

UQ Summer Project Description

Project title:	Design and Fabrication of Timber Structures: Prefabrication and digital fabrication strategies for large-scale timber construction, and alternative uses for under-valued sawmill products in innovative timber structures.
Project duration:	6-8 weeks part-time over the UQ Summer Break
Description:	<p>Proposal: This project will investigate the design and fabrication of innovative structural timber systems and digital fabrication technologies. It will involve fabrication of large scale timber to timber connections and include processes that adapt non-standard and 'low value' timber products. A key research focus will be the development of sophisticated manual and digital fabrication techniques, that investigate alternative timber construction systems to conventional stud framing and roof truss construction. It will involve design and prototyping processes that involve the physical construction of 1:1 prototypes.</p> <p>This approach seeks to add value to the 'low value' timber members by combining them together in a novel way in order to achieve overall physical and mechanical properties where the whole is greater than the sum of its parts.</p> <p>The research objective will be to investigate the assembly of small member sizes arrayed in 3-dimensional <i>Mass Timber</i> structures and connections that employ novel configurations to achieve large spans and stiffness through inherently stable geometric configurations and interconnections between aggregated members.</p>  <p>Articulated Timber Joint using mass timber - Shigeru Ban</p>



CNC routed Hooked scarf Joint
- Kim Baber and Joe Gattas - Centre for Future Timber Structures

An interdisciplinary architecture and civil engineering student cohort will be the major contributors to the project, with Kim Baber providing supervision.

Background:

The current softwood timber framing market is dominated by the demand for a narrow range of domestic structural framing member sizes in the range of: 90mm x45mm, 90mmx35mm, 70mmx45mm, and 70mmx35mm. Only a certain volume of timber milled from each log can yield these member sizes at a certifiable structural grade. The yield of framing sized members depends on the diameter of the log, and where the timber is cut from. Timber cut from the heartwood has low strength, and timber cut too close to the sapwood is frequently prone to visual and dimensional defects such as wane and warp. The profile of the log also necessitates that timber sections be cut thinner toward to the sapwood.

In order to yield the most efficient amount of sawn timber from given log, there will always be a significant volume of timber that is low strength heartwood, a quantity of boards that are relatively thin, as well as a certain percentage of the framing sized members that have some defects along their length. These all fall into the 'low value' category and cannot be certified for use as structural framing.

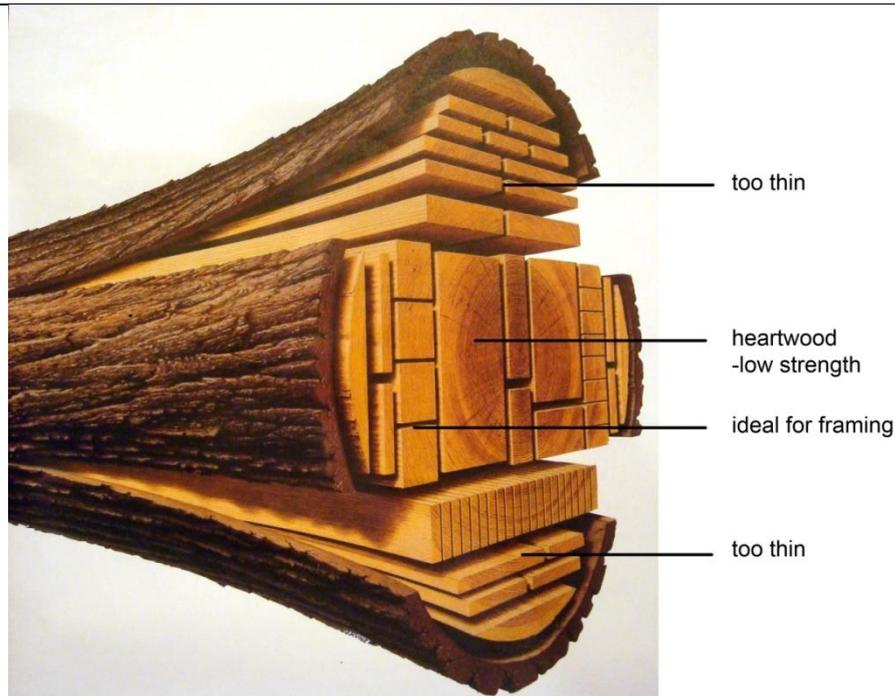


Figure: Much of a typical log ends up too thin or with too much heartwood to be used for certified structural framing.

