authors. It is worth noting that workers use only hand held axes and machetes to cut and shape this timber. The labour required is far more significant than the comparable task if a mechanized sawmill
is used. This is in part a very desirable outcome as it provides local paid employment and could contribute to the local economy.

While the requirements, which were not inconsiderable, were followed only enough timber for one pavilion was prepared. Initially the project had been formulated as a direct ‘technology swap’ between the urban and rural settlements. It was imagined that the bush prepared timber from Serongko would be used on both sites and the industrialized products such as nails, corrugated iron and water tank, would come from the warehouses beside Bumbu. While the industrialized materials were taken by boat, truck and walked into Serongko no timber sourced from Serongko was used at Bumbu. It is difficult to trace the reason why the bush materials could not make their way to Bumbu. Interviews suggest a number of reasons might have been at play. In part it might have been due to the difficulties faced by a small community to prepare a significant amount of timber. The logistics of moving such a quantity of timber such a distance back to town was also considerable – the erratic boat timetables and often poor weather – make reliable transportation difficult. This would have added significantly to the overall project cost.

**KEEPING AN EYE ON THE FUTURE**

Projects such as this are complex – many questions cannot be answered during the short time frames of the initial implementation and analysis phase. At the time of writing the two HausWin building were only eight months old and a follow up investigation is required. The attitudes towards the construction process and outcomes need to be tested and recorded. Similarly it will be desirable to measure how the buildings have been used and what role have they taken on. It is to be expected that the buildings will have already been modified to suit a new purpose. Any additions and modifications, the authors contend, will demonstrate a positive outcome. The authors have found Appadurai’s five ‘scapes’ to be a useful way to grapple with the changes underway in Serongko and Bumbu and suggest that a similar set of influences are playing a role throughout other regions of PNG. The contemporary housing culture is undergoing change that is driven by ongoing links with ideological, technical, financial, aspirational and migratory dimensions and must be understood as a reflection on the broader aspects of globalization.

In both Serongko and Bumbu the community showed itself to have high levels of capability. The communities demonstrated that they have good organization skills, and the authors suggest that this also demonstrates high-level social capital that could be leveraged for future larger scale projects. The communities also demonstrated good technical skills that suggest that self-build projects are likely to have the capacity to reach fruition. It is the author’s contention that the housing type and process in Serongko is almost perfectly adequate for the residents. Any improvements to the lack of durability for the thatch roofing would involve replacing the thatch with corrugated iron – which in turn could improve the capacity to harvest fresh water and improve some health outcomes. The Bumbu squatter settlement is in a somewhat more perilous situation. The residents lack land tenure – leading to both financial and social insecurity. Bumbu residents lack access to affordable construction materials and hence the housing they construct from scrap materials is substandard. The possibility of a government or non-government organization backed micro-finance scheme, such as the program run by the Grameen Bank in Bangladesh, should be examined as part of any future initiatives.
CONCLUSION

This paper marks the beginning of the analysis phase of a longer-term project to identify the changing face of housing in Papua New Guinea. Using Appadurai’s analysis of the forms of globalisation it reveals that there are many forces at play, many of them with a global heritage, that are combining to reshape the housing outcomes and aspirations in settlements. The future for housing outcomes in marginalized communities, both in the squatter settlements at the edge of towns and in the remote rural areas, has not traditionally been of concern to the government. However some form of state sponsored intervention, in the form of technology transfers that sees industrialized materials making their way to remote areas and bush materials becoming available to those at the town’s edge, would go a long way to alleviating problems associated with shortages in accommodation and poor quality housing. A well-structured program would have added benefits in improving employment rates and health outcomes. However before such a program could eventuate issues such as improved transport links, the formation of a well-equipped governing body and the introduction of a micro-finance scheme needs to be developed.

REFERENCES


MIGRANCY, MODERNITY AND CULTURAL SUSTAINABILITY

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ABSTRACT

Australian Home Beautiful’s October 1960 Edition was devoted to the modernisation of the Victorian and Edwardian-era houses of Australian cities’ inner suburbs. One of the articles inside was entitled ‘Terrace Houses are Common Problem’, in which the magazine’s architectural consultant Leonard A. Bullen suggested; “With houses of this type, the multiplicity of embellishments that appear in almost every possible place is irritating to eyes that have become accustomed to the cleaner and less ornamented lines of modern houses” and “The first necessity is to get rid of the superfluous decoration and emphasise horizontal features.” (Bullen 1960, 31). The post-World War Two period was a time when Australia’s traditional imagining of itself was confronted by both popular modernity and a diversity of new migrant cultures and ways of thinking. In a contemporary environment that theoretically celebrates diversity and creates audiences for increasingly multiplying expressions of culture and history, perhaps it is time that 1950s and ‘60s alterations to old houses were re-imagined as intrinsic elements in Australia’s cultural landscape. This supposition will be discussed in relation to the United Nations’ 2002 Kanazawa Resolutions’ definition of the relationship between culture and sustainability as ‘dialogical coexistence’ (Nadarajah and Yamamoto 2007).

“DRESSING UP THE SINGLE FRONT”

Much of the success of this facelift is due to the substitution of the severely plain for the grossly over-ornamented . . . Façade was improved with a bigger window opening . . . The cast concrete porch shelter is carried across the full width of the house . . .” (Australian Home Beautiful 1960, 35).

When culture is mentioned in relation to architecture, this often refers the notion of buildings as representations of cultural heritage, and framed in terms of the preservation and conservation of historic buildings and streetscapes. ‘On the one hand, buildings exist as stand-alone artifacts, and on the other, they are artifacts that express the deep meanings, aspirations, and social order of a culture’ (Howard 2006, 95). However, considering the diverse demography of a contemporary Australian city, what constitutes this culture?

The United Nations’ 2002 Kanazawa Resolutions provide some useful definitions for discussion of this question. These resolutions were formulated as the result of a series of United Nations conferences on the relationship between culture and...
sustainability. The Kanazawa Resolutions argue that sustaining cultures in terms of contemporary life is a matter of ‘dialogical coexistence’ (Nadarajah and Yamamoto 2007). They take the notion of cultural heritage into a contemporary and globalised context by linking it to ideas of cultural diversity and pluralism, similar to Sharon Zukin’s notion of cities as a ‘fluid process of forming, expressing, and enforcing identities of individuals, social groups, or spatially constructed communities’ (Zukin 1995, 289). The resolutions argue that cultural sustainability is not just a matter of the preservation or reinvigoration of the past, but an ongoing dialogue between a locality and its people (Nadarajah and Yamamoto 2007). This paper will explore this definition by looking at the alterations made to Australian residential buildings in the post-World War II period, exploring in particular the intersection of architectural and social meanings in a period when popular forms of architectural Modernism and a rapid increase in diversified migration converged on Australian cities. To illustrate this exploration, the paper will concentrate on Richmond, an inner suburb of Melbourne, and an area of diverse immigrant settlement since the 1950s. Material for this paper, other than from cited sources, is based on a photographic survey of Richmond’s residential buildings undertaken by the author in 2009.

At the end of World War II, Richmond was considered to be a slum district. Traditionally inhabited by the Wurundjeri people, the area had, in 1839 been divided by Robert Hoddle into farmlet allotments, but by the late nineteenth century Richmond has become an area for concentrated industry. Most of the area’s residential buildings by the late nineteenth century were the modest dwellings of factory workers. These inhabitants became increasingly impoverished by the depression of the 1930s, and the Richmond was a focus of Melbourne’s slum abolition movement of the 1940s and 1950s (McCalman 1998, 8). By this time, many of inner Melbourne’s wealthier residents had taken the opportunity to relocate to the newer, more spacious outer suburbs, a phenomenon that correlates with what was happening that was considered to be inevitable. As Logan has recounted, at the time the theories of urban geography propounded by the Chicago School of Social Ecology argued that the middle classes of Western cities would inevitably be drawn away from the decaying and cramped inner areas of industrial cities towards the more modern and spacious developments at their peripheries (Logan 1985, 5-6). Freed by the automobile, upwardly mobile citizens would prefer the safety of the new outer suburb, served as they were by a new infrastructure of roads and freeways and modern shopping centres. It was common wisdom that the inner city would be left to those who had no choice, and those who for some reason rejected progress; recent migrants, low-waged workers, the aged, and a few artists and other bohemians (Pahl 1968). As a result, inner suburban Victorian- and Edwardian-era building stock was not greatly valued. McCalman recalls in her history of Richmond; Australians were obsessed with the new; the old should be razed as quickly as possible. The Prest Social Survey investigators tended to think that the only good news about a very old house was that it was soon to be demolished. One in Johnson Street, North Richmond, was a sand-brick cottage built in the early 1840s and must have been one of the oldest extant houses in Melbourne. It was run down but liveable and surrounded by an old-world cottage garden. Everyone was delighted that it was due to be demolished at any time (McCalman 1998, 10).

State governments of the time, worried about a population decline in the inner suburbs, had no official problem with this, and the most obvious impact was the demolition of large numbers of houses in north Richmond to construct new public housing. The Melbourne Metropolitan Board of Works’ 1954 Master Plan
recommended “comprehensive redevelopment” of Richmond and other inner Melbourne suburbs, recommending demolition of large numbers of mostly Victorian-era houses in order to construct new public housing, the most prominent example of which are the high-rise towers of the Housing Commission estates of Richmond, Flemington, Carlton (Logan 1985, 150).

“GET RID OF THE SUPERFLUOUS DECORATION”

However, these efforts at wholesale demolition remained incomplete, and so the modernization of inner suburban buildings was also promoted, Home Beautiful’s October 1960 edition being a clear example of this. Home Beautiful was, as it is now, a popular publication, and gave advice was given on altering inner suburban dwellings to make them pleasingly ‘modern’ (Cuffley, 1993, 35). In ‘Terrace Houses are a Common Problem’, their architectural consultant suggests ‘With houses of this type, the multiplicity of embellishments that appear in almost every possible place is irritating to eyes that have become accustomed to the cleaner and less ornamented lines of modern houses’(Bullen 1960, 31). and ‘The first necessity is to get rid of the superfluous decoration and emphasise horizontal features.’ In the same magazine can be found the recommendation to ‘Unburden the Queen Anne.’ “With a dominating feature such as the turret, which is so much out of harmony with modern architectural ideals, very little can be done aesthetically without removing the feature altogether . . .” (Australian Home Beautiful 1960, 38).

As Figures 1, 2 and 3 suggest, in Richmond it would appear that Home Beautiful’s advice was widely acted upon. In the area there are numerous post-war ‘modernisations’ of Victorian- and Edwardian-era cottages and terrace houses. These, as seen in the Figures, took some characteristic forms. Commonly the narrow timber-framed front windows were replaced by wider ones with slimmer modern frames. As well as replacing an often decaying existing window, the new wider openings allowed in more light. Elaborate Victorian-era veranda roofs, with cast-iron lacework and curved corrugated iron roof sheeting, were often removed, and replaced either by simpler structures with flat roofs supported on slim metal struts, or open pergola framing, which provided shade in summer, and sun penetration in winter. Grape vines were grown on the new pergolas (see image in Figure 1). Veranda floors, traditionally surfaced with tiles or timber boards, were replaced with concrete slabs. Dilapidated weatherboards covering the exterior walls were clad in a brickwork skin, which was sometimes rendered. If real brickwork was unaffordable then the newly available brick-pattern cladding would suffice (Figure 3). Light colours were applied in render and paint, commonly white or pale shades of yellow or grey.

Most of the above alterations correlate with the advice being given by Home Beautiful in 1960. Only the occasional use of classical columns and arches (see image in Figure 3) suggest other influences. However, when these altered buildings are viewed today, they are not so much regarded as evidence for prevailing ideas about modernity in the 1950s and 1960s, but more specifically identified with another phenomenon, the growth and increasing diversity of immigrant settlement at the time. A terrace house with a white rendered front wall, flat concrete porch and aluminium-framed window is now seen as not so much as Modernised but as Mediterraneainised (Allon 2002: 102). This connection is, on the face of it, supported by the demographic changes to Richmond in the 1950s and 1960s. The low value
ascribed to the area and its building stock meant that the area was an affordable place of settlement for new migrants. From being an area that was overwhelmingly of English and Irish background before World War II, the 1961 Census found that 40% of Richmond’s population was of southern European descent; from Greece, Italy, Turkey, Malta, Yugoslavia and Lebanon.
Figure 1: Post-World War II alterations to Richmond Houses 1 (images by author)

Figure 2: Post-World War II alterations to Richmond Houses 1 (images by author)
THERE COULD BE A “TRENDY APPEALS ABROAD”

The old buildings of Melbourne’s inner suburbs presented an opportunity for these new migrants. Their modernisations also correlated with a wider sense of need for change in Australian society, and not just because of a more widespread opinion of terraces houses as a “common problem.” Luckins notes the link that was made in the 1960s between the new migrants’ culture and a growing sense of the inner city as ‘cosmopolitan.’ As she describes it:

It was, it could be said, a “rediscovery” of Continental Europe. And in an important sense, it was far removed from Melbourne’s dominant British Protestant political structure and social fabric, and was an alternative to the competing claims of British sentimental ties American cultural and political influence, as well as the ‘White Australia’ immigration policy (Luckins 2009, 268).

This notion of the cosmopolitan was also related to ideas about modernity and diversity. Diversity (of people, food, drink, buildings) was, for perhaps the first time in Australian history, something to be celebrated, at least on the surface. Into the 1970s, even architectural historians seemed open the idea that migrants’ alterations to old houses might have worth;

. . . . we all know of the Mediterranean colour schemes which these migrants have favoured when allowed free rein. Many would argue that these Mediterranean renovations have their own value and interest, but I do not want to debate what is essentially a question of subjective opinion (Lewis 1978, 96).

Some commentators were quite emphatic about the cultural value of immigrant settlement, and also noted that their cultures had become integral to the overall identity of the area. The notion of urban planning as a means of social and cultural sustainability was even mooted.

… if you bought in to, say, Richmond with the expectation of having an urban or a certain mix of population there in terms of the percentage of Greeks and labourers and so forth, then you should be able to complain to the planning authority if you think there are too many trendies moving into the area. There could be a “Trendy Appeals Board”, where you could go and put your case and so you could envisage having advertisements for houses saying, “Migrants only” (Jones 1978, 42).
Needless to say, no such local government body was ever formed, and a search for similar sentiments in any Australian municipality’s present heritage documents is likely to prove fruitless. However these two arguments, both presented at a 1978 conference on the ‘problem’ of the inner Suburbs, do show a distinct shift in emphasis from earlier opinions made in the 1950s and 1960s. In the 1960s, the Victorian-era cottages of Richmond and other Australian inner suburbs had not yet been valued by elites. Modernity was valued, and so the forms and details of old buildings required modernisation. Alterations by migrants were freely allowed, both because they correlated with this prevalent mode of thinking, and because their alterations were made to building stock and neighbourhoods ascribed little worth. Since the 1970s, the previous diversity of cultures and classes in Richmond is being diluted as the proportion of residents who are working-class and/or immigrant has been in steady decline. Many of the second and third generations of inner suburban migrant settlers have dispersed into the middle and outer suburbs. New migrants, if they do not find accommodation in the remaining blocks of inner suburban Housing Commission blocks, are now more likely to settle on the fringes of Australia’s cities. The ‘trendies’ mentioned by Jones who were enjoying this notion of the cosmopolitan were also the first wave of what has come to be seen as the gentrification process, as the middle-classes revised their previously pejorative views on the inner suburbs, and returned to renovate and inhabit their building stock. What has happened since the 1970s is an increasing ambivalence towards the post-war alterations of buildings, concurrent with the rise of conservation movements, and paradoxically, also concurrent with the rise of multiculturalism as a legitimate expression of Australian identity. Both these movements perhaps explain the increasing emphasis on the identities and cultures of those seen to be making alterations to inner suburban buildings. Thus, while the first passage is neutral and the second openly sympathetic, both of the comments from the 1978 Inner Suburbs conference identify the recently immigrant sector of the community as other, and so the altered built environment is now identified with this other identity. More broadly, this shift in emphasis can be related to the idea that value is socially and culturally constructed. Battles over identity are really claims for legitimacy, which are ultimately settled according to relations of power. It can be argued, using Bourdieu’s definitions of capital, that the accrual of cultural capital by particular forms, emblems or motifs is dependent on their adoption by cultural elites (which in the Australian context, turns out to be not that different in the 2010s to what it was in the 1960s) (Bourdieu 1993). By the 1980s, the cultural capital of these buildings’ forms, styles, and motifs had been enhanced by the social capital of cultural elites, and so had become invested with symbolic capital. The corollary of this process has been the that migrant alterations to building became gradually stripped of cultural capital as the dominant culture’s views on built heritage have changed, and ‘modernisation’ of Victorian- and Edwardian-era buildings has not only become strongly identified with Southern European migrants, but also viewed increasingly pejoratively.

AN ‘ARCHEOLOGICAL’ PERSPECTIVE

New architecture, particularly in suburbs of Victorian- and Edwardian-era origins, has to negotiate with planners’ definitions of ‘neighbourhood character.’ With new buildings, may be a matter of negotiating scale and materials, but for alterations and additions to old buildings, the difference is stark between what was encouraged in 1960 and what is allowable in 2011. With the increasing interest in restoration and
renovation of Australia’s Victorian- and Edwardian-era building stock, since the
1970s, national, state and local Conservation studies have, apart from identifying
buildings in areas that they consider worthy of conservation, set out guidelines for
the restoration of old buildings, specifying materials, details and paint colours
deemed suitable for the buildings of particular eras (City of Richmond 1985, 81). A
result of this many Victorian- and Edwardian-era cottages and terrace houses have
been restored according to these studies’ criteria, taken back, as it were to their
‘original’ states, or chronologically determined approximations thereof. What is
emphasised is the importance of the original, taking what has been described as an
‘archaeological’ perspective on the built heritage and architectural conservation
(Worthing and Bond 2008, 93). Applying a Victorian-era sense of propriety to
buildings, applying overt modernity to a terrace house or inner-city cottage is now
only acceptable when it is hidden from public view The corollary of this movement
towards restoration is that previous alterations of a different nature, i.e., modernising
the front of a Victorian cottage - are now anathema to what is considered to be good
heritage practice.

For Richmond, the base document for evaluating the area’s built heritage is The
Richmond Conservation Study of 1985. This document determines the following; “. . .
imitation bricks, imitation stone facing, imitation roofing tiles and aluminium or plastic
weatherboards are not convincing and detract from the authentic overall appearance
of a building,” and furthermore; “. . . weatherboards should not be finished in brick,
imitation or real” (City of Richmond 1985, 82). Also, “ALTERED WINDOW
OPENINGS are generally assessed as ‘Extremely inappropriate’, and “In all cases,
where visible from the street, the original windows should be retained or reinstated”
(1985, 84). Similar comments are made about veranda alterations, front fences and
other additions (1985, 86). In 1998 the City of Yarra (a municipality that merged the
old City of Richmond with other neighbouring local councils) published a Thematic
Study (updated in 2007) and this sometimes acknowledges post-war buildings or
alterations to buildings, but still ascribes them little importance (City of Yarra 1998).
The municipalities designated ‘Urban Conservation Areas’ are defined by the
prevalence of un-altered, or ‘appropriately’ restored older buildings.

However, judgment of an altered building is not just an aesthetic appraisal of
physical and material characteristics. The history of building, and the history of
altering buildings, are histories of identity. The construction, alteration, and
replacement of buildings have social and cultural significance – to particular sectors
of society – and, as well as general trends, their worth as architecture cannot be
disentangled from their identification with the sector of society that is associated with
them;

… a building can symbolically represent the development and or values of particular factions and
therefore play a positive role in reinforcing notions of community identity. However, it can have the
opposite effect, and polarise and exclude by reinforcing and validating a particular view of the past
(Worthing and Bond 2008, 49).

The re-occupation of the inner suburbs by 1970s ‘trendies’ and their descendents
has not just been a reappraisal of the advantages of inner-city living. It is also a re-
assertion of middle-class Anglo-Australian identity, and identity which is now
associated with restoration of the old pre-multicultural Australia. Melbourne architect
Dianne Peacock argues that ‘middle class taste culture’ is what has driven the
erasure of migrants’ inner suburban alterations to buildings and that “despite any
rhetoric of cultural diversity, [heritage controls] continue to preserve and reproduce
almost exclusively, a select built heritage of the prevailing culture” (Peacock 2002, 12). In Australia there still remains the spectre of the unitary nation, with its assumptions about clearly defined and defended territories of identity and belonging. Multiculturalism may have added respect for other cultures that might exist within the nation, but the degree to which these cultures can be affective agents within Australian society remains subject to debate (Gunew 1994; Jayasuriya 1997).

“BETWEEN ESSENCE AND FRAGMENTATION”

With the gentrification of the suburb, Richmond has become, for the first time since the early days of white settlement, one of Melbourne’s more desirable places to live, and the proportion of migrants amongst its population has declined. Attitudes towards architectural heritage, as noted earlier in this paper, might be considered tangible evidence of this demographic change (as are the suburb’s many new townhouses and apartment buildings), as much as the intrinsic value of particular buildings. The desire for preservation, like the desire for demolition, is not based on objective criteria. Creating a dynamic environment and retaining a sense of history demands both change and conservation, but the question, in a diversified and multicultural society, is how (and who) should decide what is significant about the architecture of the past, and the architecture of the present. Whose history, or histories, should be preserved, especially when there are conflicting needs and interests? Such contestations have their parallels in other parts of the world, especially in countries whose populations have become increasingly diversified through recent immigration. The cultural and architectural critic Kazi Ashraf has noted; ‘The new battle ground is not merely between East and West, but between essence and fragmentation” (Ashraf 2006, 66).

As noted at the beginning of this paper, the UNESCO resolutions argue that cultural sustainability is not just a matter of the preservation or reinvigoration of the past, but an ongoing dialogue between a locality and its people (Nadarajah and Yamamoto 2007). Complicating this, however, by definition, dialogue involves two definable entities, and so implies a degree of consensus over of what constitutes the identities of both. The nature of the architecture discussed in this paper suggests that this equation is more complex, that given a diverse populace, definitions of local identity can also be plural and contestable. This does not completely negate the usefulness of the UNESCO definition, but does indicate that older definitions of cultures as discrete entities still resonate within its conceptualisations of cultural heritage. If multiculturalism is to be more than a governmental mechanism for societal harmony, but a means for a more diversified audience for architecture, then it is important that a way between essence and fragmentation is needed to ensure that sustaining the built culture of one part of a diverse society does not mean the erasure of others.

REFERENCES


(1960) ‘Unburden the Queen Anne,’ *Australian Home Beautiful*. 


City of Richmond (1985) Richmond Conservation Study, Volume 1, Australian Heritage Commission & Ministry for Planning and Environment, Richmond.
Howard 2006:95
SESSION 5B - Permeable Boundaries of Architecture Education
A METHOD TO INVESTIGATE DIFFERENCES OF SKETCHING BEFORE AND DURING CAD MODELLING PROCESS

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ABSTRACT

Previous research, such as Sachse et al’s (2001), adopted traditional sketching in the CAD modelling process and this method improved the design quality. However, there has been little investigated from a cognitive perspective of using mixed media. Mixed media design environments consist of conventional and digital tools, which are often superior to an individual tool during the conceptual design phase (Ibrahim and Rahimian, 2010). When designers switch media from sketching to CAD modelling, the action of shifting is believed to improve design creativity (Chen, 2007). In studies of mixed media (Ibrahim and Rahimian, 2010; Chen, 2007), designers were asked to use sketching first followed by CAD modelling. This method of using mixed media involving one shift in media is called sequential mixed media (SMM). However, there is an alternative method of using mixed media, known as alternate mixed media (AMM), in which designers alternate freely between sketching and CAD modelling. There has been limited studies in exploring designers’ behaviours in AMM, their shifting actions between tools and the triggering factors initiating the shifting actions. The paper provides a comprehensive analysis of a wide variety of design tools supporting conceptual design in the early design process. The paper also presents a methodology for a future study to investigate design cognition in mixed media design environments. The outcomes of the proposed research will lead to a more critical understanding of the way of using both design tools so that they can be utilised more effectively. The proposed research will particularly answer why and when designers shift from one tool to another tool during the conceptual design phase.

Keywords: Mixed media, Protocol analysis, Design cognition, FBS model

INTRODUCTION

There are several studies of the impact of different types of design media, such as using the diverse solo design tools (Aliakseyeu et al., 2006, Gu et al., 2011, Schweikardt and Gross,
2000), comparing two solo design tools (Sachse et al., 2001, Won, 2001, Kim and Maher, 2008), and comparing solo and mixed design environments (Ibrahim and Pour Rahimian, 2011). Sachse et al (2001) studied on more than 100 expert engineering designers utilising sketching before and during CAD modelling. Their study identified results such as an improvement in the quality of solutions, reduction in the time taken to complete tasks and the number of processing steps required in achieving the CAD model. Their approach to studying the designers involved in sketching and CAD modelling was through a questionnaires survey, the participants’ cognitive processes were not considered in the study and it did not therefore address the issues of understanding the changing from sketching to CAD had on design behaviours or the implications of using sketching before and during CAD. The research project reported in this paper uses these studies as a starting point for studying the design activity where mixed media is employed and the cognitive processes which underpin it.

The aim of this paper is to report on the rationale for the application of a coding scheme for studying the design process and strategies in design cognition in mixed media environments including Function-Behaviour-Structure (FBS) model (Gero, 1990). This paper adapts them to suit the context of the use of sketching and CAD modelling to understand designers’ behavioural changes when utilising mixed media environments and, further, to identify the triggering factors which initiate shifting between the tools. The paper also reports on the findings of an analysis of the rationale for a designer’s utilisation of external tools, and why there is a need to understand the use of mixed media. The paper will also develop a rationale for the use of protocol analysis as the appropriate method for studying the design situation related to the application of the chosen coding scheme. The purpose of the study proposed in the paper is to provide a better understanding of the impact of using mixed media and the differences between SMM and AMM upon designers.

WHY INVOLVE CAD MODELLING IN THE EARLY DESIGN PHASE

Computer-Aided-Design (CAD) was first developed in the 1960’s and has progressed to become an important tool supporting the design processes (McFadzean, 1999). Although CAD modelling can be considered to fulfil a similar role in design to that of word processors for writing (van Dijk, 1995). The different roles and relationship between CAD modelling and sketching are not well understood (Kiviniemi and Penttilä, 1995). The environment of mouse, keyboard and the screen is dissimilar to that of the pencil and paper. These different design environments can pose difficulties due to no direct physical connection in between hands and eyes (Ekelund et al., 1992). Another difficulty, posed, is the transfer of the final design from sketching to CAD modelling (Herbert, 1993). In sketching, the design drawing is done on the paper simultaneously with the design thinking but CAD modelling builds 3D
model through 2D layout, perspective, and other detail section views (Haapasalo, 1997). The outcomes of design are often represented as several drawings or one CAD modelling of the building that is done in real scale (Penz, 1992). The early conceptual design phase may also involve CAD modelling in this case the subsequent design phases may include such activities as detail design which only requires small scale modification of CAD modelling.

Design Tool Studies

Previous research which identifies the implication of using such design tools is reported below (Table 1). The early design process involves many cognitive activities including the organisation of ideas to find a solution. This organisation involves both synthesis and analysis of a variety of perspectives and requirements. Many designers use “visual thinking” utilising external aids to better understand an idea through sketching (Laseau, 1989). This iterative method of testing ideas and informing the design phase through the use of images directs and aids the designers’ decision making. Sketching provides a way to store the conceptual ideas so designers can revisit (Ullman et al., 1990). “Seeing-as” and “seeing-that” modes were observed among architectural students when they generated ambiguous sketching (Goldschmidt, 1994). Design can be considered as a “conversation” with materials via sketching and highly dependent on seeing, according to “seeing–moving–seeing” model (Schon and Wiggins, 1992). Sketching provides representations of design solutions that allow for a variety of interpretations and sequential decisions (Scrivener and Clark, 1994). Schon’s concept infers that a reflective conversation is where the designer ‘seeing what is there, drawing in relation to it, seeing what is drawn’ and so further progressing the design. Therefore, one of the most important tools that designers have at their disposal during the early design stage is sketching; however, other design tools such as digital sketching are not yet significant but pose possibilities for the future (Tang et al., 2011). Table 1 below provides a summary of what has been learned thus far about the role of single medium’s implications upon the design activity.

Table 1: Types of Solo Design Tools

<table>
<thead>
<tr>
<th>Type 1: Sketching (Pencil and Paper)</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Seeing-as’ and ‘seeing-that’ modes were developed by observing architectural students generating unclear and ambiguous sketches. Sketching is a significant element of design creativity during the design stages. A designer frequently uses sketching as descriptions for the objects to be designed that is called interactive imagery (Goldschmidt, 1994). In addition, designing as a conversation with materials is via sketching and importantly dependent on seeing. They described the functions of different types of seeing in designers’</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type 2: Digital Sketching (Sketch Tablet &amp; Tangible User Interfaces (TUIs))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instead of trying to replace such conventional ways of sketching, it is considered to try and maintain the strengths of these conventional ways of working while at the same time improving them by providing access to new media. They discuss the realisation of a tool for conceptual architectural design on an existing augmented reality (AR) system, called the “Visual Interaction Platform” (Aliakseyeu et al., 2006).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type 3: 3D Virtual Worlds and TUIs</th>
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</thead>
<tbody>
<tr>
<td>The problem they found that many design projects occur at the same times but in different locations. Thus, they conducted two protocol experiments on design collaboration: remote design collaboration and co-located collaboration with tangible user interfaces (TUIs). The former study is to understand the behavioural changes in situations that are physically remote but co-located in 3D models virtually. The result of the latter study shows that designers’ cognitions can be improved when using TUIs combined with augmented reality (AR) (Gu et al., 2011).</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Type 4: Digital Clay</th>
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</thead>
<tbody>
<tr>
<td>They present Digital Clay, a working prototype of sketching recognition program that interprets gestural and abstract sketching and constructs appropriate three dimensional digital models (Schweikardt and Gross, 2000).</td>
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<table>
<thead>
<tr>
<th>Type 5: CAD Modelling</th>
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</thead>
<tbody>
<tr>
<td>The result shows that CAD can fulfil the same role for sketching as word processors for writing. However, at the moment CAD is still in the “typewriter” era. CAD should advance with intuitive user interfaces supporting hand movements, to better support design (van Dijk, 1995).</td>
</tr>
</tbody>
</table>

Whereas Table 2 shows that designers utilising sketching have better synthesis strategies than using CAD modelling (Bilda and Demirkan, 2003; Stones and Cassidy, 2007), Overall they have no significant differences. Thus, both sketching and CAD modelling can be used during the early design stages.
<table>
<thead>
<tr>
<th>Type 1: Sketching VS. CAD Modelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>When designers use conventional media to generate concepts, their cognitive behaviours are simpler than those when using computer tools (Won, 2001).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type 2: Sketching VS. Digital Sketching</th>
</tr>
</thead>
<tbody>
<tr>
<td>The result shows that the design processes using traditional and digital sketching are not statistically different (Tang et al., 2011).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type 3: TUIs VS. Graphic User Interfaces (GUIs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The main problem of GUIs is that designers cannot design intuitively because they have to interact via a keyboard and mouse. The result reveals that the use of TUIs changes designers’ spatial cognition and improves their problem finding behaviours (Kim and Maher, 2008).</td>
</tr>
</tbody>
</table>

Reported in Table 3 is that mixed media is potentially superior to the solo media outlined above in Table 1 and Table 2. Huang and Lee (2004) in a comparison of two types of mixed media found that using digital sketching with CAD modelling simultaneously, the designer can maintain the same cognitive behaviours in sketching while performing CAD modelling.

