IABSE Conference – *Creativity and Collaboration*
April 19-20 2017, Bath, United Kingdom

Small-scale experimentation as a catalyst for large-scale change and inspiration

Roy Crielaard, Ed Clark, Carolina Bartram, Andrew Lawrence, Alice Blair, Ishan Abeysekera, Hugh Pidduck

Arup, London, UK

Contact: roy.crielaard@arup.com

Abstract

This paper shows how small-scale temporary installations can be valuable real world demonstrators for key social and technological issues, and opportunities facing the construction industry and engineering profession. Historical precedents are presented first and three contemporary case studies are discussed. *Rock on Top of Another Rock* is a project where the use of LiDAR scanning and 3D-printing technologies allowed the creation of scale models as a design, analysis, and communication tool. *The Smile* pushed the use of a material, hardwood cross-laminated timber, to the next level. And *The Circular Building* applies circular economy principles to the built environment. These installations not only demonstrate an innovative concept now, but aspire to act as a catalyst for large-scale change and inspiration similar to their precedents.

Keywords: temporary structures, experimentation, LiDAR, 3D-printing, hardwood, CLT, circular

1 Introduction

The building industry is often seen as being slow to innovate compared to other industries. Where on large projects risks associated with employing new and innovative ideas might be unacceptable, the authors have found that small-scale temporary installations offer a unique opportunity for experimentation and can aspire for change and inspiration on a larger scale.

1.1 Historical precedents

There are historical examples where small-scale experimentation, either on small pavilion-like projects, or on smaller parts of large larger projects, proved to be a catalyst for large-scale change and inspiration. The work of engineers such as Jean Prouvé and Peter Rice is used to demonstrate this.

1.1.1 Jean Prouvé

Jean Prouvé was renowned for his work on a variety of small scale building projects including his demountable 6 m x 6 m houses, designed for refugees of World War II, and the flat-packed Maison Tropicale designed using industrial techniques to minimise material use and allow for quick deployment in Africa [1]. Working at this scale enabled prosperous communication between design and construction, with Prouvé himself acting as architect, engineer and constructor all at once. The scale of this work encouraged experimentation through the production of prototypes whereby practical experience could be utilised to test and refine designs. Prouvé was based in Nancy, giving him access to the local steel industry and feeding his interest in industrial process. This way of working led to experimentation with sheet metals and the

https://doi.org/10.2749/222137817821232658