Much of what is categorised 'low value' is due to it not meeting the minimum dimensional and physical requirements of the construction industry's domestic framing market. Similarly, much of the 'low value' timber that has been rejected to defects, may actually be of a certified structural grade, but has visual defects such as waning, warping or discoloration, so is deemed unsatisfactory by the market. Members with structural defects such as knots or checks are often only affected by less than 20% of the length of the member, allowing the remainder to be perfectly usable, but this is perceived to be too short (eg at lengths 1.8m or less) and deemed unsatisfactory by the market.

The key issues driving the de-valuing of these timber products, is the ubiquity of one standard of domestic framing system, and the industry's perception of what is visually and dimensional acceptable and convenient to use. A successful demonstration to industry of alternative systems that adapt low value timber products could change this.

Significance:

In the context of a growing demand on both construction materials and natural resources, developing alternative methods of timber framed construction that add genuine value to these 'low value' timber products has significant potential to improve economic sustainability in the industry.

Maximising the net yield of usable structural timber from harvested logs will increase the proportion of timber products that are available to meet demand from the construction industry, thus increasing the availability of renewal materials and enhancing sustainable practices in the industry.

The construction of a demonstration project to showcase the innovative use of this undervalued product is a direct and tangible method to increase awareness in the industry, and can be an effective format to encourage change of practices.

Expected outcomes and deliverables:	<p>Students will actively participate in the design development, documentation, modelling and fabrication of a series of timber prototypes and the construction of full scale timber structures. These structures will demonstrate the development of novel fabrication techniques and test structural application that increase the use of under-valued timber products.</p>
Suitable for:	<p>This project will be suitable to students already who have some experience in working in the School of Architecture Co-Lab and/or the School of Civil Engineering Structures Lab. Students should have capacity to model in Digital 3D software such as Rhino, Grasshopper Revit or Autocad 3D. Students are to have completed the requisite safety induction prior to commencement of the project.</p>
Primary Supervisor:	<p>Kim Baber, Fellow in Civil Engineering and Architecture <i>School of Architecture</i></p>
Further info:	<p>There are positions for 2-3 students Part time in this research project. Please Contact Kim Baber for further information k.baber@uq.edu.au</p>

UQ Summer Project Description

Project title:	Aboriginal Environments Research Centre projects and archive maintenance
Project duration:	8 weeks
Description:	<p>Agreed tasks and target outcomes to be selected and negotiated from the following:</p> <ol style="list-style-type: none"> (1) Maintenance of selected data sets in the Aboriginal Environments Research Centre archive (2) Assisting with current architectural and urban planning consultancy and research projects (3) Assisting with current research grants (Health Architecture, Wild Australia Show history) (4) Working on new edition of <i>Gunyah, Goondie + Wurley: The Aboriginal Architecture of Australia</i>
Expected outcomes and deliverables:	<p>Skills in accordance with tasks from following:</p> <ol style="list-style-type: none"> (1) Referencing and digitising data sets; compilation of data guide (2) Historical place research in archival and online collections for current Brisbane urban planning contracts (3) Literature collection and analysis <p>General: Familiarisation with operations of a research centre and current range of research projects by staff and postgraduates.</p>
Suitable for:	M. Arch students with high grades and intending to do an M. Arch thesis or RHD status.
Primary Supervisor:	Prof Paul Memmott
Further info:	<p>Please contact Linda Thomson at AERC office to discuss your interest and submit an application. Phone: (07) 3365 3660 Email: l.thomson@uq.edu.au</p>

UQ Summer Project Description

Project title:	Architecture in cultural policy
Project duration:	6 weeks in late November and December 2019
Description:	Architecture is a marginal topic in cultural policy which otherwise covers a wide gamut from opera and fine art, to sport and festivals. This research scholarship will contribute to a wider project that argues for a better consideration of architect in cultural policy. The Summer program research task will be to gather cultural and creative economy policies from Commonwealth, State and local government for the purpose of analysis. It will also include some site studies of public art and the use of public space for cultural events in Brisbane.
Expected outcomes and deliverables:	Students will receive an introduction and overview to the way government conceptualise culture and its role in promoting it with a particular focus on architecture. Skills will include web and web archive searching, library database searching, construction of databases and critical analysis. Some on-site investigations and interviews. The student will assist the investigators in making a survey of architecture in the field of Australian cultural policy from 1980 to the present.
Suitable for:	This project is suitable for a Bachelor's graduate going on to honours or Masters, or a Masters student. It would be particularly valuable for students planning to undertake a research thesis in M.Architecture or B.A Honours. It would suit students with some background and an interest in: architecture, visual arts, cultural studies, communications, or policy.
Primary Supervisor:	Prof John Macarthur and Dr Susan Holden
Further info:	Applicants should contact John or Susan j.macarthur@uq.edu.au s.holden@uq.edu.au The Summer Research Scholarship is a part of an ARC funded project "Is Architecture Art?" and applicants can learn more about the project at: https://isarchitectureart.com/