<table>
<thead>
<tr>
<th>Table 3: Comparing Solo Design Tools and Mixed Media Design Environments</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Type 1: Sketching VS. Mixed Media VS. CAD Modelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Results show that for designers, using mixed media is superior to using sketching or CAD modelling only. They recommend a VR-based alternative design interface that would improve design representation, hence, enhance cognition and communication among novice designers during the conceptual design phase (Ibrahim and Pour Rahimian, 2011).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type 2: Sketching and CAD Modelling VS. Digital Sketching and CAD Modelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>They develop a new formula for employing digital media in design, which supports 2D sketches and computer models simultaneously. In this scenario, the designer can maintain cognitive behaviours in sketching while constructing computer models (Huang and Lee, 2004).</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Type 3: Haptic CAD Modelling &amp; Digital Sketching VS. Physical Modelling &amp; Sketching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional tools (freehand sketching and mock-up tools) and haptic devices with tangible interfaces were compared in terms of novice designers’ spatial cognition. In brief, the main findings show significant improvement in designers’ spatial cognition within the haptic</td>
</tr>
</tbody>
</table>
devices with tangible interfaces. However, this device is expensive and many designers have no experience in such design media (Rahimian and Ibrahim, 2011).

<table>
<thead>
<tr>
<th>Type 4: Sketching VS. Mixed Media VS. CAD Modelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chen’s studies graphic design when using conventional and digital media simultaneously and found design creativity occurs when shifting media (Chen, 2007).</td>
</tr>
</tbody>
</table>

Why Study Mixed Media Design Environments

The most appropriate two design tools to form a mixed media design environments are sketching and CAD modelling. Romer et al. (2001) surveyed 106 designers for “how often do you use...?” and “what do you use...for?” in terms of sketching, prototyping and CAD modelling. The results identified that traditional sketching is the most popular design tool; however, though not to a significant degree over CAD modelling. In addition, the traditional sketching is used significantly for solution development, supporting design memory and communication; while, CAD modelling is used significantly for solution development, testing solutions, documentation, and supporting communication.

To date there has not been significant efforts made to understand the use of these media in conjunction with each other. Many architects still prefer to use paper and pen or scale models in the early design stage (Gross and Do, 1996). These design tools offer the required flexibility, speed and intuitive interaction to achieve efficient design outcomes. However, the tendency is for designers to transfer their sketching into CAD modelling thus causing an interruption in their design process flow. Therefore, in order to reduce the time spent on the transition from the early design stage to more precise stages, more and more architects start to use digital design software, likes AutoCAD, ArchiCAD and other design programs. Thus, using sketching and CAD modelling together is one of main methods which assists designers work intuitively while digitising.

RESEARCH METHODS FOR EXPLORING DESIGN COGNITION IN MIXED MEDIA DESIGN ENVIRONMENTS

Table 4 documents the range of research methods employed so as to better understand designers’ behaviours whilst utilising these external aids. Protocol analysis has been utilised to understand the difference between novice and expert designers, to study design strategies (Stones and Cassidy, 2007), and to compare traditional and digital sketching (Tang et al., 2011). Protocol Analysis is a methodology which often use the “think aloud” approach to documenting and analysing a designer’s decision making processes, it is an ethnographic approach to capturing and analysing thought processes as they inform the physical actions of the designer. The behaviours and the “spoken” thought processes are then encoded against a
predetermined coding scheme, the protocol analysis coding strings can then be analysed statistically using such methods as an ANOVA to understand the design process as well as evaluate design outcomes (Sachse et al., 2001, Ibrahim and Pour Rahimain, 2011). The literature summarised in Table 4 below supports the application of Protocol Analysis as an appropriate methodology to assist in better understanding the impact that mixed media would have on designers’ behaviours.

Table 4: Types of the Research Methods

<table>
<thead>
<tr>
<th>Method 1: Protocol Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Tang et al., 2011)</td>
</tr>
<tr>
<td>Subjects: novice designers</td>
</tr>
<tr>
<td>Coding scheme: adapted from Gero’s FBS model</td>
</tr>
<tr>
<td>Design media: traditional and digital sketching</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method 2: Combined Protocol Analysis with ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Sachse et al., 2001)</td>
</tr>
<tr>
<td>Subjects: novice designers</td>
</tr>
<tr>
<td>Evaluation criteria: six types of physical operation steps</td>
</tr>
<tr>
<td>Design media: CAD modelling and CAD modelling with sketching</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method 3: Combined Protocol Analysis with Linkograph</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Goldschmidt, 1990)</td>
</tr>
<tr>
<td>Post Protocol Analysis, every pair of design moves in a given sequence of moves is checked for the existence of links, which are then notated in a graph called Linkograph.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method 4: Combined Questionnaire Survey with SPSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Römer et al., 2001)</td>
</tr>
<tr>
<td>200 questionnaires were posted to designers, 106 completed questionnaires were sent back. Then the questionnaire data was analysed by employing descriptive statistics.</td>
</tr>
</tbody>
</table>

A Rationale for Developing Shifting Behaviour Coding Scheme Based on Gero’s FBS Model

Designing is a purposeful action involving thinking, evaluation, and decision making. External tools such as sketching and CAD modelling enhance more detailed problem analysis, solution generation, evaluation, and documentation (Römer et al., 2001, Sachse et al., 1999). Gero (1990) devised a design prototype called Function-Behaviour-Structure
(FBS) model to retrieve design process and information. FBS model consists of six categories: requirements (R), function (F), expected behaviour (Be), structural behaviour (Bs), structure (S), and description (D). The designers switching from one tool to another, in mixed media design environments, has been difficult to code. Therefore, we develop Switch Behaviour Coding Scheme based on Gero’s FBS model to encode designers’ switches from sketching to CAD modelling (SK>CAD) and switches from CAD modelling to sketching (CAD>SK). Interviews with the designers can be used to obtain the triggering factors for every switching action (Table 5).

### Table 5: Shifting Behaviour Coding Scheme

<table>
<thead>
<tr>
<th>Categories</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>(SK&gt;CAD)</td>
<td>Switching action from sketching to CAD modelling</td>
</tr>
<tr>
<td>(CAD&gt;SK)</td>
<td>Switching action from CAD modelling to sketching</td>
</tr>
</tbody>
</table>

Understanding the Design Strategies in Mixed Media Design Environments

Table 6 lists eight design processes or strategies from FBS model: formulation, synthesis, analysis, evaluation, documentation and reformulation (Gero et al., 2011). Through Protocol Analysis by applying the above Shifting Behaviour Coding Scheme, we can have a better understanding about designers’ switching actions in Mixed Media Design Environments and their trigger factors. Also, we can clearly identify which tool enhances problem-finding or problem-solving through Gero’s notions of design strategies using FBS model.

### Table 6: Defining Design Strategies Using FBS Model (Gero et al., 2011)

<table>
<thead>
<tr>
<th>Design strategies</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulation</td>
<td>Formulation which transforms a function or functions into a set of expected behaviours (F&gt;Be).</td>
</tr>
<tr>
<td>Synthesis</td>
<td>Synthesis, where a structure is proposed to fulfil the expected behaviours (Be&gt;S).</td>
</tr>
<tr>
<td>Analysis</td>
<td>An analysis of the structure produces a derived behaviour (S&gt;Bs).</td>
</tr>
</tbody>
</table>
Evaluation | An evaluation process acts between the expected behaviour and the behaviour derived from the structure (Be>Bs and Bs>Be).
---|---
Documentation | Documentation, which produces the design or partial design descriptions (S>D).
Reformulation 1 | Reformulation of the structure (S>S).
Reformulation 2 | Reformulation of the expected behaviour (S>Be).
Reformulation 3 | Reformulation of the function (S>F).

CONCLUSION: FUTURE WORK

The design activity is increasingly being influenced by the introduction of new technologies, invariably these technologies may extend beyond mere support of the design process as we currently know it and may invariably influence the process itself. This influence may be enhancement but it may also limit or constrain design. It is therefore important to have an understanding of the impact of the new technologies on design and to extend this understanding to how and when in the design process would they be most effective. Also having an appreciation of any negative or limiting effect of technologies may have because of the potential to distract from the cognitive processes rather than the support of the cognitive processes of design.

This paper identifies a gap in our understanding of the impact of mixed media design environments that integrate digital technologies i.e. CAD modelling with traditional modes of design i.e. sketching. Our existing understanding would indicate that is the potential to enhance the utilisation of these design media in an integrated approach rather than simply sketching preceding design documentation using CAD. What is proposed by the paper is that through the application of the research methodology of Protocol Analysis that we may gain an appreciation of how these two modes of design environments may be better utilised to support the design process. Though this paper precedes the instigation of the research it does provide an appreciation of how the need and an approach to gain a better understanding of the application of tradition and current technology to the support of the design process. Such understanding is very important for contemporary architectural design education to better teach digital design in architecture schools and to better support architectural students in design studios.
REFERENCES


FINDING SPACE...BETWEEN DESIGN THINKING AND CAD TRAINING

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ABSTRACT

Teaching technological skills and applications through fixed course structures is challenging in that technologies evolve rapidly, learner’s prior knowledge is diverse and issues of judgment and application often fall into the background. In order to keep pace with technological evolution and the diversity of applications, technology teaching, specifically software applications, needs to be nimble, broad and diverse, learner centered and forms an umbrella over a much wider area of a learner’s environment.

This paper will report on the evolution of software technology teaching at the University of Queensland, School of Architecture. Over the past four years the program has evolved from a fixed curriculum embedded in established course structures to become an umbrella program running in parallel. Background research informing this teaching template has been developed from practice surveys, student response surveys, engagement studies and literature research. Though the current incarnation of the program is still evolving, it has triggered questions about didactic teaching and the effectiveness of blended online and face to face environments.

Feedback and reflection on the latest program incarnations has generated some valuable insights and practical advice that can inform future development of blended learning environments, especially when the learning is focused on specific technologies and skills. The intention is to share these insights at the same time our online program will be launched as an open educational resource platform. Conceptually, such open and blended environments offers the potential for greater engagement with our profession, other disciplines and cross institutional collaboration which in turn can lead to more authentic, sustainable and quality resources for learners.

INTRODUCTION
Every year at the University Open Day I am reacquainted with a familiar raft of probing questions from expectant parents and future scholars, anxious to get the inside running on what it takes to be a student of architecture. One question that regularly arises focuses on recommendations for computer hardware and software specifications in preparation for computer aided drawing (CAD). This perceived need to be able to draw with a computer pushes back into the technology curriculums at high school, with many students undertaking many years of CAD training prior to arriving at tertiary education. The resulting challenge for teachers in tertiary design schools is balancing the learning between capable operators and those students with no familiarity at all. In terms of digital tools more broadly we also cannot assume that so called digital natives are fully equipped and adept at mastering digital skills effortlessly.

For the first group of CAD savvy design novices, an element of unlearning is needed whilst for novice CAD users a level of confidence is needed to develop virtuosity with the discipline’s ubiquitous tools. In both cases it takes time for novice designers to develop working knowledge of the complexities of design process before they are able to fold in a complex set of procedures delivered by way of digital tools. It can be argued that the ubiquity of digital tools in the discipline requires design thinking to be recast in light of this new paradigm (Oxman 2006) however what I am concerned with here are the first steps of both design thinking and penetrating the blockage that the CAD interface can create before we unravel and explore latent possibilities at the intersection of digital and design thinking.

I would argue that learning and unlearning starts with manual drawing operations that teaches mastery of simple motor skills overlaid with drawing convention, artistry, judgment of appropriate styles and composition of drawn communication. The issues of finding the pencil tool, the eraser tool, the line tool are blissfully absent in manual drafting and provide cognitive space for early design thinking. Teaching the operation of CAD applications requires a clear focus to ensure that when digital tools are deployed the focus remains on the task at hand and not distracted by an over emphasis on the interface (Johnson 2002) (Norman 1990). In the absence of being able to design the interface, the aim of CAD training should be to develop virtuosity in manipulating the interface to the extent that the interface disappears.

My second point is that the development of such virtuosity requires space to avoid confusing the development of formative procedural design knowledge. We need to recognize that learners come with varying skills and cognitive constraints that evolve differently over the course of their design education. Unlike other companion knowledge such as sustainability, construction, materials, history and theory; it can be argued that CAD mastery in formative design education cannot be deemed intrinsic to design thinking when there are simpler tools and processes available to develop and communicate design intentions. One could also argue that given that most software applications are quite universal there are many opportunities to
acquire what is ostensibly fairly simplistic procedural knowledge. Training opportunities exist in technical colleges, software providers’ tutorials and third party on line training. In already constrained curricula, education designers exercising academic triage might easily argue that such training can exist elsewhere.

It would be foolish though to assert that digital tools currently available are not effective in developing and communicating design ideas particularly when problems increase in complexity throughout a designer’s education. There is an imperative to learn digital skills when the profession demands them as a prerequisite for any early career employment. In this case, the push from the profession results in a pull in demand to develop these skills from students. In recognizing that CAD training is essential but at the same time challenging to formative design thinking, the argument here is not if we should teach CAD but what space we provide for it in the curriculum. Flexibility is needed to accommodate different learning styles and prior knowledge as well as accommodating the continual flux of software application development, which will evolve over a designer’s education.

THE EVOLUTION OF A LEARNING FRAMEWORK

In the broad scope of a designer’s education in relation to the deployment of digital tools, one could divide the pedagogical focus as being the development of core skills in the first instance and the application of skills in the second. In developing a learning framework for the teaching of digital skills I am drawing this distinction quite clearly between what we may call training and application. Application of skills is more intrinsic to a learner’s maturing design process; it can be distinct and multifarious. The aim is to create a distinct training profile to create space for design thinking to emerge and later merge with the mastery of new tools. For the purposes of this paper the learning framework is firmly focused on developing effective training that provides space and flexibility.

In the Australian context at least, there is a reasonably narrow set of dominant software applications being used by the profession. Unpublished surveys of the local profession’s use of CAD undertaken by the University of Queensland (UQ) School of Architecture in 2007 showed that the local profession was split between 4 main packages with Autodesk’s AutoCAD and Revit being utilized by 46% of practices, Graphisoft’s Archicad at 26%, Google SketchUp at 16% and “others” contending for the remaining 12%. At a basic level, the procedural knowledge of these applications is fixed and universal. For novice users there is a narrow band of operation which for CAD applications at least, seem quite complex. Though there are some conceptual frameworks to explain such as the operation of the
workspace, workflow and the spatial and geometric framework of applications, most teaching most CAD applications is a process of instructional training.

The systematic design of instruction has its roots in the training of US military personnel as an efficient and effective way of disseminating technical knowhow (Reiser 2001). A comprehensive and systematic approach to instructional technical knowhow (Reiser 2001). A comprehensive and systematic approach to instructional design was devised and revised by Dick, Carey and Carey (2009) forms the touchstone of instructional learning frameworks. A simplified, cyclical model used extensively termed the ADDIE framework; Analyze, Design, Develop, Implement and Evaluate (Power 2008) has been used in this instance to devise and revise a CAD training program.

Analysis of course based CAD training

Work began on recalibrating the UQ School of Architecture CAD teaching program in 2007. Surveys of the local profession were completed to assess CAD usage both in terms of software package usage as well as expectations of CAD skill level of people entering the profession. The survey was aimed at personnel in practice responsible for technical standards or maintaining IT systems. On balance we found practices felt it was either essential or desirable for potential employees to have CAD skills (96% of responses) however most responded that only familiarity with the software was necessary (74% of responses) rather than expert users (17% or responses). In open ended questions two other themes emerged; firstly new employee’s required training in the specific way generic software packages are deployed in the practice. In some cases employees who were too expert in their use of a CAD package had to undergo an element of unlearning to better integrate with practice methodology. Secondly there was an emphasis that traditional drawing and documentation skills should not be sacrificed to teach CAD. Similar conclusions are reported in other published studies which have been based on more comprehensive surveys of architectural and engineering practices using CAD (McLaren 2008). The argument that space in the curriculum should be defended for novice designers to develop drawing artistry by way of a traditional pencil and board style course is persuasive.

In parallel to surveys of the profession we surveyed the prior experience of students, their engagement with courses and how their skills were developed when they entered the profession. Over three years of surveys of first year students we found that on average almost a third of the students came to the course with a good command of CAD, particularly in the packages AutoCad and or Revit. At the other end, students re-entering their education after spending a gap year in the profession reported that the packages they used closely mirrored the percentage found in the practice survey. It was also found that almost 70% were provided
some form of training in their job, mainly through mentoring by an experienced user in the office.

Prior to 2008, most structured CAD teaching at UQ School of Architecture was completed through distinct modules embedded within design courses. The argument for this model is that CAD training in parallel with design led to a greater synthesis of design thinking alongside the development of CAD skill. In practice what tended to happen was that engagement with CAD courses started out at around 70% but quickly declined to around 25-30%. Being tied to a course structure also constrained scheduling options which often led to erratic timetabling and difficulties with students switching focus between design and CAD training. In some observed cases there were instances where the parallel training had deleterious effects when enthusiastic but novice CAD users comprised their design work by way of the ham fisted manner their new tools were being utilized.

Our observations yielded some key points:

- Students were not engaged because they did not have the time
- Students were not engaged because they already had background knowledge
- Learning outcomes diminished even for those students that persisted with the course
- Funding for staff became inefficient as class attendance dwindled.

At the core of these problems was that there simply was not enough time or rather the training was not happening at the right time for students. Given the constraints of the current timetable under the embedded model we advocated for a training structure that was detached from any course structure, ostensibly creating an autonomous training program running to the side, in parallel to the normal curriculum. This proposal was developed and accepted by the school with funds normally attached to course structures pooled into a single budget line. The parallel training model sought to provide adequate mental space outside normal course timetabling constraints to allow students to tailor their learning to suit their circumstances.

A MODEL FOR AN UMBRELLA CAD TRAINING PROGRAM

In 2010 a CAD training program was trialed. Instructional programs were developed around the dominant software applications determined by practice and student surveys. Courses were offered at no cost to students and advertised to all program participants at undergraduate and master’s level. Two types of program were offered, one as a series of weekly modules through semester and the other as a compressed three day course over semester breaks.
Students would sign up to courses as they were advertised on a first come first served basis. Additional courses were offered once advertised courses were filled until the budget allocations were exhausted. Because the program was not aligned to any course, students were offered statements of participation on completion which could be traded as evidence of familiarity with the software when applying for employment. In addition a series of competency tests were offered that enabled students to test their skills, both for those who completed the course as well as those with prior knowledge. These were voluntary and demand driven and on successful completion were issued a statement of competence framed around the learning objectives.

The program operated from May 2010 to February 2011. In that time 10 compressed holiday courses and 4 semester courses were completed. The number and modality of the programs was driven by student demand. There was an overwhelming demand for out of semester compressed courses. These courses had very good attendance and completion rates which on average ranged between 85-90% with two of the 10 courses dropping to 70% and 50% completion. By comparison the weekly courses offered during semester had attendance and completion rates between 70% at best and 40% at worst. Over the duration of the trial we achieved 270 completions compared to an average of 90 completions per year when the courses were embedded in the curriculum. These completion rates were achieved with comparative staff costs. In terms of effectiveness gauged by raw participant numbers the flexible delivery CAD program proved to be cost effective.

Evaluation of the first umbrella

Participants were surveyed at the completion of each course. On balance the feedback was positive but not persuasive. Satisfaction ratings ranged between very satisfied at 60% and satisfied at 40%. In addition to likert scales we asked a three open ended questions. When asked for general comments on the courses, the dominant three responses in order were that the timing of the course out of semester and away from course commitments worked well, that the run time for the compressed course was too short and finally that the compressed course was very effective in teaching core skills. One unexpected outcome from the second open ended question which asked “do you have any suggestions for future courses” overwhelming returned requests for more drawing and sketching classes alongside other analogue skills such as water colour and life drawing classes.

Evaluation of the training program was on balance positive; cost effectiveness significantly improved, participation rates improved and student satisfaction improved. Participation across the school was also diverse with balanced participation through all levels of the undergraduate and master’s programs. Whilst on the surface things seemed to be going well
we noticed some other trends that indicated that the effectiveness of the courses was not as strong as surveys indicated. We found that towards the latter part of the trial program many students were repeating programs they had completed six months earlier. Also evidence of improved aptitude in coursework was difficult to qualify and only half the students sitting competency tests were passing. It seemed that demand and cost effectiveness were triumphant but in terms of CAD competency and translation into practice we were still experiencing problems.

REDESIGNING THE MODEL

Our assessment of the first trial concluded that:

- Flexible timing of CAD training was preferred by students
- Students reported that they found the timing outside course commitments led to better learning outcomes
- A flexible demand driven training program was cost effective
- Demand for CAD training is stimulated by forces beyond being part of a set curriculum
- The openness of the program allowed students at any point in their education to top up their skills
- Evidence of the consolidation and application of learned skills was not persuasive
- Low pass rates on competency test results indicated students’ understanding of CAD functionality was weak
- Many students felt the timeframe of courses was too short

When assessing the instructional content we felt that a large portion of the class time was spent listening to the instructor and copying procedures demonstrated by them. The pace of classes did not allow much time for questions or discussion however broader questions were few as students only had basic understanding and lacked the context and experience for more discursive questioning. Though there was more space to undertake courses there was still not enough space within the course itself. One could draw the conclusion that in a dedicated CAD course such space could be made however in our specific context we were dealing with a diversity of prior knowledge and a highly constrained curriculum that did not have space for a dedicated CAD course.

Refocusing on the key aim of providing adequate mental space for training as well as consolidation of skills it seemed logical to make the purely didactic instruction available at any time for students by migrating the content on line. The logic being that assuming the instruction was well designed and the delivery technology robust, students could complete the work at their own pace and revisit forgotten components. At the same time we felt we
needed to compensate what would be lost from face time instruction by way of discussion and reconciliation of troublesome concepts or procedures. Rather than dedicate face time instruction to lower order procedures, we redesigned the face time into a series of workshops that provided opportunities to interact with instructors and peers from a level of prior knowledge and at the same time providing space to practice and consolidate skills. Workshops were designed as short sessions with a maximum duration of three hours. They assumed prior knowledge and focused on higher order skills, practical tips and integration between software applications.

Consequences and opportunities derived from implementation

Instructional content was recalibrated and storyboarded for an on line environment. Content was created by way of low cost video screen capture software and uploaded onto You-Tube as it was a free, stable and accessible platform. Rights and branding were executed by way of creative common licensing and branded title banners for each video. Length limitations both prescribed by You-Tube (15 minute maximum) and the nature of instructional format dictated the story boarding to a significant degree. Most videos were designed to run for 5-7 minutes and focused on one or two specific concepts or operations. Accesses to videos were channeled via the institution’s e-learning platform, in this instance Blackboard™.

When constructing the blended environment we were concerned that it would be difficult to determine whether the video content was useful or valuable to learning. Sure we can track evidence through testing and qualitative evaluation of coursework but it was difficult to know specifically in the video content what needed revision. In part the answer emerged once we progressively uploaded content on You-Tube when we discovered the growing number of external hits on our You-Tube channel generated through organic internet traffic. Considering the implications of external traffic we re-conceptualized the educational framework of the program, so that we could gauge the value of our instructional content as well as opening the program for wider consumption.

Migration to open access

Delivery of instructional content via asynchronous exchange and communication technology over distance is nothing new. What is emerging is the ease and sophistication of on line content delivery thanks to greater levels of broadband internet availability and open-source content creation and management tools. The consequences of such access to technology are
the emergence of deeper philosophical approaches to open access education and open educational resources. There are many high quality engaging open access resources available freely on the web. Some content is explicitly educational for example California State University’s MERLOT portal, MIT’s OpenCourseWare platform, the Kahn Academy and open ideas forums such as the TED.com series. In our case, the ubiquity of the software applications in our discipline means that the content we provide is relevant to a very wide audience, but unlike similar on line video tuition offered by software providers and third parties, the instruction is not overly generic and is tailored to a certain audience, in this case architectural students.

Though the site is still in development and hiding on the web we have logged over 26,000 upload views in 4 months without any effort to publicize though we have some way to go to compete with Khan Academy’s 64.6 million downloads and counting. Conceptually we began to think differently about the reach, authenticity, quality and sustainability of our training program. What if perhaps:

- We could engage with the profession and alumni to comment on our training program to enhance the authenticity and quality of the instruction?
- We could engage with the profession to create content that provided insights into their procedural knowledge?
- We could provide cost effective top up training to the profession in exchange for sponsorship to sustain and expand the program?
- We could engage with other schools and institutions to collaborate on content creation to make it more cost effective and dynamic?
- We could engage with allied disciplines to find common digital tools to smooth the data sharing process intrinsic to BIM models of procurement?
- We could engage with prospective students coming from secondary education or persons migrating between professions considering a career in our discipline?
- We could provide resources to people where access to content is difficult but access to the internet is not?

At the time of writing these questions are still very fresh. It has spawned another ADDIE cycle that in an open source on line environment effectively means your site is in constant beta phase (Lane 2010). This project is still a work in progress and at the time of writing we cannot provide definitive assessments of the program, other than to share its development with others to follow on line.

SUMMARY
Though the subject of this paper remains rooted in pragmatic pedagogical discourse of specialty instructional teaching within design education, the background argument remains that we need to be careful that the core aims of design teaching are focused on design and that technological tools should not interfere with or overwhelm this central focus. We need to be mindful of the teaching context, the push and pull of demands of the profession, the expectations and skills of novice learners, delivering cost effectiveness and leveraging the opportunities of blended and flexible delivery of technical content. Finally we should embrace a continual and systematic approach to the design and evaluation of instructional content which could expand though broader and more open sharing of resources through an open scholarship framework.

REFERENCES


BEYOND THE WALLS OF ACADEMIA: ARCHITECTURAL INTERNSHIPS

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ABSTRACT

A full architectural education typically involves five years of formal education and two years of practice experience under the supervision of a registered architect. In many architecture courses some of this period of internship can be taken either as a ‘year out’ between years of study, or during enrolment as credited study; work place learning or work integrated learning. This period of learning can be characterised as an internship in which the student, as an adult learner, is supervised by their employer. This is a highly authentic learning environment, but one in which the learner is both student and employee, and the architect is both teacher and employer; at times conflicting roles. While the educational advantages of such authentic practice experience are well recognised, there are also concerns about the quality and variability of such experiences. This paper reviews the current state of practice, with respect to architectural internships, and analyses such practice using Laurillard’s ‘conversational framework’ (2002). The framework highlights the interactions and affordances between teacher and student in the form of concepts, adaptations, reflections, actions and feedback. A review of common practice in architectural work place learning, internships in other fields of education, and focused research at the author’s own university, are discussed, then analysed for ‘affordances’ of learning. Such analysis shows both the potential of work place learning to offer a unique environment for learning, and the need to organise and construct such experiences in ways that facilitates learning.

Keywords: Education, Internship, Architecture, Adult learning.

INTRODUCTION

In Australia, becoming an architect requires three formal steps (AACA, 2008):

1. A formal university education in an accredited (by the Architects Accreditation Council of Australia: AACA) and recognised (by the Royal Australian Institute of Architects) university program of five years full-time (normally structured as 3 or 4 years Undergraduate and 1 or 2 years Postgraduate study).
2. A two year period of workplace training (internship) equivalent to ‘3000 hours of logged architectural experience at the required levels of competence’, (up to half of which may, and often does, occur before graduation from university study).
3. An architectural practice examination, ‘to ensure that the persons applying... have an adequate knowledge and understanding of the practice of architecture in Australia and a capacity to exercise professional skills’.

This arrangement sees three significant stakeholders involved in, and influencing, architectural education (Webster, 1985):

- State Governments who establish Boards of Architects responsible for registering architects as fit for practice, and administering registration examinations. The Boards oversee the Architects Accreditation Council of Australia (AACA) who is responsible for accrediting formal courses/programs of architecture within universities.
- The professional industry body, the Royal Australian Institute of Architects (RAIA) [since 2008 using the trading name of the Australian Institute of Architects (AIA)], who have their own Education Committee and an ‘Education Policy’ (RAIA, 2002) that is used by the AACA in assessing university courses for accreditation.
- The universities themselves, responsible for curriculum development and delivery, within the guidelines and accreditation procedures of the RAIA and AACA.

This complex arrangement is fraught with all of the expected conflict between academia and industry and the ongoing differing visions of the role of architectural education (Crinson and Lubbock, 1994). The industry and professions have a vocational view and see the architecture course as ‘training for operation in the profession’ (Brine, 1991, p.36), while many academics still see their role as ‘developing individual star architects as unique and gifted designers’ (Nicol and Pilling, 2000, p.7). The same conflicts of values and beliefs are also present during the internship period. This is especially so in situations where one of the two years of internship occurs during the formal university program (structured as workplace learning) typically on the year-out between the first three year of undergraduate study and the last two.

**INTERNSHIP AND COMPETENCY**

The purpose of the two year (3000 hours) internship is to provide candidates for registration with a learning environment in which they can develop a range of competencies, not yet developed at university, as would be expected of a registered architect. During their internship, learners must record their activities in a logbook against a number of competency areas. The logbook lists 149 ‘performance criteria’ against which the learner must achieve certain determined standards of experience, as recorded by the learner, and as certified by the learner’s supervisor (the employing architect). The aim is for the learner to achieve competence in all areas of architectural practice, such that they would be ‘competent in the
design, documentation and management of an architectural project which could be undertaken by an independent practitioner’ (AACA, 2008).

