TEACHING-LEARNING-RESEARCH: DESIGN AND ENVIRONMENTS

• Paper / Proposal Title: Critical Analysis of learning outcomes gained during a Solar Decathlon: a Case Study approach

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• Abstract: The Solar Decathlon competition is perceived as highly effective teaching tool. Each year dozens of tertiary institutions embark on a journey that demonstrates their skills and knowhow on a global stage. The U.S. Department of Energy depicts the collegiate, hands-on competition as powerful learning experience that provides students with a rigorous architecture and technology education. Clearly, sustainability must be integral part of each project and pathway for a better tomorrow. Without a doubt, learnings from each project enrich students and staff understandings, as well as boost each participants confidence and ability to make informed design decisions. However, the first disillusionment for learners starts with the realisation that ‘solar’ does not necessarily mean ‘sustainable’. Both learners and industry partners find it difficult at first to differentiate between the two terms. The handling of water, consideration of carbon footprints, as well as toxicity of building materials and technologies is complex and, in many cases, not environmentally sound. By the time plane tickets need to be purchased to travel to the competition sites, the original project team of do-gooders find that the environmental impact of air travel plays a negligible role. The second disenchantment for learners is introduced when it transpires that design decision are also often based on material and technology sponsorships. During this
process, and like a self-fulfilling prophesy, students turn into product ambassadors, highlighting characteristics as found on product websites and information pamphlets. The presentation and written paper will consider teaching, learning and research as it relates to New Zealand’s Solar Decathlon entry. Use the project is used as a case study in which the author reflects critically on the design and decision-making processes, management of risks, and safety measures that led to a successful result.

- **Author(s) Biography:**
Associate Professor Tobias Danielmeier worked in the highly regarded practices Bolles+Wilson, as well as Reichardt - Maas - Assozierte Architekten before becoming an architecture educator in New Zealand. His designs have gained national and international awards in the disciplines of architecture, design and engineering. Tobias is a member of the New Zealand Institute of Architects, New Zealand Green Building Council, Architectural Designers of New Zealand, Bund Deutscher Baumeister, the Designers Institute of New Zealand, and the Building Technology Educators’ Society. He frequently acts as juror on architecture and heritage competitions and is on the editorial board of the International Journal for Architecture, Arts and Applications. Besides acting as Visiting Professor at Coburg University of Applied Sciences and Arts, Tobias is also working on the low carbon cities and towns cluster for the United Nations Regional Centre of Excellence in Sustainability.

Prior to working as Academic Leader for Architecture at Otago Polytechnic, Tobias worked as Senior Lecturer at Victoria University of Wellington, where he was project lead for New Zealand’s highly successful entry to the Solar Decathlon and advisor to Austria’s winning project in 2013.