UQ Summer Project Description

Project title:	New Monograph on Australian Architecture
Project duration:	6-10 weeks
Description:	Commissioned by Thames and Hudson is a new monograph book on projects that define Australian architecture in the 21 st Century. This will be a showcase of 50 of Australia's century-defining architectural projects from residential through to public and commercial buildings
Expected outcomes and deliverables:	Scholars may gain skills in knowledge of Architectural practice in Australia since 2000, skills in preparing architectural drawings for publication Proof reading and copy editing
Suitable for:	This project is open to applications from Master only enrolled.
Primary Supervisor:	Cameron Bruhn
Further info:	Application submission ONLY – (no prior contact please) to hospa@architecture.uq.edu.au

UQ Summer Project Description

Project title:	Editorial & Publishing Experience: iNTA Conference UQ, December 2019
Project duration:	The project will last for 6 Weeks, commencing November 18 th .
Description:	<p>Preparing, collating, referencing and managing papers submitted to the international Network of Tropical Architecture (iNTA) Conference, UQ, December 2019.</p> <p>This will be the 7th in this series of biennial conferences that originated in Singapore. Delegates will have submitted refereed papers conforming to a template. These will require editorial review, minor editing and formatting, referencing, collating and made ready for publication.</p> <p>In addition, multi-disciplinary workshops addressing issues related to Historic Urban Landscapes (HUL) will be part of the conference. These sessions will review current practices and future trends in this important emerging UNESCO World Heritage category. Scholars will participate, help edit and coordinate reports and recommendations that emerge from these events.</p> <p>More generally, student(s) undertaking this project will participate in organizing the conference programme and producing other related published materials including a book of abstracts.</p> <p>Scholars involved in this programme will be able to attend the conference as guests and network with National & International participants and contributors.</p>
Expected outcomes and deliverables:	<p>Scholars will produce several publications based upon their work in collecting, managing and editing academic papers for the conference proceedings along with preparing and cross-referencing a booklet of abstracts and developing the conference programme. They will also be involved in preparing and editing documentation that arises from the HUL workshop sessions.</p> <p>The conference programme will relate to the grouping of papers submitted. Scholars will participate in the final stages of preparing for the conference.</p>
Suitable for:	<p>Enthusiasm, curiosity and the application of organizational, design, editorial and management skills.</p> <p>Students will work closely with the Conference Implementation Team, comprising of two academics in UQ's School of Architecture, the School's Engagement and Communications Officer and EAIT Executive Education Manager (Acting).</p> <p>The project is open to 3rd & 4th Year students and those enrolled in Coursework Masters programmes as well as students about to graduate.</p>
Primary Supervisor:	Dr Pedro d'Alpoim Guedes
Further info:	<p>Students may contact Dr Guedes by e-mail: p.guedes@uq.edu.au</p> <p>They may also go to the conference website: https://www.architecture.uq.edu.au/urban-tropicality</p>

UQ Summer Research Project Description

Project title:	Yambangku Aboriginal Cultural Heritage Hub
Project duration:	Six weeks, part-time over the UQ Summer Break.
Description:	This is a design-research project which explores the preservation and representation of Iningai (First Nations) culture through the development of a design concept for a new cultural hub on a remote site in central Queensland. The design will be led by the supervisors in close collaboration with the Traditional Owners and their community.
Expected outcomes and deliverables:	Scholars may expect to develop and expand their skills in data collection, mapping and design-research. The project will explore multi-modal communication techniques to allow users to engage with design ideas from afar. Scholars may have the opportunity to engage with other disciplines from UQ which include Interaction Design, Archaeology, Anthropology, Agriculture and Tourism. Students will actively participate in the design development through the preparation of design reports, drawings, imagery as well as physical and digital models.
Suitable for:	This project is only open to students currently enrolled in the School of Architecture at UQ. Applicants should have highly developed design and communication skills across multiple media/software.
Primary Supervisor:	John de Manincor and Kelly Greenop.
Further info:	Applicants should email j.demanincor@uq.edu.au with any questions about the role.