It is important here to note that the purpose of the Board of Architects (and the AACA operating on their behalf) is primarily to protect the public against practitioners claiming to be an “architect” but who do not have the necessary skills to provide the service to a safe standard; ‘ensuring the standards of competence required reflect consumer expectations’ (AACA, 2008). As in all industrialised nations, this is achieved through a system of registration of practitioners who have completed formal education, an appropriate period of internship, and a final architectural practice examination. This sets one of the agendas of the internship program. It is there to provide learners with practical experience to become competent in design, documentation and management. This is in essence learning about doing architecture, as opposed to the formal period of education at university which can be characterised as learning about architecture; a distinction made by Schon (1984, p. 4). This distinction between different ways of learning and being was indeed made by Aristotle who differentiated between ‘knowledge about things’ and ‘a state of capacity to make’ as in the ability to perform ‘an activity out of which is created a durable good… this might include an architect designing…’ (Sides and Mrvica, 2007, p. 2). The period of internship provides the environment in which a student may develop this state of capacity to make.

This period of practical internship, following on from a period of formal education, is a model that Gonczi (in Foley 2004, p. 33) proposes as providing a good balance for the provision of professional education; for the provision of architectural education. Such workplace learning provides ‘unique opportunities in which students explore their potential and integrate knowledge and skills acquired in higher education into a new set of employable skills and personal qualities’ (Murakami, Murray, Sims and Chedzey, 2009, p. 14). As we will see, this ‘integration’ of knowledge from academia to the workplace is in many ways a missing link in the internship process.

INTERNSHIP AND OTHER AGENDAS

While there are obvious activities of learning in the workplace with pre-established knowledge structures (such as the AACA competency standards), there are also activities of informal learning with situational knowledge structures (Livingston in Sawchuk, 2008, p. 5-6); ‘the workplace is suffused with informal and incidental learning’ (Forrester and McTighe, 2004, p. 219). The full educational process then starts with formal education of a university course, then moves to informal learing, where interns ‘consciously try to learn from their experience’ (Foley, 2004, p. 4), but which also includes aspects of incidental learning. As well as the authority-directed learning there are aspects of mediated learning, self-directed
learning, and unintended learning; each with varying degrees of learner control (Knowles, Holton, and Swanson, 2005, p. 176). All however are crucially operating within the context of the particular workplace in question, with all of its beliefs, values and cultural habits (Knowles, Holton, and Swanson, 2005, p. 4). These beliefs and values bring with them both good and bad habits, some even dangerous and unhealthy (Stevens 1998). In essence, interns are learning not only to become competent in design, documentation and management, but also learning the cultural norms of the profession as interpreted by their employer.

The profession has its own agenda and systems of control, which it exercises on a National level through its input to policy development (by lobbying the Board of Architects and the AACA), and on a local level though employing interns in architectural practices. Gary Stevens (1998) critiques the agenda of the architectural profession as being about maintaining its privileged position of controlling who gains access to architectural education and what form that education takes, where it occurs, and who is in control; in short who becomes an architect and who does not. Because of the need to ‘assure competence, professions also claim exclusive jurisdiction over this knowledge and claim the right to restrict entry to the field’ (Quinn, 2003, p. 42). The distinct advantages, to the profession, of an internship are that they can control the numbers of new practitioners, they define what is to be learned, and they control the context of learning, both cognitive and social, and thereby control the development of social capital and the social status of architects (Stevens, 1998, p. 168-179). [While Stevens’ views of the profession may seem extreme, he provides compelling scholarly research and evidence to substantiate his claims]. Milliner (2000, p. 223) notes that the ability to control and ‘reproduce its collective norms’ is in fact a defining character of any self-regulating profession, and we see other regulated professions such as medicine and law using similar systems of internship to control and regulate entry to their ranks.

**INTERSHIPS, EMPLOYMENT AND REGULATION**

The profession sees the internship as a period of control and socialisation. It also clearly sees its interns as employees; cheap employees (Stevens 1998). When the first school of architecture in the United Kingdom, the Architectural Association, was established in 1847, it was founded by disgruntled architectural assistants seeking an alternative to the abusive system of pupilage (Stevens, 1998, p. 176). Interestingly 150 years later the same complaints of abuse are not uncommon among interns (Beach, 2002; Kroloff, 1999; Quinn, 2003). In the words of the profession when surveyed about their interns, ‘they don’t cost much, they don’t mind lots of overtime, and they don’t have family responsibilities’ (Kroloff, 1999, p. 13). ‘Firms expect a return on the money they invest in their employees’ (Cascio, in Knowles, Holton, and Swanson, 2005, p. 166).
In stark contrast, the interns cite issues of poor mentoring, low pay, and lack of appropriate diverse experience. Indeed student groups have asked the question ‘we’d just like to have a truly educational, professional experience - why isn’t it simply expected that everyone will gather regularly to monitor and improve our training?’ (Beach, 2002, p. 13). One of the major concerns of interns is the lack of appropriate experience across all of the competency areas, with many interns experiencing ‘mainly menial, unchallenging work’ (Quinn, 2003, p. 41). While the intent of the internship is for the intern to be exposed to the full range of architectural activities under the supervision of an experienced professional, it is fundamentally unstructured (Quinn, 2003, p. 43), resulting in diverse experience and diverse quality of mentoring/supervision. While the employer/mentor ‘is there to help [the intern] get as many kinds of experiences possible’ (Marjanovic, Ray, and Tankard, 2005, p. 62) the economic realities of architectural practice are such that many interns spend most of their time doing repetitive tasks and drafting; tasks that are most financially profitable to the employer.

In Australia, as in most industrialised nations, the internship is not regulated nor are the supervisors accredited; there is no system of program evaluation or appraisal (all features that should be expected of such an important educational program?). It is clear that some offices do not adhere to the recommendations of the various policy documents or the competency categories of the logbook (Marjanovic, Ray, and Tankard, 2005, p. 65). The process ‘assumes rather than assures the competence of employers’ to provide appropriate educational experiences and guidance (Quinn, 2003, p. 46). While there is no substantial research in Australia, research in the United States of America shows that such assumptions are dangerous: 41% of interns were forced to change jobs to gain more diverse experience, and one third felt they were not getting adequate mentoring.

With no external guidance or assistance in running an internship, the employer/supervisor will likely replicate practice she/he experienced as an intern, since the workplace ‘serves as a primary site of socialization’ into workplace cultures... [with] hidden and unintentional outcomes’ (Sides and Mrvica, 2007, p. 12). ‘Business practices, both good and bad, can become entrenched in the culture of the firm’ (Kim, 2006, p. 88). These practices and activities are ‘shaped by its rules and cultural norms, division of labour and power...’ (Fenwick and Tennant, in Foley, 2004, p. 63), and are likely to include ‘procedures that are unjust or dysfunctional’ (p. 65). Research at the author’s own university, where work place learning is linked to aspects of the academic program, supports the above discussion, as student feedback highlights issues of excessive work expectations, inconsistency of experience, irrelevance and disconnection from a culture of learning.

ANALYSIS
In critiquing the various activities and participants of the architectural internship we can use the conversational framework of Laurillard (2002) as a structural tool to understand the potential learning opportunities and affordances. Laurillard (2008) has already proposed that the conversational framework can be used to both design and test learning environments and activities for optimal learning potential. The activities or interactions of a learning situation, such as an internship, can be mapped against the interactions of the framework. Ideally, all the interactions should be present to achieve a successful and ‘complete learning process’ (Laurillard, 2008, p. 142). This tool has previously been used to successfully critique aspects of the architectural design studio (Crowther, 2007; Crowther 2010).

Laurillard proposes a model with twelve interactions between students, teachers, environments and activities, wherein each of these interactions offers an opportunity or affordance for learning, and together form a comprehensive framework for a holistic learning environment (Figure 1). Comparison of the typical interactions of an architectural internship with these twelve interactions in the model shows that many are not explicit or not present at all. Not usurpingly, the interactions of an internship are essentially those of a workplace, reflecting the employment relationship (interactions 6, 7, 8, and 9, highlighted in the lower half of Figure 1). As previously discussed, the commercial pressures of employment and the limited skills of the intern result in most, if not exclusive, focus being on student actions (work) within the constructed environment (the workplace).

While there is undoubtedly also an exchange of concepts in the workplace, evidence suggest that this is certainly not at the cognitive or conceptual level experienced in more traditional learning environments. The exchange of concepts, as a structured part of a learning experience, still occurs primarily within academia (interactions 1, 2, 3, and 4, highlighted in the upper half of Figure 1). It is also evident from the literature and from student feedback at the author’s own university that students are not experiencing appropriate levels of reflection and adaptation (interactions 5, 10, 11, and 12) in the workplace.
At the author’s own university a modified relationship has been trialled between academia and the workplace. Students may take time off from academic studies to work under the supervision of a registered architect, ideally as a paid employee, such that this time may count towards the requirements of registration. The experience in the workplace has also been structured as a series of units (subjects) that are given academic credit. In these units, students are required, through a series of assessable assignments, to provide reflections on their experiences in the workplace. This is not simply academic credit for working, but credit for a structured and thoughtful exposition of the experience of the workplace and the relationship between concept and action; between theory and practice (interactions 11 and 12 in Figure 1).

This may be one small trial step towards some form of regulation, accreditation and quality control. It is however only a one way interaction, academia providing direction to the student and then re-describing conceptions (interaction 3) to assist the student’s learning. At this point there is no formal relationship with the employer, and no requirement or formal procedure for the workplace to respond through adaptation of the environment or adaptation of the workplace tasks (interactions 5 and 10).

Figure 1: ‘Conversational Framework’ (Laurillard, 2002, p. 87) modified to highlight potential model of the architectural internship

PROPOSED MODEL
An ideal internship may see a fully developed model in which the intern has a more significant aspect of control over the learning environment and in which academia and the workplace are integrated to better facilitate the full range of interactions in the conversational framework. An ideal internship may see all twelve of the interactions being not only present, but being explicit and identifiable to the intern. There is no doubt about the tremendous educational potential of learning in the workplace and the advantages of such experiential learning are many (Sweitzer and King, 2009, p. 10-13). David Kolb however notes the ‘need for experience to be organized and processed in some way to facilitate learning’ (in Sweitzer and King, 2009, p. 10). The above analysis starts to suggest a model for such organisation and processing which can all too often be missing from an architecture internship.

ADULT LEARNING

LaCost and Pounder (1987) propose an alternative model for internship, one with a conceptual foundation based on adult learning theory. Crucially in contrast to current architecture internship practice, they promote learner involvement in designing a program to integrate formal education with field experience or internship. Such learner involvement, and even control, has been widely championed by many writers and researchers, such as Knowles, Holton, and Swanson in their model of andragogy (2005). Issues of control in the workplace are always likely to cause conflict. The workplace, as a context of employment, is hierarchical with the employer in control. In contrast, the workplace, as an adult learning context, would benefit from the learner having control (Knowles, Holton, and Swanson, 2005). When the learning activity is also the employment activity it can be expected that there may be conflict around issues of power and control (Altman, 2008).

Yoshimoto, Inenaga and Yamada (2007, p. 94) highlight that good practice in workplace learning can be understood using aspects of both theories/models of pedagogy and andragogy. If we analyse the practice of architectural internship with Knowles’ model of Andragogy (Knowles, Holton, and Swanson, 2005, p. 64-69), we see that there are problems of control and motivation. In particular, motivation may be severely undermined by employer-employee relationships and the lack of access to a diversity of learning opportunities; ‘high levels of interest are necessary to trigger and maintain a strong intrinsic motivation for learning’ (Bye, Pushkar and Conway, 2007, p. 145). Such intrinsic motivation is vital to adult learning as ‘engagement with an intrinsic goal, such as learning for the sake of self-development, actually promotes subjective well-being’ (Deci and Ryan, in Bye, Pushkar and Conway, 2007, p. 146).
Ideally, ‘best adult education practices allow maximum individual control’ (Knowles, Holton, and Swanson, 2005, p. 172); a climate conducive to learning (p. 118-122). Ideally, mentoring must be based on ‘encouragement, constructive comments, openness, mutual trust, respect and willingness to learn and share’ (Misko, 2008, p. 25). Ideally, the educational practice of architectural internship needs to be regulated and accredited (by an external organisation); perhaps establishing ‘teaching firms’ like teaching hospitals (Quinn, 2003, p. 48).

CONCLUSION

It seems that while in principle an internship should provide an excellent adult learning environment, in the field of architecture there are problems of control, motivation, access to experience, mentoring, program evaluation, and general lack of quality control or academic integration. In a field controlled by a professional body of employers, who have significant impact on educational practices in the university, let alone in their own offices, there are a lot of cultural norms to overcome. A more successful internship would see all stakeholders participating in the design of the program, the development of cognitive and cultural goals, and the monitoring, or even licensing, of the learning environment.

REFERENCES


Webster, J. (1985). If architectural education is the answer what are the questions? *Architecture Australia*, 74(5), 33-35.

TEACHING IN PRACTICE: WORK INTEGRATED DESIGN LEARNING AND PRACTICE READINESS FOR ARCHITECTURE STUDENTS

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ABSTRACT

This literature review describes the theoretical basis for developing a pedagogical model of higher education/industry engagement for the built environment and related design disciplines, with a focus on architecture. In particular, attention is given to the conceptualisation informing the development of such a model as a form of work integrated learning (WIL). In the discussion, the use and development of WIL in architecture will be placed in the historical context of Cooperative Education as a whole. The objective of the paper is to present ideas about the way in which design education relocated to practice might better prepare students for professional life.

Aiming to capitalize on the workplace as a location for authentic learning, the paper will propose a form of WIL that will be termed “Teaching in Practice” (TiP). A prime aim of such a model is to bridge the growing gap between academia and the profession by enabling students to learn design from practitioners within a practice environment. The paper will argue that TiP allows practitioners to have a direct influence on design education, and thus establishes connections between academia and the professions that ensure built environment education remains relevant to industry needs.

Keywords: Collaborative Learning, Cooperative Education, Teaching, Practice

1. Introduction:

Historically, students of the built environment disciplines have been educated in the workplace. However, over the last century academia has come to dominate professional education. This is particularly the case in Australia where academic architectural education does not generally involve an integrated period of internship. Thus, in Australia, the professions now play little part in teaching practice knowledge, and students have little exposure to professional practice. Not only do students report this as a source of frustration but this problem also has serious consequences for employers, for while many graduates are inadequately prepared for practice many practices are just as often inadequately prepared for graduates. In architectural education discourse in Australia there has been growing concern about student’s restricted exposure to professional practice knowledge. Savage suggests that learning practice knowledge “requires immersion in the authentic, complex problems
which practice presents (2005, p. 9). Similarly, Recommendation 07 (of 17) of the 2008 ALTC discipline scoping study Understanding Architectural Education in Australasia (Ostwald and Williams 2008, p. 38) suggests “maintaining an appropriate level of current industry knowledge in an architectural program is a particular challenge in the present climate in tertiary education,” requiring that “alternative “academic-practitioner” employment models should be investigated for the architecture discipline.” This paper will present ideas about how the growing gap between practice and academia might be bridged to better prepare students for professional life, and posits a “Teaching in Practice” (TiP) model as an alternative to the “academic-practitioner.”

The academic practitioner model commonly uses practitioners to teach in academia either in the lecture theatre, classroom or studio. Teaching in Practice may be understood as variation on the academic practitioner model in that it also utilises practitioners, rather than academics, to teach. However, TiP allows practitioners to teach not in academia but rather in the context of the practitioner’s own work-place. Thus, TiP can be understood as a form of cooperative education (also known as work-integrated Learning (WIL) or practicum) in that it relocates student learning from academia into practice. The TiP model fulfils two primary aims; the first is to provide students with practice experience before completing university, and the second is to forge stronger links between academia and professional practice by facilitating two-way knowledge transfer between the two; thus informing both pedagogy and practice. While the aims of TiP echo those of more traditional cooperative education models, the structure of the model departs from these other models. Whereas traditional cooperative learning consists of a semester long or yearlong “sandwich” placement of students in industry, which requires students to be involved in everyday “work” activities, TiP differs in that the students are merely hosted in the work-place for one day per week of one semester.

In order to illustrate how a design education relocated to practice via TiP might better prepare students for professional life, we will now locate the development of WIL in architectural education within the historical context of cooperative education as a whole.

2. The Development and Benefits Cooperative Learning

Cooperative education has evolved over one hundred years to take on many forms across a wide variety of disciplines. Cates and Jones (1999) define cooperative education as a structured educational strategy that progressively integrates academic study with learning through productive work experiences in a field related to a student's academic or career goals. Thus, it is a form of experiential learning that is not an add-on to the curriculum, but an integral part of the educational process. Cooperative education has also been described as a collaborative enterprise in which students, employers and higher-education-providers work together to produce work-ready graduates with practical skills, complementary to their theoretical academic learning, that make them of almost immediate value to employers (Groenewald 2004).

The particular name given to a system of cooperative education often reflects its physical location, its duration and when the placement takes place in relation to academic study. Thus, in the UK it is most
commonly manifested in ‘sandwich’ programs (which includes most architecture courses), and in the USA it takes the form of ‘co-op’ work placements spaced evenly throughout the degree, or capstone internships added to the end of a degree. More recently, a broader term used to describe the model is work-integrated learning (WIL) (Franks & Blomqvist, 2004), a term reflecting that a key feature of cooperative education should be that learning from each ‘site’ is integrated so that structured two-way knowledge exchange occurs between academia and industry. So, for example, as Colls and Eames have explained (Coll and Eames 2007), students studying at university take knowledge, or a different culture or way of thinking, learnt from academic studies or research and use this to inform meaningful work with an employer. And, vice-versa, a student’s academic studies are informed by new knowledge from the workplace.

The framework in cooperative education for integrated knowledge exchange between industry and academia has been said to be reducible to four core dimensions (Groenewald 2003, p. 51): “(a) the integrated curriculum, (b) learning derived from work experience, (c) cultivation of a support-base and (d) the logistical organisation and co-ordination of the learning experience.” On the second dimension – the learning outcomes that should be derived from cooperative education to ensure that graduates are ready for the workplace, Martin and Hughes (2009, p. 20) have listed the six most important non-technical competencies identified in the literature as:

1. The ability and willingness to learn;
2. The ability to prioritise tasks and organise effectively;
3. The ability to take responsibility and make decisions;
4. The ability to solve problems;
5. The ability to communicate interpersonally;
6. The ability to work as a team.

In addition, they list nine key competencies identified by students that WIL should focus on developing (Martin and Hughes 2009, p. 38):

1. Communication Skills;
2. Self Confidence;
3. Customer Relationship Management;
4. Enthusiastic Participation;
5. Industry & Business Knowledge;
6. Self Sufficiency;
7. Personal Organisation;
8. Professional Networks;
9. Professional Ethics.
To these lists, Turner and Langworthy (2002) add the following “employability skills,” personal values (e.g., loyalty, commitment, honesty), initiative and enterprise skills, self awareness, life-long learning skills, and technology adaptation skills. In addition to learning outcomes, Martin and Hughes list the following ‘opportunities’ as the benefits available to students from cooperative education (2009, p. 31):

- gain knowledge and understanding of the organisational and operational aspects of an organisation or group of individuals;
- integrate and apply knowledge, theory, and understanding from academic courses to other life experiences;
- experience contacts with professional workers on the job;
- discover strengths which may be developed and weaknesses which can be improved; develop the following skills and techniques, which are common practice within an organisation: communication skills, motivation of others, marketing skills, and related organisational skills;
- analyse the organisation or group of individuals;
- identify, plan, implement, and evaluate practices that benefit the organisation;
- formulate goals and measurable objectives to be accomplished during the work place experience;
- gain an appreciation of some of the organisations environmental factors (physical, economic, social, and technological).

As reported in Turner and Langworthy, studies have identified the benefits to employers of being involved in Cooperative Education programs as including:

1. Reduced graduate recruitment costs;
2. Opportunity to screen potential employees;
3. Low employee turnover;
4. Opportunity to use students to take over tasks that free employees to focus on more advances tasks;
5. Innovative questioning approaches that students bring to established processes;
6. Students returning to campus acting as goodwill ambassadors;
7. Cost effective access to skilled employees.

To these benefits, Christopherson and Hardwick (1996) add three impediments for small businesses to uptake of Cooperative learning:

1. Student lack of knowledge about small business;
2. Loss of staff member when placement concludes;
3. Time and supervision requirements.

Let us now consider how cooperative education has been presented in architectural education policy and discourse as offering a solution breaking down the knowledge-transfer barriers between academia and professional practice.

3. Current policy and recommendations in architectural education

As Gutman has suggested (1996), in the USA the expansion in the scope of knowledge demanded of practitioners has raised the possibility that “architectural education is unsuitable to the requirements of
architectural practices,” such that aspiring architects may be “trained more appropriately if they spent fewer years enrolled in university… and instead received more of their formal education under the aegis of firms.” The tension expressed by Gutman between practitioners and the schools is reflected in the professional criticism that, as Stevens expresses it (1995, p. 120), “the schools are operating in some sort of unrealistic fantasyland, training students for a professional world that simply does not exist” (see also Buchanan on this (1989)). Anderson also recommends a rethinking of the role of practitioners in professional education (2001, p. 298), recommending that “aspects of a student’s professional development await immersion into the architectural office.”

In Australia too, the workplace has been underutilised as a learning environment for practice awareness. In 1995, Maher recommended that in Australia the training of students for practice needed be relocated to practice from academia (in (Luscombe 1995, p. 25));

“The pressure from practitioners for greater practice awareness in graduates needs to be alleviated by a shift in responsibility back to those practitioners for this aspect of training. The academies and practitioners need to cooperate in establishing a college concept for the transition to practice.”

However, Savage suggests that professional education should now embrace the best of both worlds – practice and academia – to offer a continuum between theory and practice, for (p. 3);

“design students are best equipped for working life if they develop competence in knowledge development through practice during the course of their university studies... through critical work-based teaching and learning strategies.”

Savage (2005) suggests a brief for such “best-of-both-worlds” learning that, importantly, would not oversimplify the professional environment; rather it would involve students fully participating with all that is happening in practice workplaces (rather than, as is often the case, being restricted to special tasks). Thus, students must be exposed to the workplace with (Savage 2005, p. 9) “its ‘hot’ action, its messy complexity, its instantiation of professional culture and its daily confrontation with the ethical.” As Franz has drawn attention to (2007), the problem of academic/industry engagement was acknowledged by the federal government in 2006, with the then Honorable Julie Bishop MP, Minister for Education, Science and Training asking (Bishop 2006): What is the value of providing professional degree courses which do not reflect contemporary practice? The question has resonated with various design disciplines in their educational policies and debate. At the 2006 International Federation of Interior Designers/Interior Architects Round Table Conference, for instance, it was conceded that there was misalignment between graduate outcomes and design industry expectations, such that higher education institutions, including those in Australia, needed to start producing design graduates with employable skills that allowed them to easily fit into organizations. There has been little information, other than minor references to the inclusion of professional experience, provided by the design professions on how this type of experience-based industry/practice knowledge might be learned. Franz suggests (2007, p. 2) that a solution is the design of dedicated WIL units with specified learning objectives aiming “to develop a range of discipline-specific as well as generic knowledge and skills.” Such a learning context may (Franz, p. 3);
“provide a more cohesive, pedagogically sustainable framework in relation to authentic learning for the built environment design disciplines; improve the capacity of the work environment to provide contemporary relevant learning experiences for students along with more effective outcomes for employers and other stakeholders, and; in conjunction, improve the status and purpose of work experience in the eyes of educators, practitioners and students.”

The idea of including dedicated WIL units in architectural degree programs bridges the practice/academia divide by immersing students into practice. However, the divide can of course also be bridged from the opposite direction i.e., by immersing practitioners into academia as what are known as ‘academic practitioners.’ This practice-to-academia direction of knowledge transfer has particular advantages for students, for as Hawkes has argued, many unique design insights that inform “the processes of interpretation and invention” and “the ability to communicate them through the medium of teaching, depend upon the direct experience of practice” (Hawkes 2000, p. 38). Yet it has become increasingly difficult for academia to retain the role of the academic practitioner; a difficulty that we shall now see has been recognised in recent architectural education policy and discourse in both Australia and in the United Kingdom.

In Australia, the ALTC funded scoping study Understanding Architectural Education in Australasia (Ostwald and Williams 2008) highlights that the divisions between (1) the academy and the profession, (2) practices and the profession, and (3) the academy and practices, has lead to disagreement on the extent to which “universities should produce graduates who can meet the immediate needs of architectural practices and the way in which these needs are defined by the architectural profession.” A key recommendation of the study (Rec 07 – The Academic Practitioner) focuses on the educational consequences of these conflicting demands for both architecture schools and their students. Thus, as the study explains, schools require a balance of skills from their teaching staff, meaning that some staff members (often part-time) are required to posses current practice skills and others high-level academic skills. However, as the study notes, only between 42% and 52% of current academics are able to maintain engagement with practice, and those who do rate maintaining this connection as very difficult. Over the last decade, two of the strategies that schools have used to maintain the skills balance have been threatened. First, fractional “academic-practitioner” positions do not fulfil the growing research needs of universities; and, second, academic pressures now make it near impossible for full-time academics to also run practices. The solution suggested by the study is (Vol. 2, p. 33);

“Alternative “academic-practitioner” employment models should be investigated for the architecture discipline. Such models could draw on the experiences of other professional disciplines (including law and medicine) that have developed positions that effectively balance teaching and practice.”

Francis Duffy, ex president of the Royal Institute of British Architects, has suggested that in the UK there is an equivalent problem, arguing that “there is now no connection between what happens in architectural practice and what is taught in the schools” (Duffy 1998, p. 118). He acknowledges that the “problem is a difficult one: the widening gap between the schools and contemporary architectural practice […] makes it seem practically impossible to prepare students adequately” (p. 119). Out in the profession, this problem has consequences for both employers and their new employees, for
Murray found that only 42% of architecture graduates felt adequately prepared for practice, while Cowdroy found that few practices were adequately prepared for graduates. Cuff suggests that the uncertainty of the step from academia to practice results in graduates becoming frustrated when first entering into professional employment. Nicol and Pilling are precise when explaining the reasons for this difficult transition, stating that the mismatch is because architecture schools cannot replicate a practice environment and practices cannot simulate an educational environment.

In the face of the recent widespread economic downturn, which exacerbated the problems of students obtaining satisfactory professional experience, the RIBA offered a solution to bridging the gap between practice and academia in the introduction of its ‘Host Practices’ program. This initiative offers architecture graduates desk space and work and/or research opportunities in professional offices for a fixed term post graduation. The program aimed to “develop a national template for graduates, practices, and universities to work together and provide worthwhile professionally related opportunities in times of economic recession” (R.I.B.A. 2009, p. 1). A significant inclusion in the remit of the Host Practices program is that of offering ‘research’ opportunities, for this aim can be seen to depart from a traditional internship, which is normally restricted to ‘practice’ or ‘work’ experience. The inclusion of research can be seen to reflect, it is worth noting, an issue that is particular to architecture. As Hawkes has explained (2000, p. 38), a “central point of controversy in the debate about the status of design practice in the academic system is whether design can be considered to be research.” This consideration is an important one, for excluding design from research can be seen, as Hawkes expresses it, to exclude “practising architects from the academy, purely because they and their work do not conform to the demands of a bureaucratic process of assessment” (Hawkes 2000, p. 39). It could be suggested, therefore, that the RIBA is being inclusive of research in its Host Practices program to facilitate academia being inclusive of practitioners in its research.

While the lack of satisfactory professional experience opportunities for students is a widespread problem, the issue is of greater importance for Australian universities compared to British universities. For Australian architectural education is not founded on the traditional ‘sandwich’ model common to most vocational degrees in the UK, where students spend a year (‘thick-sandwich’) or a semester-per-year (‘thin-sandwich) of their course in placement. Thus, Australian students can only obtain professional experience outside of their course structures, either between periods of study (e.g. during a gap-year), or during study (whether working in practice during part-time or full-time study). However, as Understanding Architectural Education in Australasia (Ostwald and Williams 2008) stresses (Vol. 2, p. 39);

“Architecture schools are neither resourced nor expected to monitor or manage students’ industrial experience... Commercial practitioners and professional bodies also have limited responsibility for the educational needs of students during their “year out” and... there is widespread confusion about the content of a typical intern program.”

Thus, a key recommendation of the study (Rec 13 – Industrial Experience) is for further research into this topic.
4.0 How a TiP model might bridge the practice/academia divide in architecture

As Nicol and Pilling note (2000, p. 13), “there is currently a perceived gulf between the learning in architecture schools and the realities of professional life.” Solutions to bridging this divide by facilitating knowledge transfer from academia to architectural practice and the wider construction industry can be categorised into seven strategies. These are:

1. The Practicing Academic - whereby academics are given opportunity to maintain professional activities or are supported to practice part-time;
2. The Academic Practitioner – whereby practitioners are hired part-time; as “sessional” teachers (employed on short-term contracts), or as “fractional” teachers (employed permanently on a fraction of full-time);
3. Sandwiching – whereby periods of placement in practice are a structured part of a degree program;
4. Site Visits – to practices, building firms, contractors, buildings, building sites etc.;
5. Guest Lectures – from practitioners or industry experts;
6. Supervision – where an external supervisor is appointed from the outset of a student design project to consult face-to-face for a short period of time (normally limited to a half hour to one hour per student per week). When an external supervisor is appointed, it is considered desirable to appoint a co-supervisor from within the university who, even if not expert in the thesis subject, will ensure that the university’s formal requirements and ethos are observed.
7. Work Integrated Learning - dedicated WIL units in architectural degree programs.

As has been already noted, the first two of these methods are under threat from the growing research pressures of academia. The third method of ‘sandwiching’ is impractical in Australia because; firstly, architectural education is committed to course structures that do not support sandwiching; and, secondly, because (unlike in the UK) structured placement has never been a role demanded of and resourced by architectural practices in Australia. Although methods 4, 5 and 6 (site visits, guest lectures and supervision) provide useful experiences for students, they are short in duration and can thus never be considered as continuous knowledge transfer. Nor can they be considered to offer a great deal of practice experience. Moreover, it should be noted that site visits are under threat by the increasingly burdensome demands of Health and Operational Safety. The seventh strategy – Work Integrated Learning units that aim to achieve practice learning outcomes by placing students in practice – are certainly a sustainable model for bridging the academia-practice divide. However, the role of the practitioner as teacher in such WIL might be said to be limited, and hence so is any inclusion of the practitioner in academia. The TiP model offers an eighth method, and one that can be seen to include the practitioner as a teacher; a teacher that supervises students’ design learning rather than practice knowledge learning.

5. Categorisation of the Teaching in Practices Model

A useful categorisation of cooperative education programs is utilised by Turner and Langworthy (2002). This is as follows:

<table>
<thead>
<tr>
<th>Location</th>
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| **Workplace** | • At one workplace  
• At multiple workplaces  
• At the workplace with University seminar supplementation  
  o Prior to the workplace experience  
  o During the workplace experience  
  o After the workplace experience |
| **University** | • At the University by academics  
• At the University by industry specialists  
• At the University with workplace visits  
• Business projects on campus |
| **Employer Involvement** |  |
| **Work Undertaken** | • Entirely employer driven  
• Agreed project  
• Negotiated learning contract |
| **Supervision** | • Employer  
• Academic  
• Student Mentor  
• Student Buddy  
• Employer and academic  
• Industry (non-employer) mentor |
| **Extent of contact** |  |
| **Intensity** | • Full-time  
• Part-time  
  • 2 days per week  
  • 4.5 days per week with 0.5 days study leave |
| **Duration** | • 1 week – 12 months  
• In one block |
<table>
<thead>
<tr>
<th>Timing</th>
<th>• In several blocks</th>
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<tbody>
<tr>
<td></td>
<td>• After 2nd year</td>
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<td></td>
<td>• As 4th year</td>
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<td></td>
<td>• Split</td>
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<td></td>
<td>• 1 block in 1st year, 1 block in 3rd year</td>
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<tr>
<td></td>
<td>• 1 block in 2nd year, 1 block in 3rd year</td>
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<tr>
<td></td>
<td>• Semester break(s)</td>
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<tr>
<td></td>
<td>• Parallel to part-time study</td>
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<tr>
<th>Compulsory or Optional</th>
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<tr>
<td><strong>Compulsory</strong></td>
<td>• For course</td>
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<td></td>
<td>• At institution</td>
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<td></td>
<td>• For major</td>
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<tr>
<td><strong>Optional</strong></td>
<td>• Certain academic results required</td>
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<td></td>
<td>• Credit</td>
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<td></td>
<td>• Distinction</td>
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<tr>
<td></td>
<td>• Any student</td>
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<td></td>
<td>• If places available</td>
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<tr>
<th>Range of Skills</th>
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</thead>
<tbody>
<tr>
<td><strong>Generic</strong></td>
<td>• Communication skills</td>
</tr>
<tr>
<td></td>
<td>• Interpersonal skills</td>
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<td></td>
<td>• Team skills</td>
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<td></td>
<td>• Ability to work independently</td>
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<td></td>
<td>• Ability to take initiative or be self-motivated</td>
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<td></td>
<td>• Time management skills</td>
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<tr>
<td></td>
<td>• Problem solving skills</td>
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<tr>
<td><strong>Specific Skills</strong></td>
<td>• Discipline specific</td>
</tr>
<tr>
<td></td>
<td>• Career specific</td>
</tr>
<tr>
<td></td>
<td>• Job specific</td>
</tr>
</tbody>
</table>
| Level of Skill   | • Menial  
|                 | • Low  
|                 | • Medium  
|                 | • High  |

| Recognition and Assessment | | | |
| Credit arrangements | • Credit points given towards course completion  
|                      | • Additional qualification (ie Grad Dip)  
|                      | • No credit points but noted on transcript  
|                      | • Recognition of Prior Workplace Experience |

| Assessment | • No assessment  
|           | • Assessment to pass grade  
|           | • Assessment by employer  
|           | • Assessment by academics  
|           | • Assessment by combination  
|           | • Assessment on  
|           | • Report(s)  
|           | • Presentation(s)  
|           | • Reflection(s)  
|           | • Project Outcome(s) |

| Payment | • Scholarship for all students in course  
|         | • Scholarship for students undertaking WBL  
|         | • Payment by employer at varying levels  
|         | • Reimbursement for expenses  
|         | • No payment |

Using this categorisation we can describe a TiP model as follows:

| Teaching in Practice | |
| Location | |
| Workplace | • At multiple workplaces  
|           | • With University seminar/tutorial supplementation  
|           | o Prior to the workplace experience, and  
|           | o During the workplace experience, and  
|           | o After the workplace experience |
| Employer Involvement |  |
| Work Undertaken | • Project assigned by university |
| Supervision | • Employer and academic |
| Extent of contact |  |
| Intensity | • Part-time (1 day per week) |
| Duration | • In one block of 12 weeks |
| Timing | • 4th year or 5th year |
| Compulsory or Optional |  |
| Optional | • If places available |
| Range of Skills |  |
| Generic | • Communication skills  
|           | • Interpersonal skills  
|           | • Ability to work independently  
|           | • Ability to take initiative or be self-motivated  
|           | • Problem solving skills |
| Specific Skills | • Discipline specific – building design |
| Level of Skill | • Medium |
| Recognition and Assessment |  |
| Credit arrangements | • Credit points given towards course completion |
| Assessment | • Assessment by academics  
|           | • Assessment on Design Presentation(s) |
| Payment | • No payment |
Conclusion

This literature review has described the theoretical basis for developing a form of work integrated learning (WIL) termed Teaching in Practice (TiP), which we have seen can be viewed as akin to an academic practitioner model. Like the academic practitioner model, TiP uses practitioners to teach and hence exposes students to practice knowledge. However, TiP has two significant advantages over the academic practitioner model of employment: first, the practitioner does not have to leave the workplace, for this can be a problem for time-strapped practices; and, second, unlike academia-based design teaching models the student is immersed in the context of practice and hence learns to design in a more authentic environment, an environment with, in the words of Savage, the ‘hot’ action, and messy complexity of “professional culture and its daily confrontation with the ethical.”

Within the context of the historical development of WIL in architectural education presented in this literature review, TiP can be seen to present an entirely innovative solution to bridging the divide between learning in architecture schools and the realities of professional life. Thus, as Farren Bradley have concluded (in (Nicol and Pilling 2000, p. 187)), through the acceptance of academics in practice and of practitioners in academia a better informed critique of architectural education is developed and the profession has “the opportunity to develop a learning culture and a recognition that practice is and must be a primary site for architectural education.”

3.6 REFERENCES


Christopherson, G. and M. Hardwick. 1996. Some impressions of small business support for co-operative education programs in the faculty of business at the royal melbourne institute of technology, 283-96.


Gutman, R. 1996. Redesigning architecture schools-the current model of architecture education may have outlived its usefulness. *ARCHITECTURE-NEW YORK AND WASHINGTON-AMERICAN INSTITUTE OF ARCHITECTS*- 85: 87-89.


SESSION 6A - @ the Edge: Adapting Traditions
AESTHETIC ANXIETIES: THE PROBLEM OF DEFINING THE MIGRANT HOUSE IN AUSTRALIA

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ABSTRACT
The interest of this paper concerns the problem about the migrant house – why has it been so difficult to define? In order to examine the problem of the lack of literature on the migrant house it is important to look at the literature on the Australian house, and to examine how the migrant house is positioned or not included in this literature. It will approach this through what is accepted as discourse analysis, but with a particular position informed by the work of Stuart Hall on representation.

INTRODUCTION

The migrant house is not as yet a category in studies of architecture, in Australian studies, or Australian history. This does not mean there is not research on the migrant house or that there is not interest in the wider community (Redfern & Lozanovska, 2008). The migrant house generates debate whenever it is mentioned, but in the literature on the Australian house, its lack of citation is not missed. Discussions on the migrant house have therefore been circular: when a scholar has put forward a thesis, others have found exceptions and the perception has remained that perhaps the migrant house is a myth. The interest of this paper concerns the problem about the migrant house – why has it been so difficult to define? It will approach this through what is accepted as discourse analysis, but with a particular position informed by the work of Stuart Hall on representation. Drawing on a semiotic approach to analysing texts, images, events, in the chapter “The Work of Representation,” Hall states, “in a culture, meaning often depends on larger units of analysis – narratives, statements, groups of images, whole discourses which operate across a variety of texts, areas of knowledge about a subject which have acquired widespread authority (Hall 1997:42).” This paper will examine the literature on the Australian house to discuss why the migrant house is elided from such studies through the theoretical framework of representation.

In contrast to the lack of studies on the migrant house, studies of the migrant home have developed in disciplines such as cultural studies and cultural geography, and have become an accumulative body of knowledge. Why has the migrant home gained scholarly attention and position in Australian cultural studies? The paper will thus focus on unravelling the problem of the migrant house, but will endeavour to analyse this distinction, attending to contradictions and complexities between the house and the home. It will put forward a thesis that the migrant house is problematic for two reasons: it is perceived as a culturally territorial act, and secondly that even if the house is privately owned, its image is visible to the public. For this reason the paper proposes that the problem about defining the migrant house is entangled with its aesthetics.
THE HOUSE AND THE HOME

The home has emerged as a central concept in the discourse on migration and diaspora and the anthropologist Ghassan Hage (Hage 1997) has formulated the concept home-building around the production and consumption of food. He argues that the effort migrants put into home-building illustrates their sense of belonging in the new country, and is about feeling homely in their new context, and not about homesickness, for the old place (country of origin). Hage is emphasising the making of home as a process of settlement for the migrant. Contrary to simplistic ideas about integration, home-building processes are not about forgetting familiar cultural practices but finding ways that these can co-exist within the new context. Hage’s theoretical framework shifts the more prominent thinking around home in relation to migration and diaspora in which it is argued that domestic cultural practices serve as a way of remembering the old place, and reliving an attachment to that place (Tolia-Kelly 2004).

Savas’s ethnographic study on material culture, especially practices of home decoration, furnishings, aesthetic objects, reorients the subject of food in Hage’s work (and focus on Lebanese immigrants in Sydney), bringing into focus the aesthetic productions of immigrants (with a focus on Turkish immigrants in Vienna). The objects, Savas argues do not have connections with prior pre-migration contexts, nor a particular ethnic association in terms of tradition, and yet have developed and are identified with the Turkish diaspora community in Vienna. The significant thesis is that the Turkish home in Vienna is created through the intertwined biographies of people and material objects, and as such it has become a collective symbol. Further, Savas has proposed that more than representing a static and differentiated group, these practices have become an “aesthetic and social medium for the narration of Turkish experiences of migration to and resettlement in Vienna (Savas 2010: 317).” The implication here is twofold: firstly that migration and resettlement involves an aesthetic production of identity that is not a replica of material objects from the country of origin; and secondly, that this is a narration that involves time and transformation.

Authors have also argued that migrants develop a mixture of cultural practices that can act as bridges between the two cultures, some associated with the country of origin and others producing newly attained cultural alliances. This latter framework relating to the blending of cultural practices is popular amongst scholars and proposes the more contemporary theory of plural identities and trans-cultural belonging. However, as Savas argues, such authors assign practices and objects static geographical and cultural settings and assume that these have fixed and stable meanings (Savas 2010: 316). Like the changing practices and meaning of culture, the objects of culture are not static.

It is worth contextualising what Hage means by home-building. Ghassan Hage has argued that there are two types of multiculturalism (Hage 1997). Cosmo-multiculturalism is the classy, sophisticated, cosmopolitan multiculturalism evident in official displays and manifested in people’s choice of restaurant or food. It is conscious of the international field and is associated with a privileged globalisation – a cosmopolitan aesthetic that has access to the world both in the world and at home (in Fitzroy and
Carlton). The other, inhabited multiculturalism is a lived condition, lived in by migrants, it is lower class, and involves ordinary home cooking. Hage critiques cosmo-multiculturalism as a multiculturalism without migrants, arguing that the subject of this type of multiculturalism desires an abundance of otherness without others, for his/her own satisfaction of diversity. In his work there is a desire to valorise inhabited multiculturalism which is grounded in the reality of migrant home building. It is in this context that the idea of something familiar is a way for home-building in the new context. He offers an example about a Lebanese couple, who on finding a Lebanese cucumber, went into an exhilarated expression of happiness in the form of song and dance. Home-building becomes a way of belonging not limited to assimilation or integration, but as Hage proposes formulated by a structure of security, familiarity, community and sense of possibility.

My studies of southern European migrants in Melbourne show that the relationship between the migrant and the house is intensive, and that the building of the house is a significant symbolisation of the process of resettlement (Lozanovska 1997, 2008). These include a study of elderly immigrants who have lived in their houses for a long time (more than 25 years) and a study with Victoria Gantala of an enclave in Northcote (a suburb 7km north of the CBD in Melbourne) comprising several streets in which the sites were purchased on one day and the houses were built in a period of 5 years, 1965-1970. In addition, visual documentations of migrant houses in the northern suburbs of Northcote and Thornbury and Bell Park in Geelong have been compiled. How can the study of the migrant house be informed by the knowledge of the migrant home? I have proposed the idea of house-building as a corollary to home-building. Already evident in the semantic shift is that the house is a concrete thing, and as a physical entity it has empirical parameters - scale, measure, materials, size, location, history (who built, why, how, under what circumstances, how much did it cost, what is its value, who lives in it)? The problem of defining it begins here. Already there is more at stake in relation to the location of the house in culture and to house acquisition. House-building generates a different set of contradictions, associations, economies compared to home-building.

In order to examine the problem of the lack of literature on the migrant house it is important to look at the literature on the Australian house, and to examine how the migrant house is positioned or not included in this literature.

THE AUSTRALIAN HOUSE

It is argued, Australia is centrally associated with the acquisition of a house (Davision, Dingle, O’Hanlyn, 1995). There is extensive literature on the Australian house, and significantly more on the non-architect designed house (Boyd 1951; Irving 1985; Parrossien & Girggs, 1983; Unstead & Henderson, 1969; Troy, 2000; Cuffley, 1993; Taylor, 1990). Much of this literature elaborates on décor, interiors, gardens, and all other applied aesthetics that is the result of the inhabitants’ aesthetic preference. From the abundance and tone of this literature it can be stated that Australia is preoccupied with its identity, and that the house serves as a vehicle to express, symbolise and represent the Australian identity. The impact of migration,
the way of life of the migrant inhabitants, their taste and traditions imported from cultures other than England and Ireland is barely noted in this body of knowledge.

Immigration has been perceived in contradictory ways in relation to this central Australian icon of the Australian house. An annotated bibliography entitled “Immigrant Housing in Australia” and published in 1994 states that despite studies on many issues related to Australian immigration, relatively little has been written regarding housing of and for migrants. In a chapter of another report ‘A survey of immigration and housing,’ the authors note that the house is historically connected to Australian culture, citing the Australian Financial Gazette in 1891 which stated that it was a man’s paramount duty to acquire a house, through to post-war policy which identified housing as central to the national interest (Junankar et al, 1993). In the survey above, two significant points are made: firstly that policy consolidated at the point of federal constitution in 1901 produced a white oasis in the south which erected political and cultural walls to non-white immigration, such that by the end of World War 2, 99% of the population had British heritage; secondly, it is noted that the fear that immigrants would compete for the same housing stock was used to argue against extending immigration policy after World War 2. In the 1940s only 9% of Australia’s population was born overseas, and 90% of those were from either UK or NZ. Immigration from Southern Europe (Italy, Greece, Yugoslavia) transformed the then homogenous Australian public. Housing these immigrants became controversial to the Australian public. The Australian house is historically a contested terrain in relation to immigration.

Statistics are complemented by publications on Australian housing. The volume European Housing in Australia (Troy, 2000) was an undertaking in response to a need for ‘a good general understanding of the housing history of the nation,’ and the companion book to one on indigenous housing in Australia. Both volumes are from social science discipline perspectives. However, it is evident that migration is not seen as a major trajectory in Australian housing in this volume as several of the chapters explore the colonial period up until the early Twentieth century, followed by topical concerns such as homelessness and domesticity. If the objective of the volume is on the social history of Australian housing, why is there not a contribution about immigrants’ housing after WW2? The introduction outlines that this volume is not a chronological account and that its focus is on the stereotype and the dominant distinctive form. This refers to the detached house governed by home ownership. The reader looking for an analysis on migrant houses has to be satisfied with the content of the dominant type. In one sense it is. Home ownership was even higher amongst southern European immigrants than their non-immigrant counterparts. But if the study is on social history and includes chapters on domesticity would not the socio-cultural practices of the southern European immigrants require further analysis?

It has been important to survey the availability of literature on Australian architecture and the architecture of the Australian house. The catalogue of the Australian Institute of Architects’ bookshop in Melbourne (Architext), for instance, contains volumes, under the heading ‘Australian Architecture,’ many about the Australian house, but very few refer to non-Anglo-Celtic architectural buildings, origins, or characteristics that are also produced in Australia (and none that we could identify) (Beynon and Lozanovska, 2009). In Irving’s edited volume, The History and Design of the Australian House, (Irving et al 1985), Britain is the reference as the source for the Australian house. I have found that migration has been mentioned once (Irving, 1985: 8), but not discussed as another historical force shaping the
Australian house or city. Some chapters in the book focus on architect designed houses, but many premise their argument on the idea that an Australian vernacular emerged, and that its origins were British. For example in the chapter on the Australian garden the idea of plant propagation as a British pastime can be seen as a matrix through which to perceive the historiography of the volume – it looks at stylistic historical origins of housing stock such as Georgian, Victorian, Federation, and how these are then cultivated into an Australian idiom – the Australian terrace, the Australian garden.

A similar approach to historiography emerges whether the volume is within architecture or from the social sciences: the focus of the study is to do with histories prior to large scale European, and especially Southern European immigration. This is further elided by the interchangeable use of the term Europe with the terms Britain or England, and the term, colonists with immigrants – an intriguing conflation for scholars in the social sciences. The effect of this conflation is that the potential subject of European rather than British housing in Australia, is not examined. Neither is southern European immigration, rather than British and Irish immigration, examined. But the interchangeable and generalist use of these terms produces confusion about references and produces the typical circular debates – ‘but the British are European and the British and Irish were also immigrants.’ Yes, this is true. But in the context of an Australia with very direct policies about British heritage and cultural and linguistic homogeneity, to be a Southern European immigrant was definitively not to be a British immigrant. A rigorous analysis would propose differentiated categories for these groups of immigrants. More severe in the scholarship above was that the idea of examining non-British-Celtic immigrant housing is not in either the imagination or interest of housing scholars.

There are a few exceptions. Apperly et al’s (1989) publication has a two-page spread entitled, Late Twentieth Century Immigrants Nostalgic which notes the balustrades and arches as symbolic of success in the new country and proposes this is an aesthetic imported from migrants’ homelands. Similar to Apperly, Vulker has also referred to social character, and wealth and status as descriptions of the migrant houses rather than specific architectural features of the houses (Vulker 1986:69). Vulker recognises “Some houses have acquired a new façade in order to resemble the features of a particular style reminiscent of grand opulent houses back in the “home” country (Vulker 1986:68).” If we consider the work of Savas such proposals would be questionable. These two pages are directly preceded by two pages on Late Twentieth Century Australian Nostalgic, referring to the resurgence of ‘colonial’ styles of earlier homestead architecture. This historical coincidence between the Australian and Immigrant Nostalgic differentiates clearly Australian from Immigrant. Further analysis would unravel how in one instance all immigrants are encompassed by the British immigrant as the origin of Australia, and in another instance, the category of immigrant is set in distance, if not opposition to the category Australian. Suffice to state here that in the names Australian or Immigrant, the authors unwittingly reveal the unspoken foundation of an Australian aesthetic that is constituted prior to and against a so-called Immigrant aesthetic. In addition the heritage movement generated the classification of buildings of the first half of the twentieth century, and thereby established a foundation for ‘good taste’ in architecture as directly associated with an aesthetic heritage that primarily originated in England; and secondarily and with a distinctive hierarchy, the houses of the 1920s that emerged from America.
The affects of migration and migrant inhabitation on the house is noted in *Housing in Australia* (Vulker, 1986) a study guide about housing that takes a social perspective of architecture. It is a unique publication that exemplifies a position associated with the mid 1980s at the height of Australia’s multicultural policies. The author Judith Vulker was an educational consultant to the then RAIA, and the book was published by Jacaranda press. In this and another publication by the same author, *Studying Australian Architecture* (Vulker 1990), immigration is addressed, and indeed it features as the number 1 point of post war demographic change. In the chapter on Housing Alternatives, a large section on immigrant housing is included. In addition to an image of an almost pop-art façade of an immigrant house, a map showing the top 30 source countries of migration to Australia shows that at that time, apart from immigrants from Britain and Ireland (42.9%), the next largest source of immigrants was from Southern Europe (Italy, Greece and Yugoslavia), nearing 20%.

More interesting is that Vulker proposes discussion questions: “What architectural features of our houses today can be traced to the influence of immigrants?” (Vulker 1986: 68); and a question for Debate: “The variation in housing form is evident in houses built since 1950. People have expressed their cultural values and attitudes by the appearance of the houses in which they live. Such variation has a detrimental effect on the appearance of the suburban landscape (Vulker 1986:69).” Vulker is unsure about her position in relation to this question. Vulker has described the adaptations made by migrants on Victorian terrace houses in Melbourne and on suburban brick veneer houses as having a “detrimental effect on the appearance of the suburban landscape (Vulker 1986:68).” And yet there is appraisal for the adaptation of the style through works that have been carried out on the façades. Vulker describes the contributions of migrants to housing in Australia as adding creativity by juxtaposing styles that have been previously recognised as lacking authenticity: “The migration of people from all over the world to Australia has enhanced variation in housing form. We now see houses feature a Tudor gable over a Greek balustrade (Vulker 1986:68).” An interesting if humorous proposition!

While not a rigorous analysis of architectural style, this book has identified migrant houses by reconceptualising architecture as a cultural production and by valuing aesthetics. The façade emerges as a crucial element for the identification of the houses as either migrant houses or not migrant houses. This was a book produced to inform and generate debate in the secondary school classrooms. Unfortunately there has not been much debate on the issue about the façades of migrant houses either in the classroom or in fact in the academy, and there has not been development of this question. In *Studying Australian Architecture*, Judy Vulker (Vulker 1990, note changed her name) has included a section entitled ‘the migration of architectural ideas to Australia,’ which includes a note on migration and its effect on diversity, and the diversification of project homes to include what Vulker has called ‘mediterranean style villa’ (Vulker 1990: 32). The migrant house was not just an individual production but an artefact that began to be manufactured en masse.

AESTHETIC ANXIETIES
Two decades of interdisciplinary theories, conceptual frameworks about place, history, and identity borrowed from cultural theory, and five decades of impact of southern European immigration and settlement has not closed the chasm in Australian architectural historiography. One problem is that architectural discourse does not easily contribute to and participate in cultural discourse. In *Architecture Australia*, Carey Lyon (Lyon 2007), the president of the RAIA, has strongly argued that architects have not participated and contributed to the debates over culture and identity. This is a curious paradox. While the question of an Australian identity in architecture is central to architectural discourse, this has not extended to and engagement of questions on cultural identity as debate and discussion (Irving 1985, Apperly et al 1989). Boyd (1960) had captured these themes in his critique of the Australian suburb and its relations to the land built on what Boyd called the ‘pioneering cult.’

Several studies have discussed the houses built by migrants, sometimes calling the houses in immigrant cities (especially Toronto, Melbourne), ‘monster houses’ (Mitchell), ‘too many houses’ (Jacobs), ‘mediterranean nostalgic’ (Apperly et al), ‘mediterranean villa’ (Vulker), ‘third-world looking buildings (Hage, Beynon). Migrant houses built in the sites of emigration (Ecuador, Mexico) have been called, ‘bad taste architecture’ (Klauhaus), ‘remittance houses & transnational architecture’ (Lopez). In this paper the focus is on the migrant house of immigrant receiving cities. While studies on migrant housing in Australia have not yet formed a critical and integrated body of knowledge, there are significant contributions: Winkler (2009) has examined ‘white space’ in relation to a group called Save Our Suburbs (SOS), and Levine (2010) has looked at migrant housing in Melbourne and Israel. In addition scholars elsewhere are contributing to a global studies on migrant housing, Datta (2006) has researched the construction and meaning of home and city of Polish construction workers in London. Identifications of the migrant house are derived from an empirical and observable building stock. Houses named above are documented, and thereby can be said to have existential value. Through these studies migrant houses have begun to gain representational and symbolic value. The identification of this stock of buildings offers a tangible and concrete record of the impact of migration, an empirical database that is being acknowledged, analysed and interpreted at a global level.

What emerges from the literature on the Australian house is the significance of the façade as cultural expression of the house, and the house as ownership of territory. I have stated that the house is a thing, a physical entity and therefore produces itself as an existential entity. As such the house is also an economic and cultural production. Architectural analytical methods may contribute to the discussion because the façade lends itself to elevation analysis and the house as territory lends itself to an analysis of the plan – the former producing signification, and the latter inscribing a space for the cultural practices of the inhabitants. In the studies cited above, the migrant houses enter the fields of representation, knowledge, and importantly the migrant house is given value as subject for academic research, participates in the identity narratives of the nation. What the house looks like is important, and we are reminded to look again, and look closely (Silverman 1996).

Unlike public buildings or spaces of ethnic communities, especially worship places and market spaces, which are more expressly a production of ideas that have been transported from elsewhere to Australia, migrant houses are not expressly very different to their counterparts that are not perceived to be migrant houses. The aesthetic difference is in detail rather than as form or typology. One way of understanding
The detail as a crucial aesthetic dimension is to consider the house and home in relation to references to the homeland. The ideas of the house and home are shown to be intertwined in Davison’s chapter on the “Colonial Origins of the Australian home,” as he elaborates that for Australians home was both an idea, ‘a homeland from which most colonials had come’, and a place, the houses that they built in Australia (Davison 2000: 9). He notes that an English visitor in 1937 commented on how Australians call their houses homes. This idea of homeland, home and house are significant factors for understanding the migrant houses and to unravel why the migrant houses are considered un-Australian. Details, while small in measure and scale, loom large in relation to cultural references. The homelands that migrant houses cite through details of their otherwise ordinary brick veneer appearance, are not England, Britain or Ireland. In previous publications I have called this a mild aesthetic. But the differentiation between migrant and non-migrant houses in Australia is noted in what has been called in a different context the tell-tale detail, the detail that will, unwittingly and in an unplanned way, give away the bigger story, the myth and the national narrative, by pointing to a particular cultural reference of the inhabitants.

The literature reveals that this tell-tale detail is important. The detail signals the role of the house as it mediates the home and the homeland, both. The Australian house is symbolically tied to a particular homeland. Even if the cream brick veneer is not literally imported from Britain or Ireland, both the inhabitants that prefer cream brick veneers (to other colour bricks) and the details of and about the house, are perceived as a reference to an imaginary homeland constituted by an imaginary community originating from that homeland.

In the publication, *Cream Brick Frontier* (Davison, Dingle, O’Hanlyn 1995) houses belonging to Southern European migrants feature tokenistically (p.27 & p.49). The details of the cream brick does not easily belong to everyone nor does it represent everyone. Migrant houses are thus absorbed into a matrix of sameness, but not discussed as part of the content of sameness. If they are marked as different there is a framework that represents them as looking at the past or backwards to where the immigrants have come from. For this reason it is important to critique the interpretation that the houses are neither here nor there, but some kind of bridge. The point that is difficult to accommodate is that migrant houses are here in Melbourne, in the city of immigration. The problem for a homogenous Australia is that houses are evidence that migrants are here (here to stay?) and that as such the production of migrant houses projects a different image of Australia’s cultural reference.

**CONCLUSION**

A house is an important mode of assimilation because a way of life evoked in Boyd’s ‘pioneering cult’ is intrinsically set by this suburban paradigm (Boyd 1960, chapter 4). Immigration policies presented immigration as something that would fill the undesirable gaps of Australian society. The problem in defining the migrant house is that it illustrates that migrant settlement is not temporary. Literature on migrant housing in Australia has produced a situation where by the migrant house is the same as the Australian house implying that no separate study is required, or that its difference evolves out of its nostalgia for the past and place of origin, and therefore not a part of the present Australian culture. Hall’s theories emphasise the power and significance of representation, such that ‘a widespread authority’ has
developed across the spectrum, from immigration policy, socio-economic literature, to architectural history that elide a place for the migrant house. Writings on immigration and housing have noted a fear that immigrants would compete for housing stock. Migrant houses have inscribed spaces for the practices of different traditions, languages and rituals. The appearances of the migrant houses illustrate the imaginary capacity of what Australia might look like. However, lurking in the shadows of aesthetic anxieties resulting from such appearances, are anxieties about the proliferation of migrant houses affecting the national and cultural space of Australia. Not only what Australia might look like but what it might be.

REFERENCES


Beynon and Lozanovska, research for ARC Discovery application, 2009


POST-WAR MIGRANT BUILT HERITAGE IN MELBOURNE: FROM ASSIMILATION TO MULTICULTURALISM

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ABSTRACT

If place identities are created by ascribing subjective meaning to sites and buildings it follows that diverse groups will consider place meaning differently. This poses a challenge for the selection and interpretation of heritage sites in plural societies where notions of architectural significance are likely to conflict. Basing heritage policy on the premise of a shared heritage is particularly challenging when the cultural traditions of the past underlie definitions of architectural significance in a more culturally diverse present. This paper presents an introduction to research exploring the inclusion of twentieth century migrant built heritage in Australia. Through selected examples of recently recognised heritage sites in Melbourne, the paper considers how migrant heritage is included and what this reveals about the cultural traditions underlying Australian heritage discourses. The inclusion of migrant places suggests that there is an initial shift in heritage discourses where notions of architectural significance have expanded to include the history of post-war migration. However, the examples raise questions about the nature of cultural inclusivity in heritage frameworks.

INTRODUCTION

The relationship between heritage and the politics of cultural identity is a strand of research that has developed in heritage-theory literature over the last two decades. In the 'heritage debates' of the 1980s Hewison (1987) and Wright (1985) identified the rise of a ‘heritage industry’ that appropriated the past to promote cultural agendas in the present. Lowenthal (1985) also emphasised the need for a more inclusive view of the past and has argued that aspects of the past are celebrated and forgotten selectively in the present. As heritage comprises a mediation of aspects remembered and forgotten, those authorised to negotiate the balance of each are in a powerful position to shape narratives of history and, by extension, notions of national identity. The judgment of heritage experts to act as ‘stewards’ of the past presents the possibility for hegemonies in the construction of heritage perspectives.

The more recent work of Brett (1996), Tunbridge and Ashworth (1996), Howard (2003) and Ashworth and Tunbridge with Graham (2000, 2007) examine the way notions of heritage significance conflict in plural societies, how it is politicised and the emergence of diverse heritage perspectives.
Within this literature the notion of a dominant conceptualisation of heritage that constructs, legitimises and sustains dominant notions of heritage value has been discussed by academic Laurajane Smith (2006, 2007) in particular. Smith argues that the development of heritage from the nineteenth century, fostered through organisations such as the National Trust and the Society for the Preservation of Ancient Buildings (SPAB) and legitimised in the international conventions of ICOMOS and UNESCO, has created a dominant authorizing discourse of heritage (AHD). Such a discourse relies on heritage experts with the agency to select objects, sites and buildings from the past to shape historical narratives into the future. Smith posits that maintaining dominant constructions of heritage can undermine the recognition of alternative and subaltern heritage perspectives.

This paper examines the introduction of migrant heritage places into established heritage frameworks or into the Authorised Heritage Discourse as Smith defines it. The paper outlines research identifying migrant built typologies in Australia and some of the issues that arise from the emerging efforts to include migrant places in official heritage registers. Through the discussion of specific examples of migrant places that have been recognised for heritage protection in Melbourne, the paper raises questions about the nature of their inclusion. The examples reveal how migrant history is considered peripheral, enriching but not reshaping, to the dominant heritage discourses.

MIGRANT ARCHITECTURAL HERITAGES IN MELBOURNE

Immigration to Melbourne until the Second World War was primarily from Britain as a result of the Federal Immigration Restriction Act, or White Australia Policy, that was established at Federation in 1901 and restricted immigration of those not of “substantial European decent” (Jupp, 2007). The built typology for the first fifty years from Federation in Melbourne reflected the British cultural influence with eclectic imported styles such as Late Victorian, Queen Anne, Edwardian, Californian bungalow, Tudor, Spanish Mission, Art Deco, etc. The White Australia Policy was broadened in 1947 to include migrants from other European nations under the policy of ‘Assimilation’ from 1947-1964. Post war immigrants brought new cultural traditions and established a built legacy for over sixty years that contributed to the architectural history of the city. However, there had been little research into migrant architectural typologies in Australia until the 1990s.

An early researcher in the field identifying migrant heritage typologies in Australia was landscape architect and academic, Helen Armstrong (1994, 1997, 2000, 2001). Armstrong’s research identified places of significance for migrant groups in consultation with immigrant communities and found that migrant built typologies reflected the changing immigration policies. For example, Armstrong found that social gathering places for migrants during the Assimilation policy were hidden in pre-existing halls, above shops or in suburban back gardens. These places reflected the early migrant experience but remained undocumented in an official heritage capacity and in many instances had been lost with urban redevelopment (Armstrong, 2001).
The immigration policy of ‘Integration’ from 1964 – 1973 brought a second wave of post-war migrants from Greece, Malta, Italy, the Balkan states, and later, from Spain, Portugal and Turkey. These migrants moved into run-down inner suburban neighbourhoods with housing stock built between 1880 and 1915 (Jupp et al., 1990). They updated the existing houses by replacing timber window frames with aluminium, rendering facades or covering them with a false brick veneer, concreting over existing gardens and decorating fences with concrete pillars and statues. Fiona Allon (2002) found that similar renovations represented ‘immigrant blight’ to the local resident action groups in the Sydney suburb of Earlwood who wanted to maintain the “authentic” pre-war built heritage of the area.

Post-war migrants also established social gathering places such as espresso bars, restaurants, clubhouses and places of worship with a visibly ‘ethnic’ presence built in styles reminiscent of Orthodox and Byzantine architectural traditions. Many of these neighbourhoods became popular with the wider community, such as Lygon Street in Carlton, which is recognised as an Italian precinct long after the original Italian migrant residents relocated and the neighbourhood gentrified.

Many European post-war migrants eventually left the inner city to build houses on the fringes in the 1960s and 1970s. The houses they built and the earlier adaptations to existing housing stock became associated with ‘Greekness’ or ‘Italian-ness’. They have been identified as reminiscent of Mediterranean styles from the ‘old country’ by Vulker (1986, p.68) termed ‘Late Twentieth-Century Immigrants’ Nostalgic’ by Apperly, Irving and Reynolds (1989), described as in a process of ‘Mediterraneanisation’ (Allon, 2002), characterised as ‘Wogatecture’ (Willingham, 2004) and identified as displaying “ethnic aesthetics” by Lozanovska (2008).

Despite the established presence of post-war migrants on the urban landscape, and the recognised style of their houses, migrant places had not been considered in heritage discourses until fairly recently. In her study of cultural diversity in the planning system in 1998, Leonie Sanderock was one of the first to, provocatively at the time, suggest a range of places that could reflect alternate histories in the representation of Melbourne’s built heritage:

What should be preserved, apart from the obvious Chinatown precincts (which have become ‘useful’ as tourist attractions and revenue generators)? What about vernacular, low income ‘half houses’ … or the politically shameful migrant hostels, marking places of ‘first settlement’ of many of our ‘new Australians’. Surely these are worth saving as a reminder of the desperate struggle of immigrants to make a start in a new country. (Sanderock, 1998, p.223)

More than a decade after Sanderock’s suggestions there has been an increased recognition of migrant places in Australian Heritage Registers. Armstrong’s research in the 1990s, was used to produce a publication for the Australian Heritage Commission in 2001 that outlined instructions for migrant groups to nominate places for heritage listing. The guide suggested places that “may not be known to the wider community, such as places of worship, places of work, local shopping areas or places associated with people or events that have significance for particular migrant communities”
(Australian Heritage Commission., 2001, p.9). The guide was intended to assist migrant groups in nominating places for heritage listing although heritage authorities remain the ones who are ultimately authorised to determine inclusion on Heritage Registers.

In Victoria, the State’s most significant heritage places and objects are listed on the Victorian Heritage Register (VHR). Nominations to the Register are assessed by the Heritage Council made up of ten experts appointed by the Governor in-chief as recommended by the State Minister for Planning. The nominated place must fit into one of eight criteria relating to its cultural, aesthetic, social, architectural or historic significance to have ‘State-wide’ heritage protection. Migrant places that have been included on Federal and State heritage registers can be categorised as either reception centres, such as Bonegilla Migrant Camp (1947 and 1971), migrant employment sites such as the Snowy Mountains Hydro-Electric Scheme (1949-1974), and examples of 19th century buildings associated with earlier migrant groups such as the See Yup Chinese Temple, South Melbourne (1856).

Heritage places considered significant at a municipal level are included into a Heritage Overlay as part of the local council planning scheme. Post-war migrant places recognised in the Heritage Overlay of local councils across Melbourne include migrant hostels, such as the Brooklyn Migrant Hostel built in 1949; immigrant employment sites, such as the Kinners Ropeworks that operated from 1906 – 1969; migrant club houses, such as the Williamstown Italian Social Club built in 1950 and migrant places of worship, such as the St Eleftherios Greek Orthodox Church in Brunswick (converted in 1969). These inclusions mark a considerable change in heritage representation that, until recently, comprised predominantly nineteenth and early twentieth century architectural styles. Such sites are included in the Victorian Heritage Database (VHD), which is a digitalised online inventory of heritage sites with Federal, State and local heritage protection and includes recognised sites by the National Trust of Victoria.

MIGRANT HERITAGE INCLUSION

Academic Joseph Pugliese describes heritage recognised sites as “master signifiers in the narratives of a community and or nation [that are] ... charged with a privileged signifying status that suggests that they will inform and structure the shape of things to come” (Pugliese, 2002, p.6). Heritage professionals frame notions of architectural significance by selecting objects, sites and buildings for heritage registers. Once classified, heritage sites are landmarks of not just what a society values about its past but how we frame notions of national identity into the future. However, the included sites are based on an authorised value judgement, and as Ashton (2009) states, they are not “value free”.

The Significant Statements for buildings listed on the Victorian Heritage Database present the criteria for heritage assessment and can be used to study the basis of post-war migrant heritage inclusion. Selected examples of a comparable building typology from the database, such as post-war Greek
Orthodox churches, illustrates the nature of assessment. Two examples classified in local council heritage overlays include the Holy Church of St George in the suburb of Thornbury and the Greek Orthodox Church of St. Eleftherios in Brunswick. Both are examples of Greek Orthodox churches adapted from former Methodist church buildings by Greek-migrant communities.

The original brick, inter-war, Gothic Revival church of St George was built in 1923 and the Greek congregation acquired the building in 1986 updating it with additions such as the new porch structure. In the Significance Statement that justifies its heritage protection, the church of St George was deemed to have local ‘historical’, ‘architectural’ and ‘social’ significance. It was deemed architecturally significant as an early twentieth century brick church in the Gothic Revival style. However, the additions made by the Orthodox congregation were considered “not significant” and “unsympathetic” to the value of the original building (Heritage Victoria, 2011).

St Eleftherios Greek Orthodox Church adapted a former Methodist church in 1969 that was originally built in 1934. The additions made by the Greek community include the side towers, new front gable and the addition of a new front porch supported by Corinthian style columns with glazed floor tiling that suggest Byzantine and Orthodox architectural references into the previous Gothic Revival style church. The Significance Statement states that the church was deemed to be historically significant for its presence on the site, and for its representation of the changing demography in the post-War years. It was also deemed architecturally significant as a representative and intact example of an inter-War brick church with typically simplified Gothic detailing. The additions made by the Orthodox congregation are described as reflective of the “Greek stylistic influence, which altered a previously simple church”. Phrases in the significant statements, such as “unsympathetic” and “altering a previously simple church” suggest that the migrant additions are considered to disrupt the heritage-integrity of the original church building (Heritage Victoria, 2011).
Despite the Orthodox denominational use of both examples for the past 25 and 42 years respectively, both churches are listed on the Heritage Database as “former-Methodist churches” using their former names (Heritage Victoria, 2011). The Greek migrant presence is considered socially, culturally and historically valuable as evidence of the demographic changes in the area. However, the adaptations that tangibly demonstrate these changes are not considered architecturally significant. The justification for heritage listing is instead based on the architectural significance of the Gothic Revival style, suggesting that notions of architectural value in the determination of heritage significance remain associated with imported nineteenth century and early twentieth century architectural traditions.

Identification of migrant heritage can be problematic if it reflects the values of the heritage professionals as an outside group. Armstrong’s research in the 1990s identified a disjunction between the narrative of the heritage professional and the immigrant community in the assessment of significance (Armstrong, 1994, 1998, p.292). Such a disjunction can result in the misinterpretation, simplification and stereotyping of migrant heritage.

In contrast to the previous examples, St. John the Baptist's Greek Orthodox Church was purpose built on a corner site in Carlton North, in 1968. The church combines references to Greek Orthodox typologies such as the iconographic mosaic decoration although is adapted to the Australian context as demonstrated with the use of locally available and cheap concrete Besser blocks and the corrugated iron roof.

Figure 3. St. John the Baptist's Greek Orthodox Church, 998 Lygon Street Carlton North

The heritage value of St John’s Orthodox Church was identified in a 2007 heritage study as part of the City of Yarra’s Heritage Overlay. The Significance Statement outlines the heritage justification of the Church as socially significant, as a place where post war immigrants could socialize, and architecturally significant as an example of the “Late Twentieth Century Immigrants' Nostalgic” style. It is surprising to see the reference to the term defined by Apperly, Irving and Vine (1989) in this significant statement in an attempt to legitimize the architectural style of the building. However, the generalisation of migrant buildings into one collective architectural typology risks oversimplifying the complex expression of cultural identity that exists in migrant places and generalises the experiences and memories of migrants themselves.
THE NATURE OF MIGRANT HERITAGE INCLUSION

More extensive discourse analysis of the Significance Statements used for the heritage justification of migrant places is required, although questions arise from the initial exploration of migrant heritage inclusion. For example, is it enough that these migrant places are recognised for their social, cultural and historic significance and not their architectural value? Another question that these examples raise is whether migrant places are included as symbolic examples of heritage diversity or places that redefine notions of heritage significance? Moreover, in the process of inclusion, does migrant heritage become a marginalised category within mainstream heritage discourse?

What these examples do suggest is that architectural significance remains associated with nineteenth and early twentieth century architectural styles rather than later migrant adaptations. This is demonstrated in the heritage assessment of the Holy Church of St George and Greek Orthodox Church of St. Eleftherios where the additions made by the Greek congregation were considered antithetical to the value of the original church building. In the case of St John’s where the architectural value is recognised, it is as an example of a style so broad and general in definition it could potentially include any migrant building in the post-War period. It is considered to have architectural value in so much as it symbolises the diverse history of the neighbourhood rather than any intrinsic aesthetic qualities.

The attempt to incorporate migrant places into the fold of heritage protection does demonstrate an initial shift in heritage discourse where notions of significance have expanded to include the history of post-War migration. However, merely considering ethnic heritage in the scope of a heritage study does not constitute a culturally plural reshaping of heritage definitions. As post-War migrant places are increasingly recognised as heritage, more extensive enquiry of how such places should be incorporated into mainstream heritage frameworks is required. These examples in Melbourne highlight the challenges for heritage identification in plural societies, more broadly, where there is an attempt to represent diverse histories and identities through a shared interpretation of heritage value and architectural significance.
REFERENCES


Apperly, R., 1989. A pictorial guide to identifying Australian architecture: styles and terms from 1788 to the present, Angus & Robertson, Sydney


Armstrong, H. 1997. 'Migrant heritage places in Australia', Historic Environment, 13, 2, 12-23


Armstrong, H. 2001. 'Migrant Cultural Landscape: Collisions of Culture in Australia's Pluralist Cities', Landscape Australia, 23, 1, 57-60


Sandercock, L. 1998. 'Multiculturalism and the planning system (Part Two)', *Australian Planner*, 35, 4, 223-227


ABSTRACT

Not much has been said on the role of the architectural form of housing in the process of migrants’ settlement in the literature. This paper looks at this question through an exploration of the ‘outward gaze’ against the ‘inward gaze’. The outward gaze allows the investigation of exteriors of houses - assumed to be of Italian migrants - by looking at them only from the street, while the ‘inward gaze’ allows the investigation of the interiors of the house as well. In addition to housing exteriors explored in the streets of Melbourne, one Chinese migrant house was examined first through the outward gaze, as seen from the outside of the house by passer-bys, and then by the inward gaze, as seen only by household members and their guests. It is argued that ethnic representations described in the literature are only the visible side of the story, and that there is a lot more that is hidden from the public eye that can be exposed only by the inward gaze. Nevertheless, these unseen representations are vital to the settlement process and are often crucial to its success.

INTRODUCTION

The question of architectural form of housing in the process of immigrants’ settlement has not been adequately addressed. It concerns issues of the built form, i.e. housing of all kinds, and its role in immigrants’ lives during their years of settlement (a process which could last many years). Do migrants modify their homes in ways reminiscent of their homeland, in order to better adjust to settling in their new home? Studies of this question are scattered, appearing randomly in various disciplines, and there appears to be no comprehensive body of research on this topic.

The paper focuses on this topic as it has been discussed in the literature of several disciplines. The different ways in which immigrants achieve belonging and home-building have been presented in recent researches in anthropology, cultural studies, cultural geography and urban studies, examined through different perspectives, both spatial and social. For example, some researchers have focused on the house itself, as a built, architectural form (Blank 1998; Allon 2002: 101-110; Mitchell 2004: 142-163). Others have investigated the house as a symbol of
constant contradiction between past memories and constructed present (Lozanovska 1995: 101-129; Thomas 1997: 95-114; Jacobs 2004: 164-183). Lastly, other have examined the open space around the built form, the backyards and gardens, as expressing the bond with the homeland through land and vegetation (Armstrong 1999: 28-35; Head, Muir et al. 2004: 326-347; Morgan, Rocha et al. 2005: 93-105; Graham and Connell 2006).

Thus, Allon (2002: 101-115) investigates the debate about the housing of Earlwood, a suburb of Sydney, Australia. Through the story of this south-east suburb, she explains 'cultural conversations concerned with traditional housing styles, bungalow and federation, within this area, where the experience of post-war immigration has resulted in the rise of hybrid styles, in particular a style known as 'Mediterraneanisation' (Allon, 2002: 101). Mitchell’s study presents a similar conflict (2004: 142-163) concerning the struggles over the reconstitution of dwellings in Shaughnessy Heights, a wealthy suburb of Vancouver, Canada. The architecture of this suburban landscape has generated a public debate after many of the dwellings were purchased by a wealthy group of immigrants from Hong Kong, who reached Vancouver with capital which they intended to invest in housing and commercial properties in the city. Many of them have built large mansions known as ‘monster-houses’ to the local residents. These are two examples of conflicts that arise as a result of newcomers infiltrating established residential areas.

The gardens and backyards of immigrants have also aroused scholarly interest. It is evident that suburban Australia (and particularly Sydney) has given rise to many studies focusing on immigrants and their physical environment. For example, Morgan, Rocha and Poynting (2005) examine how immigrants’ gardens become sites of cultural practices in the Fairfield Municipality of Western Sydney. Similarly, Graham and Connell (2006) investigate the role of gardens in the process of settlement of both Vietnamese and Greek immigrants in an inner-city suburb of Sydney, while Head, Muir and Hampel (2004) examine the back gardens of Macedonians, Vietnamese and British born in suburban Australia. All these studies explore, in various ways, what their gardens mean to the immigrants.

All these diverse approaches to examination of the migrants' built form demonstrate the importance and relevance of this inquiry into the role of housing for migrants in their host country. However, none of them has actually studied the role of the built architectural form itself within settlement processes. In addition to a discussion on exteriors of migrant housing, this paper presents one home-environment of a migrant who emigrated from China to Melbourne. The paper draws on data collected from twelve houses of migrants from mainland China in suburban Melbourne, where the immigrants' alterations to their homes and modifications of their domestic space have been analysed. My findings have shown that, in many cases, home-building representations are invisible to the public eye. I have selected one house to demonstrate its importance in the process of settlement, despite the fact that it is impossible to trace the
migrant’s identity by only looking at the exterior of the house. Hence, the paper attempts to achieve a broader understanding of the roles of interiors and exteriors alike in this process.

TWO IMMIGRANT GROUPS IN MELBOURNE

Migrants from Italy and migrants from China are the focus of this study because of their significant role in the social landscape of Melbourne as two of the largest immigrant groups in the city. In order to study two generations of immigrants for a comprehensive examination of the settlement process, I have selected the Italians, as an earlier immigrant group, and the Chinese, as contemporaries. In 2006 2.1% (73,801 persons) of the total population in Melbourne were Italy-born, and 1.5% (550,000 persons) of the total population was born in China. Most of the Italians arrived in Australia before 1986, while most of the Chinese arrived after 1986 (ABS 2001 census).

Italian immigrants

In the first two decades of the post-war period there was a massive wave of emigration from Italy to Australia (Ruzzene and Bastiston 2006). Since this large-scale immigration ended in the late 1960s and early 1970s, the population of Italian-born Australians has aged significantly. According to the 2001 census, the highest concentration of people born in Italy was in the northern and western suburbs of Melbourne, and there were also high percentages in some eastern, south-eastern and southern suburbs of the city (ABS 2001 census).

Chinese immigrants

The Chinese group in Australia includes not only migrants from mainland China (the People’s Republic of China), but from other areas such as Hong Kong, Singapore and Taiwan. I define ‘Chinese’ according to the Australian Bureau of Statistics’ definition, i.e. Chinese from mainland China (PRC) excluding Hong Kong and Taiwan. Only after the end of the ‘White Australia’ policy, in the mid-1970s, did Chinese immigration increase and the

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5 73,737 Italian immigrants before 1986 as compared to 1,632 after 1986, and 28,802 Chinese immigrants after 1986 as compared to 5,446 before 1986 (ABS 2001 census).
recent wave of Chinese immigrants includes a much larger number of professionals and people from cities (Ip et al., 1992). According to the 2001 census, there is a high concentration of Chinese in the eastern and south-eastern suburbs of Melbourne (ABS 2001 census).

EXPLORING MIGRANT HOMES

The qualitative approach is based on examining exteriors of housing in suburban Melbourne, as well as interviews with immigrants and observation of their home environments. The study included in-depth semi-structured interviews with twelve Chinese immigrants in suburbs of Melbourne, who have bought or built their own homes. The interviews included not only accounts of emigrating to Australia, settlement in Melbourne and housing histories, but also stories of past homes in the homeland, as well as a guided tour in and around the house.

In the first part of the next section I trace the Italian (and probably other southern European) immigration through the suburbs of Melbourne. An ‘outward gaze’ has enabled me to view housing forms, alterations, and changes of facades and front yards. My findings focus exclusively on visible home-building representations. A discussed below, much literature on migrant housing has claimed that migrant houses can be recognized by their facades and other architectural signs, only through the ‘outward gaze’. This gaze is seen by passer-bys without entering the houses. In the second part I wish to challenge this assumption and present an example of another migrant house which does not display any obvious signs of its dweller’s ethnic background, but nevertheless contain ethnic signs in its interiors. Here I employ an ‘inward gaze’ depicting a Chinese immigrant’s home, thereby demonstrating how this Chinese immigrant ‘makes himself at home’ by using artefacts and decorations only inside the house. This raises interesting questions about the place of interiors and exteriors of homes in the settling process, and about the desire to ‘fit in’. It also considers the public gaze from the street toward the private area of the house, and the private and secure gaze from the house toward the street. Thus I explore the interface of the public and private domain.

THE OUTWARD GAZE AND THE INWARD GAZE
The ‘outward gaze’ in suburban Melbourne

The outward gaze allows us to view exteriors of housing, as done by some commentators who have written extensively on migrant housing in Melbourne. For example, Melbourne’s inner suburb of Carlton was the first place inhabited by new Italian immigrants (Sagazio 2004; Willingham 2004; Borgo 2006). Willingham (2004: 473) describes their architectural style in detail:

The Mediterranean idiom or sub-style in housing in Melbourne is characterised firstly by the heavily modified facades of suburban housing in the inner suburbs, and then by grandiose pseudo-Italianate villas erected on standard building lots in the outer suburbs in the late twentieth century.

Apperly, Irving et al. (1989: 270-1), in their pictorial guide to Australian architecture, identified a style titled the ‘Late 20th-Century Immigrants’ Nostalgic Style’. It describes how immigrants, who came to Australia from southern Europe after the Second World War, arrived with little or no money. At first, they lived in old rundown areas or found cheap accommodation on the fringe of suburbia. Through hard work and family solidarity, many eventually acquired enough money to build new homes in the outer suburbs (Apperly, Irving et al., 1989). Apperly et al. observed that

[w]hen [the migrants] were in a position to build houses for themselves, they understandably wanted the buildings to express two things: the fact that they had ‘made’ it in a new country, and a recollection of the culture from which they had come. [...] The typical house was double-storeyed and symmetrical, with central external stairs and a veranda edged with bulbous Baroque balusters of pre-cast concrete. The front elevation featured walls of buff or brown faced brickwork pierced by large arched openings (1989: 270).

Indeed, walking around Melbourne’s suburbia, one cannot dismiss the impression that many of the big suburban houses bear numerous traces of Mediterranean architecture: arches of all kinds, pseudo-Greek columns, white verandas and balustrades, ornamental metal fences, and walls guarded by lions and eagles (Figures 1, 2, 3), that are, as Lozanovska (1995: 129) puts it, mythical and masculine symbols of war and defence.
The ‘outward gaze’ into Jin’s home

In contrast to the outward gaze, the inward gaze allows us to view into the private interiors of housing. Jin has been living in his house for seven years, after emigrating from mainland China first to Singapore and then to Melbourne in 2000. According to Jin, the house, located in one of the outer suburbs of Melbourne, was built by Italian immigrants. However, I could find no representation of that fact because both the Italian and the Chinese character of the house are barely noticeable.

The house is similar to many Australian suburban houses built in the decades after the war (Figure 4). Its front yard comprises a square lawn surrounded by vegetation and flower-beds, as in many Anglo-Australian houses (Holmes 2000). The backyard is filled with plants and outdoor furniture (Figure 5). There is no doubt about the importance of gardens in the formation of the (Anglo-)Australian national identity. Around 1880 the lawn-mower was introduced in Australia, and suddenly the lawn became a standard feature of the Australian home (Boyd 1952). Gardens in Australia not only express class and gender, but also reflect ideas of nationalism and the nation. In the post-Federation era gardens were expressions of national identity, and reflected a

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6 Pseudonym.
strong sense of national pride even though there was nothing really ‘Australian’ about many of them (Holmes 2000).

The house is veneered with brick, which is a very common material in the Australian suburban landscape (Boyd 1952; Lewis 2000). It is a simple, single-storeyed structure, and this simplicity, together with the quiet location, was the main reason for buying it:

Well, we quite liked this house, house like this is quite cosy, yeah, I like here, Australia is a good place to live, quite peaceful, quite calm and here you see it’s very calm and … I like the environment.

Thus, this is a standard suburban Australian house with no distinction or peculiarities. Its quietness indicates the normal, ordinary life taking place within it. About relationships with the neighbours, says Jin:

When we moved in we didn’t see the neighbours. I think we should probably go and knock on the door. I didn’t know whether I should go and knock on the door “Hi, I’m the new neighbour”. I didn’t do that just in case people don’t like it, so we just kept quiet when we moved in, until probably a few months later I saw the neighbour on this side and he was very nice. He said “Ah, you moved here recently”. I said “Yes”. We introduced ourselves to each other and that’s it.

And on another occasion:
…opposite to me there used to live… he's no more now. He sold his house. The first time I saw him and met him I thought he just moved in, but he told me he lived here for 10 years and he thought I lived here probably only a couple, half a year, but I lived here 7 years. So first time I saw him (laughs) was after 7 years…

The lack of contact with the neighbours contrasts with Jin’s former home in China, in which the extended family had lived, and relationships between the residents were based on kinship. The fact that the house does not reveal its occupants' ethnic identity must have had a major influence on the lack of recognition from the neighbours. Asked whether he wanted his ethnic identity to be public Jin answers:

No, nothing, nothing, we don’t have. You want to have a look, you can look. Nothing, nothing special, I know some Chinese people they have very good, they have fish ponds but we haven’t done much, haven’t spent much time on…

Of course, the demands of the western lifestyle do not leave much time for extra activities related to the house and its appearance, nor the financial burden accompanying such modifications, but I do not believe that these are the real reasons for neglecting the exterior of the house. I believe that this Chinese family wants to keep its ethnic identity for its own ‘inward gaze’ benefit. I do not think they are trying to hide their identity or feel any shame because of it, but that they would like to remain private about it, thus reducing interference with the exterior of their house.

The ‘inward gaze’ into Jin’s home

The inward gaze is more intimate, reserved for members of the family or those who have been invited inside. It tells a story of migration and cultural context that is unique and peculiar to a specific family, revealing evidence of ethnicity via the decorations, furniture and artifacts of everyday life that ‘can be felt without having to be incorporated in everyday behaviour’ (Gans 1979 :9). Thus the interior of this Chinese house is decorated with Chinese calligraphic works, some of which were inscribed by Jin’s father and therefore have emotional value. The study is filled with mementos and calligraphers’ equipment (Figure 6) while Chinese knots and paintings of traditional opera masks (Figure 7) are hung in corridors and other private areas, emphasizing the ethnic identity of their owners:

…and this also a friend gave to me. I think that’s a sword…but this is not part of it [a red knot]. Actually, I put that here because this… is very typical, this is the same heart, this is a family which means your family is united or the couple husband and wife, they send
you … It’s good we have a few of these, have one here, have a couple there [in the bedroom]. Normal people put photographs there [above the bed]. It’s not necessary to put it in the bedroom. It’s just everywhere, it’s just good luck sort of…

The inward gaze has not been discussed in the literature about the built form as concerns the settlement of immigrants, perhaps because invisibility is inherent to it, making it less evident. However, to my mind, not only does it exist, it also plays a significant role in the settlement process of new immigrants in urban environments.

CONCLUSION

Most of the literature on immigrants’ homes and gardens explores only the visible evidence of changes and modifications of houses and yards according to tastes, fashions (Lozanovska 1995; Allon 2002; Mitchell 2004), cultural needs or customs (Blank 1998; Allon 2002: 101-110; Head, Muir et al. 2004; Mitchell 2004: 142-163; Graham and Connell 2006). Visible modifications of housing in many established residential areas have generated conflicts and struggles between newcomers and local residents. This is not the case in Melbourne. It seems that newcomers have not caused any conflicts or struggles over the public domain as has happened in Sydney (Allon 2002) or Vancouver (Mitchell 2004). The reason for that has not yet been fully investigated, and is not the focus of this paper. But changes and modifications of housing in some suburbs of Melbourne do exist and cannot be ignored. When I first commenced this investigation, I wanted
to know whether this outward gaze is the only way migrants make themselves feel at home in their houses, or there are other ways migrants facilitate their settlement behind private walls. The literature dealing with visible adaptations of migrant housing seemed inadequate, so I searched for other concealed representations that are hidden inside the houses.

As a result, I argue that the ethnic representations described in the literature (Apperly, Irving et al. 1989; Willingham 2004) are only the visible side of the story, and that there is a lot more that is hidden from the public eye. In the case of Jin, a Chinese immigrant, this is the only way he and his family can get the ‘feeling of being at home’, without any ‘visible’ ethnic representations outside the house. I also believe that these unseen representations are vital to the settlement process and cannot be disregarded. They are often crucial to its success. Writings on the settlement process of migrants in the city and in particular in their home environment tend to neglect this aspect of the house and focus on the visible ‘ethnic’ attributes of it. But as we have seen in this paper, there is much to gain from an exploration of interiors of housing, as well as exteriors, if we want to fully appreciate the role of the house in the settlement process of migrants.

The ways in which immigrants get to ‘feel at home’ in a new country vary and are dependent on many variables, such as their country of origin, their cultural heritage, the number of years since they arrived in their new country, and how they have been accepted by the locals. In this paper they were examined by means of what I have called the ‘outward gaze’ and the ‘inward gaze’. The outward gaze surveys the visible ethnic representations of immigrants in the outer suburbs of Melbourne, examining facades and front yards of homes with specific attributes that indicate occupation by immigrants mostly from southern European countries. The inward gaze, in contrast, examines invisible ethnic representations of a Chinese suburban family, visible only to the family members and their guests. By this means, I have discovered that we need to look into the interiors of housing in order to fully understand how some migrants make themselves feel at home in their houses, and I have demonstrated how the architectural form of housing plays a major role in the process of immigrants’ settlement, whether ethnic representations are visible or invisible.

REFERENCES


BUILDING COMMUNITY: ENABLING FIRST YEAR DESIGN STUDIO CULTURE USING SOCIAL MEDIA

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ABSTRACT

The teaching of architectural design has remained relatively constant since the French Ecole des Beaux-Arts was established in the 19th century. Central to teaching in architecture is the Design Studio, a unique learning environment that is based in the tradition of “learning by doing” within a communal context. Central to the effectiveness of the studio environment is the understanding that learning is a socialised activity, that a community needs to be formed for learning to take place.

This paper presents a qualitative study of socialised studio learning, using a social network platform to investigate the interpersonal behaviour of first year students in a blended learning environment of traditional face-to-face studio and online participatory teaching. Using student and staff feedback, the paper investigates patterns of student re-presentation, levels of disclosure, communal behaviour and social exchange in both the physical and virtual environments, and explores ideas of information transparencies, cultural perforations and temporal fluidity. This paper describes the analysis of qualitative data to develop a preliminary theoretical framework of the social affordances in studio education to enable the enculturing of design as process and profession. The framework aims to support future models of blended studio learning and facilitate further research into mediated design education.

A BLENDED SOCIAL APPROACH

For the beginning student, the design studio as a place of learning is often seen as a mystifying setting. Architectural historian Jeffrey Karl Ochsner notes that part of this mystery lies in the unbounded nature of design enquiry that is “...fundamentally about learning ‘trust’ in a process – a process of discovery, the endpoint of which cannot be initially be known or even predicted” (Ochsner, 2000). Degrees of connectedness and trust can be developed through social relations occurring in an educational environment.

One increasing global trend for Internet-based teaching delivery is the blended learning environment, which combines the online instructional system with face-to-face contact (Driscoll, 2002). Blended environments are often seen as a hybrid of two environments, one that employs conventional face-to-face interactions and one that utilizes the Internet for extended communication and collaboration. Thus, blended environments present a flexible approach to course delivery, offering more than one time and place for learning (Collis and Moonen, 2002). Blended learning environments offer
opportunities for social interactions to occur through reflective activity, collaboration and individual expression. According to social constructivist theory, higher levels of learning occur within this social context (Yildiz, 2009, Jusoff and Khodabandelou, 2009), where interactions are promoted outside the face-to-face class time. The blended learning approach, combining both face-to-face teaching and online environments, was introduced to the design studio to encourage opportunities for socialisation, connectedness and trust.

ESTABLISING THE BLENDED ENVIRONMENT

In 2011, the Interior Architecture program at the Faculty of the Built Environment, UNSW conducted a pilot study using blended learning environment in the First Year Design Studio combining the traditional face-to-face studio environment with an online studio environment using a social network platform. The aims of the study were to:

- investigate patterns of student re-presentation, levels of disclosure, communal behaviour and social exchange in both the physical and virtual environments
- test whether a blended learning approach was able to facilitate a more effective community of design inquiry

The literature defines blended learning environments as achieved either through the blendedness of media or pedagogical approaches. In this study, the blended approach focussed on the integration of the physical studio environment with a virtual studio environment.

Traditional Face-To-Face Studio Environment

The face-to-face studio environment of First Year Design Studio is typical of most studio-based forms of design education. Tutorial groups are based around a maximum of fifteen students in a problem-solving setting led by individual tutors. Typically, studio activities begin with group pin-ups and discussions early in a project aimed at facilitating common understandings of design limits and possibilities and build to individual desk based consultations in the later stages of a project, aimed at refining design ideas.

Implementing an Online Social Network Platform

The on-line studio environment of First Year Design Studio was implemented using the social network platform, Ning. A social network site (SNS) is defined here as a web-based service that allow individuals to share content within a bounded system. Such systems can generally be constructed as either a public, semi-public or private profile, and aims to allow users to view and
negotiate with their list of connections and those made by others within this system (Boyd and Ellison, 2008). A SNS was determined to be appropriate for the investigation of social behavior of students within the formal educational environment.

Ning, an online platform for the creating and hosting of social networks, was selected to host the course’s online component. Ning is social network platform that competes with social sites such as Facebook and MySpace by allowing people with specific interests to create their own social networks using their own visual design, choice of functionality and member data. In the context of wider offerings, Ning was chosen for its ease of use and range of functionality for the administrator (the course co-ordinator). The following functionality was implemented in the on-line studio environment:

- Latest Activity: a central block of dynamic information, containing updates from blogs, events and comments. The latest activity was used as the first point of contact, to keep the student updated on what was occurring within the course.
- Blog: each member had a personal blog, in which individual content could be uploaded to. The blog was used to house developmental work from their studio projects.
- Photo Gallery: used to store student albums containing scanned drawings, graphic layouts and imagery. Design studios involve a large amount of graphic communication, so the galleries allowed the students to upload a range of graphic content. This was a necessity, and a required component of the online environment.
- Comments: used to provide tutor feedback to specific posts, and an avenue for peer feedback. Comments were valued for their immediacy and connection to the relevant work.
- Events: simply used for announcements. However, the social terminology “events” altered the way the announcements were received.
- Individual User Page: each member had a personal page that contained their blogs, photo galleries, friends, and comments. This was used primarily to provide a high level of personalization to the course.
- Chat: an opportunity for casual, unmonitored interaction between the students.

The on-line studio environment mimicked the face-to-face environment through the establishment of “Groups” representing the 7 tutorial groups led by studio tutors. Students were required to maintain a weekly Blog using drawings, photos of virtual or physical models and text summarizing and reflecting on their design development. Tutors were requested to comment on the Blogs at least once prior to the weekly face-to-face studio. On joining the network, users were requested to maintain all communication as “public” i.e., to allow all users to view their profile, photos and blogs.

Dynamic Interface and Social Presence
A key factor in selecting the Ning platform was its similar visual appearance and functionality to Facebook. The “Latest Activity” functionality, in particular provides a constantly changing and engaging front page for users that was particularly important in providing a sense of an active studio environment. The interface of the Ning platform was designed to two primary criteria: visual appeal and social presence. Visual appeal included an easy to understand, simple layout that did not contain distracting or confusing imagery or color schemes. Social presence here is defined as the “degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships” (Jusoff and Khodabandelou, 2009). It is also seen as the ability of learners to project themselves socially and affectively into a community of inquiry (Rourke et al., 1999). Social presence is a complicated construct and involves privacy, social relationships, communication styles, the nature of the task, feedback, and immediacy (Tu, 2002), and can have a significant impact on student progression, improved learning, motivation and engagement (Richardson and Swan, 2003, Jusoff and Khodabandelou, 2009). It is therefore necessary that a social presence is able to be sensed in the front page of the SNS.

The front page of the Ning network (Figure 1) focused on the central block of information: the latest activity. Similar to other SNS, the latest activity block constantly changes with updates of activity from the network, including student blogs, events and comments. Network members are continuously being featured in this block, generating a strong sense of social presence. Other front page items include personal settings, members, events, blogs and groups.

![Design Studio 1](image.png)

Figure 1: Components of the Ning front page. (A): Latest Activity feature block constantly...
updates with the activity of student blogs and comments (B): Personal settings for every member, including email and list of friends (C): Events feature block is used for announcements (D): List of course members (students and tutors) displayed as customized avatars (E): Features such as groups can be dragged and dropped onto the front page

METHODOLOGY & SAMPLE

A review of research in social media for education reveals a clear lack of studies that have specifically investigated the effectiveness of inclusive learning through student social interaction in a blended course environment. There is a need for more in-depth studies that examine the effectiveness and inclusiveness of online socialized learning, particularly when combined with face-to-face contact. This study, therefore, has the aim of examining how student perceptions of blended learning environments, social interaction, and overall satisfaction are related, as well as identifying critical issues such as privacy and disclosure, information management.

A survey was issued to the students and staff containing a combination of questions ranging from multiple choice and short answer questions, to psychometric scale items. Of the 92 students surveyed, the average question response rate was 99%. Student responses to the multiple choice questions were measured as a percentage of the response count. Multiple choice questions were made mandatory, so these questions had a 100% response count. Students’ responses to the more open-ended short answer questions were analyzed to discover any patterns and common issues. These questions were optional, so response counts are provided for further clarification. Student’s responses to the psychometric scale questions were measured with a rating average, calculated from allocated scores for each scale. Five scales were presented with these questions: SA=Strongly Agree (Score of 5), MA=Mildly Agree (Score of 4), NAD=Neither Agree or Disagree (Score of 3), MD=Mildly Disagree (Score of 2), SD=Strongly Disagree (Score of 1).

The study involved 92 First Year Design Studio students and the associated 7 Studio tutors. The following details preliminary demographic and behavioural information of both the student and staff cohorts that were surveyed:

- Number of student respondents = 92 (100% of cohort); Number of staff respondents = 6 (out of a total of 7)
- 91% of students under the age of 24, of which 75% were female; 82% of staff over the age of 24, of which 4/7 were female
- 99% of students had access to computer at home; 83% of staff had access to computer at home
- 70% of students were local, 30% of students were international
- 95% of students had used social media previously (overwhelmingly Facebook), of which 71% of students used social media outside the educational environment every day; 83% of staff had used social media previously (Facebook), of which none used social media outside the educational environment every day
- Only 26% of students had previously used an online learning environment for educational purposes eg., Blackboard in the school setting; Only 66% of staff had previously used an online learning environment for educational purposes eg Blackboard in the university setting
- 87% of students logged into the on-line studio at least a few times per week; 60% of staff

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logged into the on-line studio at least a few times per week

A key observation from the demographic data is the striking difference between the frequency of use of social media between students and staff. On a daily basis, 70% of students used social media (overwhelmingly Facebook) in contrast to 0% of staff. This is a reflection of a key change in 21st century information and communication channels - the prevalence of social network sites, particularly amongst younger generations.

COMMUNITY FORMING

On joining the network, users were requested to maintain all communication as "public" ie., to allow all users to view their profile, photos and blogs. Within 5 minutes of sending the invitations to the site, students began joining the network. Within 24hrs, 90% of students had joined. For students, the on-line studio environment assisted in developing a sense of a learning community, with over 75% of survey respondents agreeing that it improved the way in which they interacted with their peers and tutors:

“…it creates a sense of community and it helps to know that there are other students and tutors there to help between class times.”
“…I think it’s approaching learning in a different way, that we can look at other students work and form a community to help each other out.”
“There was more of a relationship between tutors and other students. It’s has a stronger sense of community.”

Students’ perceptions of community, inclusion and level of comfort with using the Ning environment were also evaluated using a range of psychometric scale questions (Table 1).

<table>
<thead>
<tr>
<th>Survey Question (Psychometric)</th>
<th>SA</th>
<th>MA</th>
<th>NAD</th>
<th>MD</th>
<th>SD</th>
<th>RA</th>
<th>RC</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Ning environment helped me build a sense of community (interaction) amongst the students</td>
<td>15 43 23 8 2</td>
<td>3.7</td>
<td>91</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Ning environment helped build a closer relationship with tutors</td>
<td>21 41 19 7 3</td>
<td>3.8</td>
<td>91</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using Ning improved the way I interacted with my peers/tutors in studio</td>
<td>21 44 22 3 1</td>
<td>3.9</td>
<td>91</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using Ning helped me feel more connected with the course</td>
<td>32 38 16 3 2</td>
<td>4</td>
<td>91</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The online environment developed my ability to express and share my ideas</td>
<td>30</td>
<td>46</td>
<td>14</td>
<td>0</td>
<td>1</td>
<td>4.1</td>
<td>91</td>
</tr>
<tr>
<td>I am comfortable with publishing my work online</td>
<td>24</td>
<td>38</td>
<td>18</td>
<td>9</td>
<td>2</td>
<td>3.8</td>
<td>91</td>
</tr>
<tr>
<td>I am more comfortable presenting my work online than verbally</td>
<td>21</td>
<td>20</td>
<td>26</td>
<td>14</td>
<td>9</td>
<td>3.3</td>
<td>90</td>
</tr>
<tr>
<td>I feel comfortable providing honest feedback on other students' work</td>
<td>8</td>
<td>30</td>
<td>35</td>
<td>13</td>
<td>4</td>
<td>3.3</td>
<td>90</td>
</tr>
</tbody>
</table>

Connectedness

The Ning platform is built around the visible profile of members, including the listing of “Friends” who are also part of the system. Like most social network sites, Ning allows members to upload a profile photo, an avatar, as a representation of themselves. This feature was used enthusiastically by students, with many regularly updating their avatars. Avatars emerged very quickly after the network was made active. Avatars for both students and staff ranged from full or partial portraits to more abstract images.

A critical component of all social network sites is the public display of socialization and the making of connections. Like all social network sites, users were prompted after joining to welcome new members and identify others they wish to make “Friends” with. The act of “making friends” was quickly adopted by students early in the course. The list of Friends also allows users to cross the network by clicking through the Friends lists. Both the avatar and friend feature of Ning contributed to the very high level of personalization. The display of connectedness through ‘welcoming’ and ‘friending’ function as important signals of individual and sub-group identity and assist students in navigating the online social world.

While all computer-mediated communication allows individuals to meet strangers, what makes social network sites different is that they “enable users to articulate and make visible their social networks” (Boyd and Ellison, 2008). In the on-line studio environment, identity and connectedness is given visual and temporal form through the public displays of “friending”. In social network sites, information is provided on an individual through the context of their connections, “…social status, political beliefs, musical taste, etc, may be inferred from the company one keeps” (Donath and Boyd, 2004). For students, the on-line studio environment assisted in developing a sense of connectedness, with over 77% of survey respondents agreeing that it helped them to feel more connected to the course overall. For students, connectedness was important not only in terms of connectedness to each other and the course, but also in terms of connectedness to their own design process:

“...the best thing about Ning was connecting with other students who are in the same position as you, learning from them as well as re-reading your thoughts”
“...being able to learn from your peers as well as receiving feedback and learning from other people’s feedback as well.”
“being able to get feedback more frequently and reading other students feedback was also
beneficial e.g. reading another person’s feedback would help me to think about specific issues in my design I might need to improve upon”

Trust and Disclosure

Trust is defined by the willingness of one to be open and susceptible to the engagements of another, based on a mutual expectation that an exchange of important information will be performed (Mayer et al., 1995). Trust is a crucial component of developing new relationships, both for face to face situations and online interactions (Coppola et al., 2004). Although trust has been confirmed as a precondition for the disclosure of information of a personal nature (Metzger, 2004), studies have suggested that it is not a necessity for the building of online relationships as it would be for face to face (Dwyer et al., 2007). In fact, inference is often enough to establish a connection that would be used as the basis for building trust (Donath and Boyd, 2004)

For students, the on-line studio environment assisted in developing a sense of trust in the undefined nature of the design process, with over 78% of survey respondents agreeing that it helped them reflect on what they were learning:

“The best thing about using Ning is I can see clearly of how my work has been developed.”
“The best thing about using Ning is connecting with other students who are in the same position as you, learning from them as well as re-reading your thought.”

A key aspect of the visibility of theirs and their peer’s design development was that it made the process of design visible: “…The best thing about using Ning is the design process can be seen.”

Trust between students however was at risk because of the potential for copying of ideas:

“The worst thing about Ning is that other students can easily "take" other students ideas, whilst in some cases this may be obvious, in others simple ideas and concepts can be taken and used in a different way...this is frustrating as we are expected to blog about our ideas before submitting an assignment.”
“Putting your work on public sometimes means that people can copy your work, rather than learning from the development or thinking behind it.”

Students’ conduct and judgment about the online publication of their creative ideas was analyzed using three multiple choice questions, and associated short answer responses. Results reveal that the majority of students deliberately withhold creative work when publishing online, choosing to retain the work for face-to-face contact with their tutors. Although most students upload their work on completion, over 40% of students withheld their publication until the last day or until they saw evidence of other students work first. This strongly suggests either a concern over intellectual theft, or a lack of confidence in the standard of work. Over 40% stated they looked at other students work when they are lost, rather than seek staff advice. This may suggest a trend towards peer copying, and supports students’ concerns of intellectual theft. Short answer questions reveal the key reasons behind this behavior:

“(I don’t upload all of my work because of) fear that other students will steal ideas - have seen my own concepts ‘recycled’ by other students word for word.”
“(I don’t upload all of my work because) I don’t want others to ‘borrow’ it.”
“(I don’t upload all of my work because) at early stages, competition between students is a big factor.”

Conclusion

This study clearly demonstrates that a social network does influence and change students’ interactions and behavior. Social behavior is clearly beneficial for students, with most of them stating they gain a deeper understanding of the course content and each other through the online environment. There is also evidence to support social networks as an effective environment for facilitating student community and culture. Students have stated they are better prepared, settled and informed about the course through the combined use of online and face-to-face contact. The large majority assert they are more connected and comfortable with the online environment, and clearly value the network as a crucial component of their learning. Social interaction is shown to add value to a student’s learning experience through trust building and community forming. Hybrid teaching environments that take advantage of their developed online literacy are much more able to connect to their diverse patterns of information and knowledge management, scholarly publishing and learning. Further research would investigate issues of disclosure and privacy at a deeper level.

REFERENCES


AN INTERPROFESSIONAL APPROACH TO ARCHITECTURE EDUCATION: COLLABORATION BETWEEN ARCHITECTURE AND OCCUPATIONAL THERAPY

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ABSTRACT

A research study which explored cross faculty collaboration of the professional disciplines of architecture and occupational therapy yielded many teaching and learning lessons learnt for the wider community of practice of interprofessional educators. The academic programmes involved the design and development of a structured intervention program delivered concurrently into the course syllabus of a first year core design unit of an undergraduate architecture course and a third year core professional practice unit of an undergraduate occupational therapy course. The teaching and learning aims sought to increase student engagement of both cohorts with the growing international agenda of social inclusion and provided rich experiences in relation to universal design practice within a framework of inter-professional education. The results of the study evidenced increased and broader student understanding of issues in relation to inclusive design and engagement with different ways of thinking. The study further established a pathway for the embedding of universal design practice within both programs at multiple levels; has captured the interest and eye of key community and industry stakeholders nationally; and, has identified opportunities for cross faculty work integrated learning and research opportunities into the future. This paper presents the outcomes of the research study.

INTRODUCTION

This research was undertaken in 2010 as part of an Australian university strategic teaching and learning grant scheme (STALGS) titled Design 4 Diversity: enhancing interprofessional learning for architecture and occupational therapy students. The focus was interprofessional education for architecture and occupational therapy students in relation to universal and inclusive design practice. Specifically the aims of the project were to: 1) explore the current community, industry and interprofessional philosophy and practice regarding universal design and inclusive design practice; 2) develop and trial flexible blended teaching and learning resources, designed to provide rich experiences regarding raising awareness of inclusive design practice; 3) explore and identify sustainable opportunities for architecture and occupational therapy students to learn about inclusive design practice within a framework of interprofessional education, and, 4) explore and identify sustainable partnerships with key stakeholders that will support ongoing research and work integrated learning intended to drive collaborative practices for both professions forward.
The raison d’etre of interprofessional education is that students from different professional groups, who will work together in future, should engage in learning with, from and about each other, with the aim of promoting collaborative practice and ultimately improving the quality of the service they offer (Ellis, Morison and Purdy, 2008, pp. 77). The reflection of collaborative practice in interprofessional education models used in health and social science programmes were found to be of particular value when applied to built environment programmes (Ellis, Morison and Purdy 2008; Oxley and Glover, 2002 and Allinson et al., 2003). The programmes of architecture and dentistry, (Aurel and Howe, 2010) showed the example of 300 students and staff engaged in professional collaboration to develop leadership in public health education and community engagement. This unlikely collaboration offered the flexibility to bring different audiences together and to offer a platform to collaborate knowledge sharing through diverse networks with multiple partners. In architecture and built environment education, learning design and communication is a typically highly personal process, however the introduction of a blended learning environment increased both individual and cooperative learning.

INTERPROFESSIONAL EDUCATION (IPE)

Interprofessional education emerged as a branch of constructive alignment education applied primarily in health, health planning, social welfare fields and allied health related professions. In 2007, the University of Minnesota adopted the definition of interprofessional education, developed by the Center for the Advancement of Interprofessional Education (CAIPE) that states, “Interprofessional Education occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care.”™. Interprofessional education occurs when students from the health professions and related disciplines learn together about the concepts of health care and the provision of health services toward improving the effectiveness and the quality of health care (CAIPE 2007).

Although effective interprofessional education may occur in different ways, it generally involves the following elements: collaboration; respectful communication; reflection; application of knowledge and skills; and experience in interprofessional teams. Hugh Barr from the UK Centre for the Advancement of Interprofessional Education offered this definition of IPE:

“The application of principles of adult learning to interactive, group-based learning, which relates collaborative learning to collaborative practice within a coherent rationale which is informed by understanding of interpersonal, group, organisational and inter- organisational relations and processes of professionalisation.”

Within this framework, IPE is distinguished from multi- professional education (also known as shared learning or common learning) because the latter relates to circumstances when different professional groups learn together for whatever reason with common content of learning. The former focuses on learning from and about each other to improve collaboration and consequently the quality of care. The use of varied descriptions for inter-professional practice where ‘prefixes such as inter, multi, and trans are used randomly’ (McCallin, 2001). Barr’s (1996) definition is well established and widely accepted in these fields, and focuses on interprofessional (as opposed to multidisciplinary) education, where the ultimate intention is to improve collaborative practice, rather than simply as an end in itself.
DESIGN FOR DIVERSITY agenda

The process by which environments are designed and constructed is the medium through which inclusive design can be implemented. Insufficient best practice examples to guide practitioners were considered impediments (Hitchcock, et al., 2001) and further developments were needed to improve developments in current methodologies (Keates and Clarkson, 2003). Dalcher (2006) advocated for the borrowing of knowledge from other disciplines to promote effective universal design. “No one area can give the entire answer and the essence of design activity is, therefore, in the reconciliation and resolution of multi-issue, multi-disciplinary dilemmas, decisions and trade offs.”(Dalcher, 2006, pp. 264). The work of occupational therapists (OT) and architects in universal design practice has been separated in practice due to differences in professional socialization and language. A recognition of and respect for the strengths of each group would facilitate, along with early collaboration in the design process their collaborative practice.

The Design 4 Diversity agenda sought to bridge this distance between the two professions through increased emphasis on equity, diversity and access in social and political agendas at the local and national levels. Several local, national and global initiatives currently operating demonstrated the need for graduates who are able to work in new and emerging areas of practice. These include the United Nations Convention on the Rights of Persons with Disabilities (2008); Review of Australian Standards for Access and Mobility: AS 1428 (2009), Disability (Access to Premises) Standard, Victorian Government’s Build for Life campaign (2010), Livable Housing Design standards (Federal) and others that consider place making and healthy cities in recent years have also made traction in this arena. The literature review conducted by the Design for diversity research team found little evidence of educational initiatives in relation to these movements. No precedent instances where architecture and occupational therapy students have been brought together within the context of interprofessional education about a shared area of practice, that is, universal design/inclusive design were reported.

methodology

Conceptualisation of IPE approach

A range of teaching and learning strategies designed and developed jointly by the faculty staff involved saw the collaborative architecture and occupational therapy program embedded into the respective curricula (Refer Figure 1 and Table 1). The conceptualization of IPE approach was realized as an “intervention” model and saw students from both cohorts take part in an infused program of delivery of specific themed content and through focused engagement by academic staff from both disciplines.

Evaluation of three aspects of both qualitative and quantitative data were conducted: 1) the experiences of students in relation to the teaching and learning program; 2) measurement of the level of self reported readiness for interprofessional learning at pre and post intervention; and 3) measurement of the level of self reported achievement of the student intended learning outcomes at pre and post intervention. A pre and post evaluation survey elicited information from students at the
beginning and end of the intervention program. Additionally, a standardised instrument that measures the readiness for interprofessional education was utilised.

![Diagram of Architecture and Occupational Therapy Curriculum Infusion]

Figure 1: Architecture and Occupational Therapy Curriculum Infusion

<table>
<thead>
<tr>
<th>Year Level</th>
<th>Trimester</th>
<th>Core Unit</th>
<th>Architecture</th>
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<td>Core Unit</td>
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<td>1</td>
<td>2</td>
<td>HSO 104</td>
<td>SRD 164</td>
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<tr>
<td>2</td>
<td>1</td>
<td>HSO 206</td>
<td>SRD 263</td>
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<td>3</td>
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<td>HSO 305</td>
<td>SRD 363</td>
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<tr>
<td>4</td>
<td>2</td>
<td>HSO 304</td>
<td>SRD 763</td>
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<th>Year Level</th>
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<td>SRD 763</td>
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Delivery of themed content and student learning experiences

<table>
<thead>
<tr>
<th>Teaching and learning strategy delivered to 114 architecture students and 49 occupational therapy students.</th>
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<tbody>
<tr>
<td>Themed lecture content by academic staff and guest lecturers</td>
</tr>
<tr>
<td>• Designing for diversity</td>
</tr>
<tr>
<td>• Mobility and accessibility</td>
</tr>
<tr>
<td>• Australian Standards that related to accessibility</td>
</tr>
<tr>
<td>• Disability and dignity</td>
</tr>
<tr>
<td>• Proxemics</td>
</tr>
<tr>
<td>• International Classification of Functioning (WHO, 2001) introduced as the model of considering diversity of abilities in the community.</td>
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<tr>
<td>• Principles of universal design (North Carolina State University, Centre for universal design)</td>
</tr>
<tr>
<td>Student immersive and interactive practical workshop and small group discussions.</td>
</tr>
<tr>
<td>• A range of experiences designed to provide “real life” simulation of wheelchair use and vision impairment.</td>
</tr>
<tr>
<td>• Virtual simulation environments (Second Life) via avatar use of wheelchair.</td>
</tr>
</tbody>
</table>
Cross school academic staff were involved in each other’s curriculum

OT staff participated in design studio reviews.

Architecture staff and students participated in OT curriculum in relation to design literacy and architectural communication for occupational therapy practice.

Shared online learning resources including multimedia (View Quest) made available to both cohorts of students, online narrated power points, references and web links.

Showcasing a series of interviews with key stakeholder representatives around key issues regarding inclusive and universal design.

Table 1 Table of summary of content of collaboratively designed and delivered program

study findings

Student outcomes and evaluation

In architecture students’ final design project presentation, students were required to show evidence of how they had considered the principles of universal design within their final design solutions. Many had gone to considerable effort to make their design accessible for a broader group of people than those typically considered. While not conforming totally to the Standards, the intent was to take these things into consideration while at the same time not to inhibit their consideration and thinking in relation to the design elements. Students made a link between early exposure to other influential parties and the development of suggested recognition and respect. Views about the status of universal design as a specialist area or core skills were mixed. OT students recognised it as a specialist area and distinguished it from their other fields of practice; architecture students argued that universal design was essentially good design and therefore fundamental. End users were identified as extremely important. Issues identified as being factors, which restrained or damaged the ongoing development of universal design in the community included the historical and current focus on disability or many as a narrow view of the subject saw aging.

The readiness for inter-professional education (RIPL) evaluation showed architecture students to be significantly less ready for inter-professional education than occupational therapy students. Given the different year levels of the two student groups and the experience of OT students with a previous inter-professional practice unit in the Faculty of Health, this is unsurprising. A post evaluation showed the pattern was similar although some items on the 19-item scale were no longer statistically different in relation to the gap between architecture and occupational therapy students. Of some concern, was that OT students as a group showed a trend in some items to be less positive about the benefits of interprofessional education after their collaborative education experience. Given the literature that has shown this to be the case in some studies, this is understandable.

Overall, findings suggest that this group of architecture students saw less value in shared interprofessional learning opportunities and were less positive about the concept, and the teaching and
learning interventions did not bridge to any great extent the gap between the two student groups. Some students offered comment that they wanted to see more contact hours where architecture and occupational therapy students could come together so that they could gain greater benefit from the opportunities. Both groups of students reported feeling more confident in relation to describing the Principles of Universal Design and to demonstrating evidence of this in a design solution and critiquing a design solution against the Principles.

Stakeholder consultations

In addition to student participation, three focus groups and twelve telephone interviews were held with representative community and industry stakeholders. The 28 participants included representation from a range of professional backgrounds including architecture, occupational therapy, access consultancy, service management and a variety of health, education, and law professions. Thematic analysis of the data revealed six key themes: 1) What is inclusive / universal design; 2) Multiple stakeholders; 3) What’s holding us back; 4) Making it happen; 5) Skills required, and 6) The bureaucracy.

Discussion revolved around the nature of the design process. Early involvement of all key parties at the beginning of the design process was advocated. Too often access consultants felt they were brought in at the last moment to ensure that a design conformed to the relevant standards for accessibility. This meant that the final design solution compromised both form and function, not to mention additional costs related to changes specified. The view was that good universal design is both interprofessional and inter-industry and is the result of the intersection of a broad range of viewpoints and that no one profession will ever have the remit for universal / inclusive design. Stakeholder participants felt that where architects and others had experience, either directly with family members or friends or colleagues, their understanding of the importance of universal design and its implementation is better understood.

There was the opinion that community education; greater inter-professional education; having champions of change; promoting people with disabilities in community leadership positions; and, architects with greater exposure to life experiences will together with statutory requirements, contribute to greater implementation of inclusively built environments. There was agreement that universal / inclusive design is not just about physical access and the built environment. Overall, participants confirmed the findings of the literature review that there is no general agreement regarding preferred terminology. Broad application of universal or inclusive design could not progress until the design industry recognises the need for built environments to be designed from a ‘cradle to grave’ perspective. Participants commented that in recent years the focus on accessibility has diminished as the sustainability movement has become more dominant. Some did not see this as an either / or phenomenon but rather that accessibility and the impact of built environments on people’s health and wellbeing is integral to the sustainability argument and the design process.
Difficulties in translating discussion into tangible change were identified, and both the trades and general community were highlighted as group requiring more education on the need for universal design. Many could see the potential benefits and advantages universal design offers, whilst identifying economic pressures as a major barrier to universal design and that universal design was being constrained by the current focus on disability, rather than a whole population approach.

Architects were seen to focus on form and the creative elements of the design process and were often trained to defend their design. In contrast, occupational therapists focused more on function and its application to individuals or groups and there were clear need for a balance between the two. This begs the question of how to bring the various stakeholders together so that the design process is collaborative and promotes respect and recognition for each group’s expertise and skills. The interprofessional collaboration increased understanding of the impetus that had seemingly been lost in recent years. The project team are continuing the work into 2011 and identifying how this work can be extended further into upper levels of the architecture course units.

With last year’s first year cohort now in second year, a second year unit has been earmarked for intervention, where students’ consideration of the issues and subject area can be extended. In this unit, students are required to design a shelter and three sites have been identified for this purpose, each student working in relation to one site. The shelter that they are to design needs to be able to provide shelter for up to five people. In order for students to consider the needs of a broader group of people, it has been proposed that one of the sites needs to accommodate a person who uses a wheelchair, the second site needs to accommodate a person who is blind (i.e. legally blind) and the third site needs to accommodate a person who is elderly and frail and uses walking frame or single point stick. One aspect of the marking criteria for their projects will take account of the degree to which students’ designs have considered these conditions. A lecture presentation by access consultants will introduce a little more formally the Australian Standards relevant to accessibility. In this presentation the political and social context to the Standards (i.e. why do we have them) will be introduced and then some broad information about them provided. The primary focus of the presentation will be about aspects of the Standards relevant to the three conditions that students will need to be investigating (i.e. vision impairment, wheelchair use and frail aged). It is therefore envisaged that information about aspects of the Standards relevant to these conditions e.g. steps / ramps / height of door handles and signage / color contrasts etc. will be part of the presentation. In this way students can start to understand what are the issues for people with these conditions that students need to consider without necessarily students having to know the specifics of the Standards in detail.

Collaborative work integrated learning opportunities have now also been identified and October 2011 will see the pilot of an architecture student placed alongside an occupational therapy student in an access consultancy organisation.

CONCLUSION

The Design 4 Diversity study has major implications in relation to universal / inclusive design practice at a local, national and global level. This paper focused on the interprofessional approach to
architecture education and in this context, we are able to conclude the findings support the available literature, expand our understanding of universal design as it is practiced in industry while other aspects address key gaps in the literature and educational initiatives internationally. A key message is that regardless of the terminology used, it can only be aspirational at best and that design for all is as much about the quality of the process within a context of inter-professional and inter-industry practice as it is about a focus on the end product. There is a need to see design for all as being so much more than just designing for people with disabilities and that the designing of buildings that are universally welcoming and accessible is an integral part of sustainability. The move towards exploring interprofessional work integrated learning opportunities for architecture and occupational therapy students has proven a positive step towards progressing this agenda towards best practice with regard to design for all.

REFERENCES


THE “FUSION OF HORIZONS”: AFFECT AND THE LEARNING SUBJECT IN ARCHITECTURAL HISTORY AND THEORY

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ABSTRACT

This paper is part of an on-going research project at the University of Tasmania where the School of Architecture & Design contains a significant cohort of culturally and linguistically diverse students who are engaging (often for the first time) with the interpretation of historical and theoretical themes and applying them to design. This paper argues that an understanding of affect and how it can contribute to critical literacies in this context is essential to enable students to interpret different cultural worlds.

Recent ‘affectual turns’ in other disciplines force a reassessment of the ‘learning subject’ within architecture and design. Affect has been extensively theorized in relation to education since the 1950s, and foreign language learning, where students develop a sense of their own identity or “voice” in a second language, and confidence in using it to communicate with others (Brown, 1987). Affectual understanding differs from ‘subject-centred’ cognitive understanding as it eschews the dualist model of the learning subject (the learner as an internal tabula rasa to be inscribed with external knowledge (Gadamer cited in Snodgrass and Coyne, 2006).

Affectual learning, takes on new partners from the edges of subjectivity, resulting in different relations between the human, society and architecture, which according to Thrift, “constructs new forms of empathy, enabling identification with “another” (2006). Cognition and emotion are thus engaged simultaneously to produce richer discursive engagements in history and theory of architecture and design.

INTRODUCTION

This paper discusses the implications of theorizing ‘affect’ in relation to the complexity of learning and teaching architectural history and theory, in light of the rise of different discourse communities in schools of architecture and design. Recent ‘affectual turns’ in other disciplines such as philosophy,
sociology and geography force an equivalent reassessment of what we call the ‘learning subject’ within architecture and design. In the educational realm, and in higher education in particular, there is a pressing need for students in cohorts with culturally and linguistically diverse backgrounds (CALD) to ‘make sense’ of their increasingly complex globalised environments. We argue that this process can be facilitated by encouraging both cognitive and affectual learning, with reference to students’ own identities and value systems, and to disciplines as cultural practices that are implicated in identity and value formations. The paper also argues that history and theory in architecture and design pose specific challenges and offer specific disciplinary insights into understanding affect in higher education learning and teaching practices.

**COGNITIVE LEARNING THEORY AND AFFECTIVE LEARNING**

Generally, ‘affect’ refers to emotion or feeling. Philosophically, there are various ways in which this human capacity is theorized: as an embodied practice relating to sensorial, perceptual and cognitive reactions, as connected to unconscious or psychoanalytic drives, or as relational capacities between bodies, whether human, non-human or non-organic entities.

In education, theories of affect in relation to the learning subject were investigated as early as in the 1950s by humanist psychologist Carl Rogers (1951) and his followers who saw the learner as “a primarily emotional being … in the process of being and becoming himself.” The importance of the “affective domain” in learning was described in the mid-1960s by Krathwohl, Bloom & Masia (1964) who developed a comprehensive definition of affect in relation to education. Brown states that the cognitive domain was secondary to the affective domain in learning. (1987: p.71) Biggs (2003) suggests that affect is important for deep, rather than surface learning. Affect has also been extensively theorized in relation to foreign language learning, where students develop a sense of their own identity or “voice” in relation to a second language, and confidence in using it to communicate with others (Brown, 1987).

Affective learning can be seen as engaging the learner’s sense of identity, involving integrating emotion and intuition with cognition. David Ausubel (1965) researching cognitive learning theory found that learning takes place in humans “through a meaningful process of relating new events to existing cognitive concepts.” He distinguished between meaningful and rote learning, pointing out that rote learning does not permit the “establishment of meaningful relationships” whereas meaningful learning requires “subsuming new material under a more inclusive conceptual system when it enters the cognitive field.” (cited in Brown, 1987: p.66) Thus affectual understanding differs from the ‘subject-centred’ cognitive understanding of the foundations of self-awareness (Thrift, 2006) as it eschews the dualist model of the learning subject (viz. the subject as an internal tabula rasa to be inscribed with external knowledge).
An understanding of affect underpins constructivist learning theory which is well-accepted today by educators and cognitive psychologists. According to Hein (1991), the basic principle of constructivism is that learners construct meaning as they learn. There are two dramatic consequences of this process. Firstly, we need to focus on the learner (not on the subject to be taught), and secondly, there is no knowledge independent of the meaning the learning subject or community of learners attribute to the experience of learning. The constructivist view of epistemology asserts that knowledge is not passively received, but actively *constructed*, by interactions in the experiential world. Affectual learning therefore involves an experiencing subject, who is creating meaning by integrating his/her lived experience with all the traits that combine to create that person, including: culture, gender, ethnicity, socio-cultural and educational background. Affectual learning is also seen to involve the whole person, perhaps on an instinctual level, as according to Smitheram and Woodcock, “affective relations precede conscious thought.” Affectual learning involves an integrated learning process, where a focus on affect “brings to the fore processes over substance and stability.” (2009: p.8)

Constructivist learning theory complements an increasing interest in affect across the humanities. For example as Besnier (in Melles, 2008: p.163) points out, anthropological research questions the ‘Western’ opposition between cognition and emotion, emphasizing the construction of meaning via ‘interactional processes’ such as dialogue. This is associated with a turn towards the material and the body, which theorists have taken “due to dissatisfaction with post-structuralism and its focus on disembodied and primarily textual analysis and critique” (Smitheram and Woodcock, 2009: p.8). Although there are a number of different approaches to theorizing affect, the one that is most pertinent to constructive learning is the Deleuzian view of affect as “adding capacities through interaction with the world.” (Smitheram and Woodcock, 2009: p.11)

APPLICATION OF AFFECTIVE LEARNING IN HISTORY AND THEORY TEACHING

Against this background of research into affect and the learning subject, it is clear that affectual relations inform pedagogy, and facilitate learning and teaching. It is argued here that both cognitive and affectual approaches to learning and teaching should be juxtaposed, as they are not clearly divided. There is, in a Deleuzian sense, an ‘affective cycle’ where “affective territories are … a way to theorise the complex materiality of social textual, affective and spatial relations.” (Smitheram and Woodcock, p.16) In spatial disciplines like architecture and design, where students are constantly negotiating the thresholds between material realities and conceptual ideas, phenomenological experiences and representational conventions and abstractions, digital worlds and actual environments, the natural and the artificial, the personal and the public, and the self and others; the notion of affective territories become doubly complex.

These insights inform an on-going research project at the University of Tasmania (UTas), which examines issues of affect and the learning subject in the School of Architecture and Design. The School possesses a significant cohort of culturally and linguistically diverse students who are
engaging (often for the first time) with the interpretation of historical and theoretical themes and applying them to design. The development of an understanding of affect and how it can contribute to critical literacies in this context is essential, to enable students to make sense of different cultural worlds, and a complex subject such as architecture and design with its multi-disciplinary and multi-modal curriculum. As discussed in a previous paper (van den Berg and Loo, 2009), our research suggests that many students from Confucian Heritage Culture (CHC) backgrounds have been previously involved in architectural and design education which privileges building technology, often to the exclusion of academic reading and writing, and where critical literacies have not been a focus of their learning. Research into teaching English for academic purposes in schools of Architecture and Design (see Swales et al., 2001) has suggested that this area may be particularly challenging for CALD students studying architecture, because they see architecture a practical, visual and spatial discipline, therefore placing little emphasis on humanities subjects such as history and philosophy.

Ways of thinking and learning styles vary across cultures, as does socially acceptable behavior in formal learning environments, which can present particular challenges in a multicultural learning environment. However these perspectives on the “other” can also create an enriched perspective on what can be considered the regional and global narratives surrounding architecture. We argue here that given appropriate support and curriculum design, a critical discourse approach to architecture and design history and theory produces affectual conditions that provides a rich discursive environment for learning and teaching. Such affective discourse also develops the students’ ability to understand the relevance of history and theory to the practice of architecture and to contextualize their design in architecture’s larger project of cultural ideas. (Leach 2010) More important is the question: What are the specific ways in which history and theory in architecture and design provide affectual conditions that enhance the learning and teaching experience?

AFFECTUAL UNDERSTANDINGS AND TEXTUAL INTERPRETATION IN HISTORY AND THEORY

Architectural history and theory itself has its own varied history as a discipline, not always related to the teaching of architecture, raising the question: how is history relevant to contemporary architectural education? A working knowledge of architectural history can be seen as a significant part of architectural culture and professional life, as according to Leach, in recent times, architectural history’s readership has consisted mainly of architectural historians themselves, and “the wider community of architectural culture including architects and students of architecture (2010, p.101). Recent architectural history has particularly emphasized the cultural contexts of architecture, which, according to Watkin are “especially challenging and stimulating” (p.183) because it includes other academic areas such as social, political and economic history. To the American architectural theorist K. Michael Hays, to be relevant to the present, architectural history should
“be concerned with the larger conditions on which architectural knowledge and action is made possible: with the multiple agencies of culture in their ideological and historical and worldly forms.” (cited in Leach, 2010: p. 8)

At present, architectural history and theory can thus be seen as having both epistemological and ontological roles in contemporary architectural education, encouraging students to draw conclusions based on interpreting the past in relation to the present. The disciplines of architecture and design history and theory can also be seen as having an ‘affective turn’, in the sense that we require an understanding of history not just to chronicle the past, but to engage with the existential dilemmas of the present, in order to create the future, as according to Habermas:

“The future exists as a horizon of expectations, which fuse hypothetically the fragments of previous experience into an intuitively grasped totality. We anticipate end states by reference to which events, both past and present smoothly coalesce into action–orienting stories.” (in Snodgrass and Coyne, 2006: p. 37)

The interpretation of society, political ideologies and philosophical issues are seen as essential to teaching and learning architectural history and theory. This brings architecture firmly into the sphere of hermeneutics, where the learning subject is seen as part of an interpretive community. Here, as Geertz argues, “thinking is a public act realized in conversation” and it is “consummately social” (in Snodgrass and Coyne, 2006: p. 104). In an educational environment we learn discourse-related thinking by dialogue with others: “our thoughts have their source in some interpretive community – therefore, in order to think we need to think well collectively. (Bruffee in Snodgrass & Coyne: p. 104)

There is a connection between affective learning and the particular demands of history and theory as a critical and hermeneutical practice as “the goal of hermeneutics is understanding,” (Schleiermacher, in Snodgrass & Coyne, 2006: p. 8) where rather than searching for exact or doctrinal interpretation of texts, the learner makes significant connections between the subject matter of history and theory, and their understanding of the world and themselves in it. Although seemingly anachronistic in age of digital design, texts remain important as a starting point for interacting with different understandings of history. Reading puts us in touch with the realities of the past and the enables us to imagine the possibilities of the future. As Jeff Adams points out in his book on the role of narrative in the development of thought, reading requires “an active subject who has the ability to represent his or her social world, plus an active and highly structured social world that is represented.” (1986: p. 4) Reading is conceived as a “clash of structures: the possible meanings of the text meet the representational processes and desires of the reader.” (p. 5). If reading is to be meaningful to someone it must have an affective base and consequently, the distinction between cognition and affect can be seen as misleading and without doubt “an obsolete and misconceived methodological necessity.” (p. 5)

As learners, from a hermeneutic perspective we are in conversation with the text as “other.” Textual analysis is often used as a strategy to make sense of an author’s viewpoint: the student’s
understanding can then be expressed by participating in a variety of ‘conversations’, whether formally in essay writing, building a model, or maquettes; or dialogically in tutorial presentations and discussions as part of an interpretative community. In each case, students (and teachers) interject or add layers of examples to “thicken” the discussion with their own experiences and conceptual frameworks, abstract and construct using communication and representational techniques unique to architecture and design, thus engaging at a deeper level with the text.

As Gadamer points out in his discussion of the fusion of horizons, we cannot approach a text with a tabula rasa mind set, because we bring with us “anticipations, a body of beliefs, concepts, attitudes norms and practices which are instilled by our historical experience and constitute our life world.” (cited in Snodgrass and Coyne, 2002: p.157) It is by expressing and critiquing these understandings, in relation to the “Thou” of the text that students can learn to interpret history in ways that are meaningful to them. We learn by conversation with “the Thou, questioning the different views presented and being open to interrogation of our own views at the same time.” (cited in Snodgrass and Coyne, 2002: p.157) In line with modern educational theory, the learning subject is not a tabula rasa, or blank slate upon which knowledge is inscribed, but a human being with a history of his/her own. In this way each student is an affective learner, constantly negotiating the territory between the self and the other: bringing his/her own life-world to bear as an essential part of this process.

**COMBINING METACOGNITION WITH AFFECTUAL LEARNING IN HISTORY AND THEORY**

What does this mean for curriculum and student experience? At UTas, concerns with the potential relationships between cognition, affect and hermeneutics are being questioned in two specific areas: firstly, in the teaching practices of a Bridging Studio programme aimed at direct entry international students; and secondly, in the development of affectual assessment practices within the wider history and theory stream.

Affective learning is particularly interesting in the context of teaching CALD students and at UTas, in-house support is provided to attempt to bridge the gaps in “critical awareness” for these students entering the undergraduate degree at different entry points. This mainly occurs within the Bridging Unit for international students and within tutorials and discourse-based workshops for the whole year group. The Bridging Unit (available to second and third year international students) provides specific acculturation into the expectations of academic discourses in Australia. While this unit covers aspects of the course included in Building Technology in Design (BTD) and Design Studio (DS), the primary area of interest for this research project is the development of critical literacies in relation to history and theory and design.
In this unit, disciplinary language is learned in a shared context, as “linguistic practices cannot be separated from concrete ‘life forms’ that is, attitudes, world views and a cultural ethos” (Snodgrass and Coyne, 2006: p.32). As we are aware that students are trained to view the world in “certain socially determined ways” (p.33), we ask them to reflect on these and through discussion of issues arising in texts to gain new perspectives by reinterpretation of the past to provide an understanding of the present, and enable them to better cope with the future. (2006, p.136).

In this way, students from “discourses of difference” participate in workshops designed to acculturate them into western academic thinking, where critical literacy is a focus of teaching and learning, as it includes becoming aware of different cultural perspectives. Students then develop the confidence to participate in History and Theory in Design (HTD) tutorials which deal with the same themes as discussed in the Bridging Unit. As a diverse group of affectual learners, these students bring to the wider learning environment a rich mix of experience and diverse world views, and can also contribute valuable perspectives to local students on the themes studied.

Workshops are varied, but generally are based around assessment tasks (particularly essays) and there is an emphasis on acquiring academic skills, using metacognition in the sense that strategies for learning (such as concept mapping) are discussed and practiced. As Swales et al. (2001) point out, the teaching of English for Academic Purposes (EAP) is often criticized for being too hierarchical and cerebral, aiming to teach students about academic genres in artificial contexts. However in the Bridging Unit, for example, affective learning interacts with cognition, in the sense that students have the opportunity to ‘construct’ their own learning as previously discussed and also to “learn in dialogue with others.” (Biggs, 2003: p.13)

AFFECT AND THE FUSION OF HORIZONS

Hyland (2006) suggests that disciplinary acculturation is best seen not as the initiation of novices or apprentices nor even as the acquisition of increasingly complex genres but rather in terms of more ambiguous (affective) processes where students and teachers negotiate their identities and practices. In this way, affectual learning realigns the roles of concepts, precepts and affects, taking on new partners from the edges of subjectivity in learning and teaching. Combined with an interpretative hermeneutical approach to learning, such contexts also catalyse the potential for a Habermasian notion of a future of hypothetically fused horizons.

At UTas the ideal of future-oriented outcomes of affectual conditions have underpinned experimental assessment practices in history and theory units, bookending the School of Architecture and Design’s three year Bachelor of Environmental Design. In the School’s introductory history and theory unit, a major assessment task asks students to design and model a contemporary aedicule in the manner of Brunelleschi, Bramante, Michelangelo, Palladio or Romano. The task deliberately uses an ‘in the
manner of” format to establish a dialogue between students and the prescribed group of Renaissance
and Mannerist designers. Through group discussions and exercises in tutorials, as well as an informal
exhibition of the work at the time of submission, the individual explorations of students are set within
the context of a wider interpretative community, in which the convention role of the history tutor is
effectively re-positioned to something akin to an expert consultant, as the focus shifts from knowledge
to subjective interpretation. The learning subject in this context benefits from the discourse developed
within the group as affect drives the sociality of the learning community in a classroom.

This ‘in the manner of’ exercise ultimately aims at a ‘fusion of horizons’, as early emergent
knowledge of architectural history – including abstract conventions of classicism – is brought to bear
on a small-scale design exercise, set within a familiar everyday space and a known type of
occupation. In 2011 (the first run of the assignment), the outcomes of this task ranged from well-
mannered translations of understood conventions through to highly idiosyncratic interpretations of
selective conceptual ideas. This is affective learning because, in contrast to conventional text-based
investigations in architectural history, learning becomes an embodied practice, incorporating
sensorial, perceptual and cognitive reactions. By encouraging students to creatively interpret historical
works, this assignment allows them to relate personal identities and values to historical knowledge
and express intuitive understandings in designing social space, for example using Mannerist spatial
puns in a reading space.

Of particular interest were the different interpretations of the ‘manner’ of the selected architects and
the ways in which the models constructed were then able to be discussed and cross-referenced by
students, to form a multi-layered discourse, both in the interpretation of historical design and its
expression in a meaningful contemporary setting. In this way, metacognition was combined with
affective understandings to produce a meaningful communal narrative, apparently facilitating deep
rather than surface learning. A comprehensive analysis of students’ perceptions and longer-term
learning outcomes is yet to be undertaken, but both anecdotal evidence and Student Evaluations of
Teaching & Learning thus far point to a very high level of engagement, as historical knowledge is re-
figured as a possible point of departure for the end-goal of contemporary design. Whilst some
emphasis on the instrumentality of history might be questioned, benefits of an affective environment
and forward looking, action-oriented investigation and interpretation through design in history suggest
a productive ground for engaged learning, warranting closer attention.

At third year level, when advanced students are examining recent architectural theory, a text by John
Rajchman (1990) questioning of the ‘new’ in architecture provides a lens for an interpretative
modelling exercise, focused on the work of a range of contemporary designers. In this case, students
are required to produce a series of tightly defined maquettes, which abstract individualised
interpretations of the ‘new’ in the work of selected designers. The complex and open-ended nature of
the Rajchman text immediately establishes an affective terrain differently negotiated by individual
students as they engage with complex theoretical ideas and their various manifestations. More so than
the first year exercise, the resulting maquettes (2008-2011) capture different and forward-looking
perspectives on the human, society and architecture, rarely seen in conventional learning practices.
Drawing on the work of Thrift, such affective explorations have the potential to construct “new forms
of empathy, that are simultaneously acts of identification with the feelings, thoughts, or attitudes of another and the imaginative ascription to a natural object or a work of art of feelings or attitudes considered to be present in oneself.” (2006)

CONCLUSION

Our on-going research project in the undergraduate degree at UTas, suggests that, in line with Constructivist learning theory, a pedagogical approach based on affectual interpretations of historical and theoretical themes in a diverse learning community, produces deeper understandings of human societies and cultures across time and in the present. Affect in this context is viewed as an embodied practice, where, rather than attempting to separate cognition from emotional and sensorial perceptions, emotion, intuition and cognition are integrated, to produce deep rather than surface learning, as evinced in the UTas first year “in the manner of” assignment. Creating an environment where affective and cognitive learning can work together, not only facilitates understanding of complex themes in history and theory, but by the fusing of the learning subject’s life world with the “other” of the text, creates a deeper and more relevant connection between history, theory and design. Such an affective view of learning in history and theory, which derives in part from hermeneutic philosophy, seems to offer a way forward for architecture and design students from a variety of educational backgrounds, to construct their own deep learning in community, and to find a stable ground from which to design for a sustainable future. Our research to date points to further work that needs to be carried out in the developing the connections between affect and Gadamerian hermeneutic theory in learning and teaching. But more importantly, our research also points to the potential of architectural history and theory, with a specific mix of textual, material, spatial and imaginative dimensions, to catalyse affective conditions in learning and teaching, with potential implications beyond our immediate discipline.

REFERENCE LIST


URBAN ECOLOGIES AT THE EDGE: A CASE STUDY

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ABSTRACT

This paper discusses some central theoretical and methodological constructs in the field of urban ecologies, identifies research gaps in the field, and uses the Victoria Laboratory of Urban Ecologies (VALUE) as a case study illustrating possible directions of future urban ecologies research. It begins by tracing the theoretical roots of urban ecologies before reviewing contemporary urban ecologies studies throughout the world. Two critical gaps in urban ecologies research are identified, suggesting opportunities for future studies. The paper then introduces the research teams and projects of VALUE – a research centre hosted by the School of Architecture and Building at Deakin University. The paper concludes that the research activities in VALUE are at the edge of urban ecologies research due to the interdisciplinary nature of collaboration in and between project teams, which have thus been able to address gaps in urban ecologies research and make important contributions to the field.

BACKGROUND

Theory of Urban Ecologies

Urban ecologies research can be defined as the investigation of living organisms in relation to their environments in towns and cities. Using the ecological approach, as Sukopp has explained it, a city is considered as an ecosystem, “characterized by its history, its structure and function, including both biotic and abiotic components, and the cycling and conversion of energy and materials. Cities also have their own spatial organisation and distinctive patterns of change through time, which result in patterns of species’ behaviours, population’s dynamics and the formation of communities” (2002, p. 79).

Early studies of urban ecologies were in the tradition of natural history and focused on single biotopes. The investigations often centred on the documentation of flora and fauna, as well as plants and animal migrations directed by human beings (Sukopp, 2002; Pickett et al, 2001). For example, Johnson provided a list of recorded species of a particular area in London in the early 1600s, and the flora of Paris was repeatedly studied in the 17th and 18th century (Sukopp, 2002). Growing from this root, the study of the ecological structure and function of habitats or organisms within cities is still the most common approach used in urban ecological studies. Scholars of urban ecologies have agreed to label this approach as ecology in cities (Pickett et al, 2001).

Contrasting to the ecologies in cities approach, an alternative approach to urban ecologies exists in landscape architecture and planning: ecology of cities. Using an ecology of cities approach, entire cities are examined from an ecological perspective (Pickett, 2001), so that
research at the scale of whole cities and urbanised areas can be addressed. Research questions have included the assessments of the flux of nutrients, water, energy and organisms throughout entire cities and towns, or the effects of land-use change over time on the distribution and abundance of organisms within a city. As research questions at the scale of whole cities and urbanised areas require multidisciplinary teams and a large amount of resources, relatively little progress has been made in this area. However, there is now growing interest in the ecology of cities approach to develop programs for ecologically sustainable development (ESD) in cities (McDonnell, Hahs, & Brueste, 2009). An example of ecology of cities in ESD is the introduction of the concept of the “ecological footprint.” The ecological footprint of an urban area indexes the area required to produce the resources used, and to assimilate the wastes produced, by a defined population at a specified material standard of living. For example, the population of Vancouver, Canada, appropriates the productive output of a land area nearly 174 times larger than its political area to support its present consumer lifestyle (Rees, 1996).

**Contemporary Urban Ecology Studies and Research Gaps**

Contemporary research in urban ecologies has come to an agreement that cities are hybrid phenomena that emerge from the interactions between human and bio-geo-physical processes and thus cannot be fully understood by studying their component parts separately (Alberti, 2008; Pickett et al, 2001). Because human and ecological factors work simultaneously at various levels, neither the natural nor the social sciences can explain in their separate domains how integrated human and ecological systems emerge and evolve. Therefore, it is necessary to integrate natural and social sciences into one framework to understand urban ecosystems as coupled human and ecological systems (Albert et al., 2003).

Yet, much urban ecologies research has failed to consider the socioeconomic components of urban systems. For example, research at the Australian Research Centre for Urban Ecology (ARCUE) focuses only on natural systems. Furthermore, it could also be argued that research at the Urban Ecology Research Laboratory (EURL) at the University of Washington, although recognizing urban ecosystems as coupled human and natural systems, has made little attempt to investigate the human system in cities. Empirical studies conducted by EURL have monitored landscape patterns associated with urban growth, linked urbanization and vegetation carbon patterns, assessed the impacts of urbanization on near-shore and urban water, and modelled land cover change and casting scenarios for regional growth. The expertise of the research team covers urban design and planning, geographic information science, forest resources, computer science, etc. (“The Urban Ecology Research Laboratory”, 2011). While the Baltimore Ecosystem Study (BES) has developed a human ecosystem framework (Machlis, Force & Burch, 1997), and thus has conducted analyses of both the natural and social systems of Baltimore city, the framework needs to be tested and revised before it can be generalised in other contexts.

**Modelling Coupled Social-Ecological Systems**

Important progress has been made in modelling dynamic ecological systems. For example, Wu and David (2002) have presented a spatially explicit hierarchical modelling approach to studying complex ecological systems, as well as a software platform designed to facilitate the development of models. In order to optimise model complexity and reduce uncertainty, Grimm and colleagues proposed pattern-orientated modelling that systematically uses multiple patterns observed in real systems at different hierarchical levels and scales (Grimm, Revilla, Berger, Jeltsch, Mooij, Railsback, Thulke, Weiner, Wiegand & DeAngelis, 2005).
However, there remains a gap in the knowledge. As Alberti (2008) points out, no one has formally tested hypotheses about the interacting emergent behaviours of the holistic urban ecosystems. Therefore, it is necessary to develop the modelling of ecosystems that effectively incorporate human activity and behaviours. Models that explain how people affect the composition of habitat patches and their patterns will have to integrate historical, political, cultural and economic factors with traditional variables such as competition, predation and nutrient availability, which also control the distribution, abundance and relations of organisms (Collings et al., 2000). As we shall briefly discuss now, research into ecologically sustainable development recognises that models such as these can only be developed by interdisciplinary teams that cross the boundaries between the natural and social sciences.

**Urban Ecologies and Sustainability: Multidisciplinary and Interdisciplinary Research at the Edge**

In their book *Rethinking Science*, Nowotny et al. suggest that modern research communities are experiencing a transgression of discipline boundaries that echoes the changes that occurred in the scientific revolution of the seventeenth century and the industrial revolution of the nineteenth century (Nowotny et al. 2001). Thus, as Thompson Klein suggests (Klein 1996), two claims about knowledge are widely made today:

- knowledge is increasingly inter-disciplinary;
- the crossing of discipline boundaries has now become a defining characteristic of knowledge production.

Contemporary research in the built environment disciplines is not immune from these changes. This is particularly so with research into sustainable built environments, which is a topic, as Copper describes it, “that respects no spatial, temporal or discipline boundaries” (2002, p. 126). This is because, as Bentivegna et al. suggest (2002), success or failure in any development situation is dependent on integration across the various urban decision-making and professional disciplines to link socio-economic and technical dimensions as well as planning, property, design and construction. As Uiterkamp and Vlek have pointed out (2007), since the late 1980s sustainability research has been a focus of both the natural environmental sciences (physics, chemistry, and biology) and a wide range of environmental sub-disciplines in psychology, sociology, economics, law, and philosophy. Thus, they argue, the quest for sustainability has increased the need for multidisciplinary research. As Robinson reiterates (2004, p. 378),

“What is needed is a form of transdisciplinary thinking that focuses on the connections among fields as much as on the contents of those fields; that involves the development of new concepts, methods and tools that are integrative and synthetic, not disciplinary and analytic; and that actively creates synergy, not just summation.”

Elkington’s (1998) notion of ‘the triple bottom line’ suggests that equal weight should be given to the social, economic and environmental components of sustainable development. Giddings et al. argue that the division of sustainable development into these three separate sectors has been shaped by the alienation of much of human life from the environment, as well as the separation between production and consumption (Giddings et al. 2002). They suggest this does not produce an integrated or principle based outlook (p. 195):
“we cannot pretend to separate the impacts of our actions into distinct compartments. There is a need to overcome the barriers between disciplines to an interdisciplinary or even trans-disciplinary view of the world. Sustainable development, to have long-term meaning, will be an integrated and principle based outlook on human life and the world we live in.”

Thus, as Deakin et al. discuss (2002, p. 104), ‘post-Brundtland’ it has been recognized “most forcefully” that a ‘trans-disciplinary’ approach is key to a fully integrated assessment of sustainable urban design (Deakin et al. 2002). Boulanger et al. also suggests that an analysis of the most challenging sustainability issues reveals that an interdisciplinary approach is central to sustainable development decision-making (Boulanger and Bréchet 2005). Copper presents a wheel of ten cognate disciplines involved in research on sustainable cities; these are Architecture, Planning, Law, Economics, Sociology, Psychology, Medicine, Ecology, Materials Science and Engineering. Although Cooper suggests that the closer disciplines are, “the more likely they are to share a common parentage and so the more open their boundaries are likely to be to each other.” Thus, in the international project on sustainable urban development that Cooper reports on, the three disciplines most represented fall within an arc formed by engineering, architecture and planning. In the case study we shall consider now – the Victoria Laboratory of Urban Ecologies – we shall also see an interdisciplinary approach that also has a focus on sustainable urban development.

VICTORIA LABORATORY OF URBAN ECOLOGIES: A CASE STUDY

The former part of this paper has reviewed the area of urban ecologies and identified two critical gaps in urban ecologies research - . The latter part of this paper will use the Victoria Laboratory of Urban Ecologies (VALUE) as a case study. The School of Architecture and Building at Deakin University created the Victoria Laboratory of Urban Ecologies (VALUE) in 2010. This initiative has the objective of integrating scientific knowledge within the School and the University. In addition, VALUE aims to bridge science, society and policy, by establishing channels of partnership between the research centre and other key groups, organizations and institutions in the region (Leao, 2010).

Four Research Teams

The expertise of the 25 researchers in VALUE covers a wide range of specialties, with teams formed around four themes: Urban and Regional Ecology, Cultural Ecology, Construction Ecology, and Architectural Sustainability. VALUE is thus designed to, and indeed it might be argued, informed by the need for significant integration for new knowledge production towards sustainable development in the built environment. As we shall see now, the knowledge production within and between these teams is fundamentally trans-disciplinary in nature.

The Urban/Regional Ecologies research team has research expertise in geographic information science; stakeholder management; and design encouraging environmental awareness in children. The current research projects conducted by the team include Bellarine Peninsula, Vision 2, Peoplemap, and Regional Growth and Climate Change. The aims of these projects are to integrate natural and social sciences in the study of the ecosystem of Geelong Region, and develop models for the coupled human-natural system.
The Cultural Ecologies research team is interested in the study of social and cultural issues related to the built environment. The research expertise of the team covers migration and architecture, war and destruction/construction, low energy and solar energy systems, architectural history, culture and architecture, sustainable urban growth, and architectural education. The current projects conducted by the team include sustainability in coastal housing development and the production of migrant architecture.

The Construction Ecologies research team seeks to investigate the dynamic interdependent structure and behaviour of resource systems that support the built environment life cycle supply chains. The research expertise of the team covers construction management, risk management, concrete noise barriers, lightweight structures, and building information modelling. The current projects of the team include sustainable infrastructure construction and construction supply chain teams and waste.

The Architectural Sustainability research team investigates the environmental performance of buildings and urbanised areas. The expertise of the team covers glass architecture, natural ventilation in buildings, urban heat islands, urban design, and building performance measurement. The current projects of the team include an analysis of the environmental performance of sport facilities, environmental performance of health facilities and contextual influences on comfort and energy performance in offices.

Collaboration in VALUE transcends discipline boundaries via two mechanisms of collaboration: ‘Multidisciplinary’ and ‘Inter-disciplinary’. Via these two mechanisms, a number of projects are being pursued; some of which have a discipline specific focus and some of which transcend disciplines, but most of which have sustainable development as a prime or subsidiary focus.

**Multidisciplinary Collaboration in VALUE**

Multidisciplinary collaboration occurs when the four discipline teams work in series and in parallel without stepping outside of their discipline boundaries. For example, Peoplemap project is a recently finished study by the Urban and Regional Ecologies team. It used multidisciplinary approaches to elicit and broadcast community voices. The process is based on a *vox populi* format in that a trained interviewer randomly invites people from the street to answer prepared questions. There were 166 people from Geelong Region who participated in the interviews. The interview data was analysed using the technique of thematic analysis, and the results were presented using a geographic information system. The project demonstrates the multidisciplinary collaboration of social science methodology in combination with geographic information science (Xu & Elkadi, 2011).

The Sustainability of Housing Development project is a recently completed project by the Cultural Ecology team. It aimed to develop a multi-criteria approach to evaluate the sustainability of housing development. The research combined qualitative and quantitative methods, using a geographic information system as a platform. Three housing precincts in Geelong region were chosen as the sites, and five criteria have been identified: Greenhouse gas emissions, resource use, housing equity and diversity, character, and community connectivity.

**Interdisciplinary Collaboration in VALUE**
‘Interdisciplinary’ collaboration occurs when the four discipline teams work together through the development of shared perspectives to construct common theoretical positions, conceptual frameworks, or methodological approaches. This happens via, firstly, peer review, in which teams assess research across the themes, or secondly, via short-life inter-disciplinary teams working to produce new knowledge by collaborating in dynamic research in which discipline boundaries become permeable and are therefore transcended. For example, a recent ARC-funded Linkage project has been developed by members from three teams: urban/regional ecology, cultural ecology, and architectural sustainability. The project is titled: ‘Sea change’ communities: Inter-generational perception and sense of place. The research is proposed to quantify factors that determine the ‘character’ of two historic Victorian coastal towns that have been affected significantly over recent decades by the sea change phenomenon. It will evaluate the effectiveness of local planning scheme provisions to preserve character, and will explore the impact of the measured changes with generational- and gender-specific focus groups to determine the differences in their perceptions and responses to the changes.

Another example of interdisciplinary collaboration is the development of a recently commenced project known as Vision II. Vision II has been developed by members from the urban/regional ecologies, cultural ecologies, and construction ecologies teams. It is a 12-months project that considers the reinvigoration and re-imagining of the city centre of Geelong by engaging stakeholders from public and private sectors with the aid of computer modelling. Five steps are involved in the project: (1) to identify key stakeholders and key issues regarding Central Geelong reinvigoration; (2) To model the current situation of Central Geelong by using GIS & 3D modelling; (3) To develop alternative scenarios for Central Geelong reinvigoration; (4) To assess the alternative scenarios by using GIS & 3D modelling and from the key stakeholders’ perspective; and (5) To propose an optimal scenario for Central Geelong reinvigoration (Yang & Elkadi, 2011). The project is jointly supported by the Victorian Government, Deakin University, the City of Greater Geelong and the Committee for Geelong; and the Victorian Government has approved $150,000 to fund the project.

CONCLUDING THOUGHTS
Recent projects identified by VALUE teams, both multidisciplinary and interdisciplinary, address two critical gaps in urban ecologies research. The Peoplemap project combines social science methodology (e.g., interviews and survey) and geographic information science; the ‘sea change’ communities project integrates social science methodology with natural science. The Vision II project not only integrates social science into urban ecologies research, but also contributes to urban ecological modelling. Therefore, through multidisciplinary and interdisciplinary collaboration, VALUE is able to develop cutting-edge research projects and addresses research issues at the edge of urban ecologies, thus advance our knowledge of urban ecologies.

REFERENCES


ON THE RIM OF THE WORLD WITH FRANK LLOYD WRIGHT AND MARTIN HEIDEGGER: ARCHITECTURE AND NATURE ON THE EDGE OF MORALITY

Andrew Macklin

KEYWORDS
aesthetics, organic architecture, phenomenology, ecocide, ecology, morality, ethics, Nature

ABSTRACT

Armed with the romantic ecological idealism of Thoreau and Whitman, the humanism of Emerson and the moral philosophy of Unitarianism, Frank Lloyd Wright invented organic architecture, not just to cup Nature in the hands of architecture, but to remind us of our moral connection to mother Earth. The integral unity of humans with the cosmos is a theme in moral philosophy that extends from Socrates, Plato and the Stoics, to the Renaissance and surfaces in a 20th century essay that is seminal both to architecture and ecological philosophy, Building Dwelling Thinking by the phenomenological philosopher Martin Heidegger. Heidegger writes, ‘(t)he boundary is that from which something begins its essential unfolding’. (Krell 2004, p. 356) The boundary or ‘edge’ of architecture for Heidegger is less a line and more a threshold where earth, sky and divinities presence within human being revealing our primal oneness with a transcendent Nature. For both Wright and Heidegger, who never knew each other’s work, the role of architecture was to immerse humans in the wonder of the cosmos – nature’s intrinsic ‘value’ - drawing them into awe and love as the basis of respect and care that grounds an ecological morality. In this century of ecocide, architecture balances on the edge between aesthetics and morality. Philosopher Erazim Kohak writes, ‘To recover the moral sense of our humanity, we first need to recover the moral sense of nature.’ (Kohak 1984, p. 13) I will discuss Wright’s Taliesin West, a paradigm of primal, organic architecture, in tandem with Heidegger’s Building Dwelling Thinking to explore the edge between an ethical architecture that cultivates connections to nature and our humanity by heightening awareness, intimacy and harmony versus human-mirrored architecture that leads through alienation and false-consciousness to moral delusion. Whether standing on the rim of the world with Wright at Taliesin West seeking the primordial soul of architecture, or on the edge of consciousness with Heidegger lighting up the lifeworld, we might still realize Thoreau’s maxim that ‘In wilderness is the preservation of the world.’ (Plummer 1989, p. 51)
INTRODUCTION

‘Occupiers seize territory by force or threat of force. They take resources for use at the center of an empire. They degrade the landscape. They kill those who resist this theft . . . They eradicate those who are in the way - the humans and nonhumans whose land this is . . . They force the remaining humans to live under the laws and moral code of the occupiers. They inculcate future generations to forget their non-occupied past and to aspire to join the ranks of their occupiers, to actually join in the degradation of the landbase that was once theirs.’

Derrick Jensen

(Jensen 2006, p. IX)

‘They paved over paradise and put up a parking lot.’

Joni Mitchell, Big Yellow Taxi

At the beginning of the 21st century we live on the edge of ecocide. (Ponting 2007) Humans are destroying other life forms and the earth, the very ‘ark’ of our survival, because of a profound disharmony with and disconnection from Nature. We have forgotten the reality of nature and our nature within it through abstract systems of thought and their technologies which have obscured the living, loving bond between humans, other humans and the world. Our understanding of Nature after 200 years of science and capitalism comes from concepts embedded with ideologies that intervene in our direct awareness of her enabling destructive behaviors. Science has replaced alive, animate Nature with a highly sophisticated abstraction that she is ‘dead’ matter, operating mechanistically to causal laws which are capable of being known through an empirical, rational system. For capitalism, Nature is not valuable in itself; Nature only becomes valuable economically as a resource to be used by humans. Science and capitalism acting in tandem have systematically disengaged human consciousness from Nature once valued for her primordial or spiritual qualities (Hossay 2006). Profiling Nature as a mechanism, an object or a resource is ideologically strategic. It has allowed humans to categorize her as ‘inanimate’ – without ‘life’, consciousness, spirit or soul as we know it, and hence without rights. There is no moral code that deals with Nature as a life-force with whom we are intersubjectively engaged. This moral void has allowed us to own, possess, colonize, dominate, use, abuse, consume and poison Nature in a very concentrated period. We need to develop a moral connection to this more-than, other-than human world. We need to relearn that we are one life-force immersed in a multiplicity of intelligences in the biospheric web of Gaia - a transcendent, organic intelligence diffused in a vast lifeworld
beyond our comprehension - from which we have evolved, to who we are integrally connected, who gives us life. To reclaim our humanity and morality we need to engage with Nature by rediscovering Her consciousness in us. This is the edge of ecological ethics which architecture is uniquely positioned to participate in.

Architecture contributes both physically and ideologically to environmental destruction. Physically, the energy required for architecture during its lifecycle equates to 28% of total global carbon emissions (Edwards 2005, p. 34). Under the rubric of sustainability many architects have shifted their focus to environmental design, from passive solar principles, to retrofitting or embodied energy in order to reduce the carbon footprint of buildings. Problematically architectural environmentalism is still locked into the capitalist mindset of nature as a resource with obviously the inverse focus on the minimization of production, consumption and pollution. However, sustainability is NOT about how we can value nature outside of economic paradigms such as resource or use-value – instrumental versus intrinsic value. In this essay I won’t be discussing sustainable or environmental architecture, rather the organic architecture of Frank Lloyd Wright, specifically Taliesin West (Arizona, 1937), in tandem with key ideas from the phenomenological philosopher Martin Heidegger’s essay *Building Dwelling Thinking* (1951) to shift the discussion to how architecture as an intermediary between culture and nature is automatically an ethical practice sensitizing humans to or alienating them from Nature through aesthetics.

Morality and ethics are based on what we value which is determined by what we care about, what is ‘morally considerable’ (Singer 1993, p. 291). Morality codifies what we as a society value through written and enforced laws versus ethics which is how we individually develop a system of values based on the personal experiences of everyday life. These experiences often occur physically hence ethics is developed behaviorally leading to ethical abilities such as empathy. For the theorist Herbert Marcuse humans are constituted ideologically by sensuousness - our sensuous experience of reality effects and develops the essence of self. (Held 1980, p. 234) How we ‘feel’ is formed by the ‘reality’ we historically find ourselves in, which becomes who we are at a biological level - our ‘bio-history’. Similarly architecture creates a ‘reality’ which is stylistically determined in an historical period and this reality directly influences the existential possibilities both for how people relate to one another and the natural world. Architecture embeds ethics at an ontological level through aesthetics. In the 21st century, architecture design is often based on imposition and domination demonstrating possession and ownership or aesthetic value is implicitly determined by an economic system. For green ethics to develop in architecture we need to change what and how we value.
AESTHETICS WITHOUT ETHICS AND THE RETURN OF THE REAL

‘To return to things themselves is to return to that world which preceded knowledge,

of which knowledge always speaks,

and in relation to which every scientific schematization

is an abstract and derivative sign-language.’

Edmund Husserl

(Abram 1996, p. 36)

We not only live with amplifying environmental destruction but in the wake of Modernist architecture, whose formalist and technological aesthetic (bankrolled by cheap oil stolen by aggressive imperialism) long ago uncoupled ethics from aesthetics. The historical roots of this separation lie in the work of the philosopher Emmanuel Kant who gave the enlightenment and the 20th century the idea of morality as a systematized set of laws but as theorist Max Weber pointed out (Iliescu 2009, p. 40), his separation of ethics from aesthetics inadvertently ignited the secular culture of the 20th century, to artists or architects abandoning reality and turning inwards - art for art’s sake. This led, for example, to the abstraction of Mondrian or the synthetic architecture of Mies van der Rohe. Art and architecture design marched in lockstep with science and capitalism, separating from reality which receded from consciousness. Phenomenology and organic architecture present an alternative philosophy - our experience of reality is the ground of truth and authentic consciousness and it is from this we should design architecture. Phenomenology comes from the Greek words phainómenon, meaning that which appears and lógos meaning language. Phainómenon as Martin Heidegger points out has its roots in the word alethia or truth (the truth of what appears). (Moran 2000, p. 230) Phenomenology seeks to describe as closely as possible the way the world makes itself evident to awareness (appears), the way things first arise in our direct sensorial experience (truth) by paying attention to the rhythms and textures of our experiencing and thinking body (embodied intelligence). Phenomenology recognizes that language, systems of thought, ideologies, social practices and the tools, and techniques we develop from them mediate our lived experience, or more insidiously, substitute human constructs for the truth of reality. (Ilyenkov 1974)

ARCHITECTURE, TECHNOLOGY AND THE LOSS OF REALITY
A key problem in terms of developing ecological ethics in architecture is that architects traditionally use ‘visualization’ techniques – lines, measurements, axonometric drawings, CAD – that are disconnected from their physical, emotional or psychological experiences of reality. Technology becomes problematic when we think of it as autonomous of the purpose which led to its creation. For example, computers are ocularcentric allowing only one sense, sight, into the design process. This nullifies how sound, smell or touch merges with memory and emotions to become the wellspring of design thinking. We translate our experiences of Nature through spatial mapping (plan, section and elevation) which is filtered through computer technologies. Our experiential knowledge is lost in the abstract, schematic drawings and the machines of architecture design which pacify the thinking, sensual body. Ideology operates in tools and technologies such as computers, fashioned for use within social systems and professional practices that transmit a codified thinking that stops questioning and embeds behaviors that perpetuate systemic conformity. ‘Technology intensifies every form of dissociation by distancing decisions not only from the consequences themselves but also from awareness, psychological perception and psychological response to the consequences,’ writes Robert Jay Lifton (Nicholsen 2002, p. 149). Virtual visualizations create a fictive world of computer-generated cartoon-like textures, a crude verisimilitude of Nature’s fecund colors, patterns and textures. Nature, ignored in the virtual is ignored in reality. Sadly, as Jean Baudrilliard’s idea of hyperreality explores, technology inverts reality, the fake often becoming the reference for the real.

An important aspect of ethics for the great educator Paulo Friere who was working on an ecopedagogy at the time of his death, was that it opened up critical consciousness (which he called conscientization); it was a socio-political tool that engaged learners in questioning their reality, how their historical and social situation conditioned their understanding of reality and who they are empowering them to challenge and change this (Friere 2004, p. 56-63). Similarly, Michel Foucault’s aesthetics of existence (O’Leary 2002: Introduction) looks at how ideology operates subliminally influencing physical behaviors – from the food we eat, to how we understand the world through technology – and how to challenge and change this through ethical stylization. Ecological ethics allows us to question how the way we design and the technologies we use participate socially and ideologically in disconnecting Nature from mind and body and enabling destructive behaviors.
NATURE AND CONSCIOUSNESS

‘The landscape thinks itself in me and I am its consciousness.’

Paul Cezanne

(Nicholsen 2002, p. 67)

In our current ‘reality’ of TVs, cars, IPods, computers or air-conditioned buildings – an anthropocentric world created by capitalism for profit - we forget that biologically our bodies emerged out of nature, meaning our perceptual apparatus is itself a part of nature and enables us to resonate with nature. Despite the world we have created, we are of and in nature. The ecological philosopher David Abram writes, ‘The eyes, the skin, the tongue, ears and nostrils - all are gates where our body receives the nourishment of otherness . . . our bodies have formed themselves in delicate reciprocity with the manifold textures, sounds, and shapes of an animate earth.’ (Abram 1999, p. 22) More profoundly for the phenomenologist Maurice Merleau-Ponty, nature is the interior of consciousness. (Diprose and Reynolds 2008, p. 182) It is not just that we have reflexes that respond to the world in a causal way, more the body is primordially embedded with animality which is realized or completed through Nature. Henry David Thoreau famously wrote, ‘In wildness is the preservation of the world,’ meaning that humans need nature to be human (Plummer 1989, p. 51) To extinguish nature is to extinguish the very genetic code of our being and our creativity.

FRANK LLOYD WRIGHT AND MARTIN HEIDEGGER:
PRIMAL ONENESS AND THE MORAL ORDER

‘I believe in God, only I spell it Nature.’

Frank Lloyd Wright

(Treiber 1995, p. 17)

Our primal oneness with Nature is the critical connection between Wright and Heidegger. Organic architecture developed from Wright’s recognition that humans ARE nature, that Nature is the ground of reality and the wellspring of our ideas, that humans need nature to design ‘authentic’ architecture and that it is morally necessary to do so to show respect for the divinity of life. (Organic architecture is explicitly biophilic.) Heidegger’s Building Dwelling
Thinking, a key 20th century essay in architecture and ecomorality, explores the same theme through the idea of the *fourfold*. In this essay Heidegger uses the example of a bridge to discuss how architecture intervenes in Nature creating relationships, in this case joining the banks on either side, with a connection which previously didn’t exist and now does so through human intervention. The bridge creates a ‘locale’ (a site) which ‘gatheres’ the banks, river, earth and sky, unifying them, revealing the fourfold within the nexus of aesthetic connections. Explicitly he declares, ‘To *preserve* the fourfold, to *save* the earth, to *receive* the sky, to await the divinities, to initiate mortals – this fourfold preserving is the simple essence of dwelling.’ (Krell 2004, p. 360) The clear implication is that ‘authentic’ (ethical) architecture provides a ‘clearing’ that ‘discloses’ (reveals) the fourfold – humans, on the earth, under the sky and before the divinities – ‘*in their essence*’, in their essential oneness. The philosophies of Wright and Heidegger are informed by the platonic idea that humans have a place in the divine order of nature. Plato in *Book 10* of the Republic writes that ethics and aesthetics are joined through Nature. (Iliescu 2009, p. 37) Different to our era of moral relativism, for Plato aesthetic judgments were either right or wrong because for the ancient Greeks, truth was defined as understanding the ‘right order’ of humans in the universe which could be revealed through beauty in art. Plato famously critiqued aesthetics (versus the verbal rhetoric of philosophy which was a higher art form) as a tool that, through the enchantment of artifice, often estranged humans from an understanding of their true harmonic place in the divine order - a criticism appropriate to this age of techno-architecture and its intoxicating aesthetics that spiral away from reality into a synthetic world of human illusion and delusion.

**LESSONS FROM THE 19th CENTURY**

*The ultimate meaning of any building is beyond architecture; it directs our consciousness back to the world and towards our own sense of self and being. Significant architecture makes us experience ourselves as complete embodied and spiritual beings. In fact, this is the great function of all meaningful art.*

Juhani Pallasmaa

(Pallasmaa 2005, p. 11)

Frank Lloyd Wright marched into the 20th century armed with a moral code from the 19th, an ethical-aesthetic convergence informed by a specific group of late-Victorian thinkers - Thoreau, Whitman, Ruskin, Emerson, Violet le Duc and Muir – whose anger at environmental destruction was the catalyst for developing theories of nature that mixed Platonism (divine order) with Christianity (God as immanent in nature) with enlightenment...
ideas of Nature as sublime (awe) and animism. As Wright matured, these ideas coalesced to become his design creed. Most influential was Ralph Waldo Emerson who wrote, “Seek each to concentrate this radiance of the world on one point . . . Thus in art, does nature work through the will of a man filled with the beauty of her works.” (Cronon 1994) For Wright organic architecture was not created through biomimicry, the slavish copying of nature, rather nature inspired humans to explore their inner self thereby expressing universal spirit. ‘Artist’s should convey not just the natural appearance of an object, but its meaning for the artist’s soul . . . Art must abstract from nature to convey its deepest truths,’ writes Ruskin. (Cronon 1994) Importantly, architecture would be beautiful by reflecting divine beauty. Organic architecture was not enslaved to the aesthetic whims of the era but drew from the beauty of nature (e.g. truth to materials) leading to a famous phrase from French architectural theorist Violet le Duc that, “Style is the manifestation of an ideal based on a principle.” (Cronon 1994)

Wright’s organic aesthetic was built on care for nature from which he cultivated a deep empathy which evolved into a holistic design philosophy. Ethics transformed his behaviors. By paying attention to the cycle of the seasons or the light of the forest, Wright was living and expressing a relatedness to Nature leading to a personal identification which transformed him through that experience. Early in his career, for example, he developed the idea of ‘fields of ornament’. ‘Read the grammar of the earth in a particle of stone,’ writes Wright (Hoffman 1986, p. 27) for whom the genius loci of the landscape - the striations of rock, the bark of trees or the dappled forest light - had a Natural scale of textures and patterns. Materials, which he often sourced from the site or locally, suggested the appropriate mass or proportions of the building. This care, attention to detail, this noticing (Wright often did drawings of the flora of the site) also underpins Heidegger’s idea of space. Heidegger subverts the architectural idea of space as geometric and measured – distanced from reality or actuality - and instead reaches to etymology to redefine it as ‘(s)omething that has been made room for, something that has been freed, namely within a boundary.’ (Krell 2004) Space is created when architecture illuminates the (organic) qualities of the phenomenal world. Phenomenology and organic architecture are philosophies that foreground care, paying attention to our experiences of the lifeworld as it is in itself and to design with Nature, as much as possible, in its own truth. It was in the Arizona desert at Taliesin West that Wright explored an architecture that could express both his truth and the truth of nature.

**TALIESIN WEST: FROM HERE TO ETERNITY**

‘The desert is the environment of revelation, genetically and physiologically alien, sensorially austere, aesthetically abstract, historically inimical . . . its forms are bold and
suggestive. The mind is beset by light and space, the kinesthetic novelty of aridity, high
temperature and wind. The desert sky is encircling, majestic, terrible. The rim of the sky . . .
here . . . is infinitely vaster than that of rolling countryside and forest lands. To the desert
go prophets and hermits; through deserts go pilgrims and exiles. Here the leaders of the
great religions have sought the therapeutic and spiritual values of retreat, not to escape but
to find reality.’

Paul Shepard, Man in the Landscape

(Krakauer 1998, p. 25)

Taliesin West was built in 1937 near Scottsdale, Arizona, on a southern slope of the
McDowell Range on the Maricopa mesa ‘an arcing land of craggy mountain peaks, its rock
burned down and pulverized into dunes of sand, the cactuses tough and spiky, the ground
inhabited by snakes, the skies igneous with color and heat.’ (Plummer 1989, p. 67) Wright
described it as ‘(a) look over the rim of the world’. (Levine 1996, p. 40) This was not
architecture designed from concepts imposed on the landscape - defensive, defiant and
standing against nature. After 50 years of designing organic architecture, it was the
landscape which gave Wright the embryonic context and inspiration for the creation of
architecture, not on the hill but of the hill. The rubble walls, the canvas roof flapping in the
dust storms, the rooms excavated into the ground like Hopi kivas, cool and moist against the
searing heat outside, the axis of the plan aligned to distant landmarks, the bubbling springs or
the heat and the flickering light from the huge fires on ink-black nights – Taliesin West shifts
architecture from aesthetic representation to a mode of primally experiencing place.
Plummer writes, ‘Life was deliberately stripped down to fundamentals and essentials,
everywhere attempting to meet existence with the greatest possible directness.’ (Plummer
1989, p. 61) Taliesin West doesn’t block heat and cold, sand or sky but is a series of
terrestrial rooms that allow nature to inhabit architecture confronting consciousness with
maximum reality, or, as Antoine de Saint Exupery would say, dwelling as ‘lying naked
between sky and sand’. (Levine 1996, p. 48)

Unlike the Robbie House which hovers on the ground on a building-length stone pad (plinth),
the ‘desert rubble’ stone walls of Taliesin West seem to break through the ground like
tectonic plates rising out of the earth, ‘(a) thing growing out of the nature of the thing’.
(Wright cited in Treiber 1995, p. 7) The walls were made from boulders from the site,
stacked in formwork angled at 15 degrees and fused by a mixture of desert sand, gravel and
cement poured around to leave the face of the boulder near the formwork exposed
which was acid washed to bring out the color. The roof consists of fin-like redwood trusses,
angled again at 15 degrees and attached like ‘c-clamps’ to the walls looking in silhouette like
the local horned lizard, the angular desert rocks or the distant mountains. The angle of the
walls and the trusses which also ciphers into the plan came from Wright’s logo consisting of
two square spirals, tilted at 30/60 degrees, inspired by the Native American spiral which
spoke to Wright of inner nature explored through the spirit of nature as experienced through architecture. (The spiral appears again 33 years later in Robert Smithson’s famous Spiral Jetty.) Wright created a diaphanous, membrane roof from framed canvas panels sliding in grooves in the trusses inspired by Japanese shoji screens. (Wright was heavily influence by traditional Japanese architecture after seeing the Ho-o-den pavilion at the World’s Columbian Exhibition in Chicago in 1893.)

It is important to remember that Wright was building Taliesin West at the same time he was building the Johnson Wax Headquarters in Racine, Wisconsin (1936-39) with its ferro-concrete mushroom columns and its ceiling of Pyrex glass tubing, both state of the art technologies invented by Wright. Wright didn’t use technology to show his ingenuity, he always used it to reveal the qualities of space, light or materiality he was exploring. Similarly, Heidegger writes, ‘To the Greeks techne means neither art nor handicraft but, rather, to make something appear (letting appear), within what is present . . .’ (Krell 2004, p. 361) The ‘technology’ of Taliesin West was knowingly basic and primal allowing the desert, which Wright saw not just as Nature but a fusion of human and geological history, to appear in architecture. The desert rubble stone walls, for example, referenced the stacked boulders and stone markers of the ruins of vanished meso-American civilizations. Wright’s favorite quote was from his wife Oglivanna who said that “The whole opus looked like something we had not been building but excavating.” (Levine 1996, p. 43) For Wright the interaction of nature and culture was fluid, both sharing a common world of light, heat and sound, and a continuous history of birth, growth, decay and death. This was what technology was meant to show.

The ‘heavy’ walls anchor the building to the earth and the ‘light’ roof floats into the sky, the visual weight not only aligned to the terrain but to the feel and mood of the desert. Gottfried Semper, a late-19th century architectural theorist who studied vernacular, ethnographic architecture and its implications writes, ‘It is characteristic of our secular age that we should overlook the cosmic associations evoked by these dialogically opposed modes of construction . . . The affinity of the frame for the immateriality of the sky and the propensity of mass form not only to gravitate toward the earth but also to dissolve into substance.’ (Frampton 1995, p. 12) Taliesin West is the architectural version of land art or earth works such as labyrinths, solar calendars or mounds, designed to unify earth, sky and humans in a cosmological experience. As such, it returns the mythic dimension of Nature to the language of modern architecture with a focus on time. Wright Scholar Neil Levine writes, ‘Taliesin West is located in the desert which is a place where the eternal-nature of time is more profoundly experienced versus the modernist belief in the temporal actuality of an ever-changing historical present that defines itself by its dissociation from the periodic and cyclical existence of nature.’ (Levine 1996, p. 39) Existence as being in time was central to Heidegger (his opus is titled Being and Time) and time moving to the celestial clock of the universe so apparent in the dome of the desert sky was central to Wright’s conception of
Taliesin West. For Plato, body time and cosmic time beat to the same universal motion (time equaled movement for the ancient Greeks) and hence share the same soul. For Wright and Heidegger time determined the Nature of being.

CONCLUSION

'I believe that the universe is one being, all its parts are different expressions of the same energy, and they are all in communication with each other, therefore parts of one organic whole . . . This whole is in all its parts so beautiful, and is felt by me so intensely, that I am compelled to love it,

and to think of it as divine.”

Robinson Jeffers

(Nicholsen 2002, p. 50)

Edge can mean a boundary, or the defining line between things we are familiar and comfortable with because they are known (e.g. knowledge, behaviors, political or social systems, ethics or architecture) versus new things, new ideas we are unfamiliar with and hence fearful of, hence the term edgy. Thomas Kuhn uses the idea of paradigm (in a critique of the philosophy of science) to describe an edge or boundary as an epistemological line that circumscribes the limits of knowledge and questioning. (Kuhn 1996) He was referring to science but the idea has expanded since to society or history. A paradigm is like a thought-bubble; collective thinking is hermetically sealed in an environment of sameness and conformity. Ordinary people can engage in profoundly immoral acts under the influence of a paradigm via (unquestioned) ideology influencing or coercing personal decisions, group think, corporate or societal behaviors and national policies which legitimize immorality in a normalizing cloak. A paradigm-shift for Kuhn occurs when revolutionary events or ideas disrupt, challenge and change the paradigm. Brick by ideological brick, we are walling ourselves into an anthropocentric paradigm. Biopiracy or genetic modification, for example, reduce Nature to a monoculture transforming reality and leading eventually to a monoculture of the mind – the world becomes nothing but humans and their works. We kill Nature by killing our awareness of Nature which kills our ecological consciousness of Nature which kills our ethics and atrophies the ability to question or create other possibilities. Or killing diversity kills evolution of thought and kills the future. Organic architecture which evolved from a Victorian philosophy that blended aesthetics with ecological ethics, offers a window to a paradigm shift in thinking by changing being. Culture, as philosopher Erazim Kohak explains, came from the Latin cultus meaning awe before the holy, the beautiful, the true or
the good, but now it is a category of capitalism subordinated to the dynamics of production and consumption. (Kohak 1984, p. 20) It also meant a person of culture, one who cultivates his/her life, not leaving it to the mercy of whims, advertising, conformity, gratification or desire, but ordering it according to morality which for Heidegger requires *taking a stand*. The culture of architecture and architects must return to acknowledging the wonder of nature in aesthetics by cultivating the ‘beyond within’. But this requires the courage to step over the edge. To leave the safety of human ideas, preconceptions, history or technologies and the willingness to return to the phenomenal world, to reality - to see, to hear, to be and to receive - knowing that the earth encompasses and surrounds us, opening up our bodies which are sensually tuned to omnipresence. This is the wisdom of Frank Lloyd Wright and Martin Heidegger.

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REFERENCES


Ilyenkov, E V 1974, *Activity and Knowledge*, MIA (Marxist Internet Archive Library),


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