

## Sustainable Innovation 2015

20<sup>th</sup> International Conference

'State of the Art' Sustainable Innovation & Design

9<sup>th</sup> – 10<sup>th</sup> November 2015

University for the Creative Arts

Epsom, Surrey, UK

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## Transforming THTKB into the Brighton Waste House: from Zero Waste to Re-use of Waste

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### **Premise: From zero waste to reuse of waste**

In 2008 the author designed and built the UK's first EPC (Energy Performance Certificate) 'A+ rated' dwelling known as 'The House that Kevin Built' (THTKB). It was also the UK's first low energy dwelling constructed predominately from locally sourced organic material: a compostable house that 'locked' carbon rather than burning it. The project was almost completely constructed off-site i.e. it was prefabricated, and consequently the construction process produced zero waste on site. It proved that the UK construction industry did not have to waste up to 20% of all material arriving on site (source Waste & Resources Action Programme (WRAP)) as is the norm.

The project took just six days to construct. It was filmed every day and aired each evening on UK TV as a 'live' version of UK Channel 4's popular programme 'Grand Designs'. Approximately five million viewers an evening viewed the construction process. However, post-completion THTKB was disassembled and put into storage. The original plan was to rebuild THTKB at the BRE (Building Research Establishment) in Watford UK. This did not happen. However Baker-Brown was keen to rebuild THTKB within the grounds on the University of the Brighton's College of Arts & Humanities where he taught, and to slow down the build to six months and to allow the construction process to involve architecture, design and construction students, and finally to ensure that this inclusive process became an innovative and effective pedagogic tool.

By 2011 Baker-Brown had supervised design programmes with undergraduate architecture & interior architecture students considering themes addressed by THTKB, assembled the beginnings of a delivery team to support the student construction team, and he had been gifted the land to support the rebuild project. However the original building fabric and systems had been returned to their suppliers. This gave Baker-Brown the opportunity to re-consider the project. Would he re-build THTKB as before, or focus on other issues to use as a vehicle for design enquiry?

This paper will discuss the issues that convinced Baker-Brown during the Summer 2012 to completely change the emphasis of THTKB collaborative rebuild project from a focus on locking carbon and reducing waste on site to zero, to developing a construction project that considered issues associated with emerging ideas within the subject area of 'The Circular Economy' and to perhaps prove that "there is no such thing as waste, just stuff in the wrong place!": In other words to move the issues address by the rebuilding of THTKB from zero waste to the re-use of waste.

### **Approach: The pedagogic process**

To involve design & construction students, academic colleagues from the University of Brighton, City College Brighton & Hove and other academic institutions, professional design consultants, local authority officers, SME's and national contractors, national social media networks, local schools and community groups, in the design, construction and in-use monitoring of Europe's first permanent public building made of (approximately) 90% material others had discarded. To create a 'live' on-going research initiative raising awareness of issues pertaining to 'The Circular Economy', Resource Efficiency, Resource Security, Re-use & Remanufacturing, Consumption & Production, and to capture the process via various social media platforms.

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This paper will consider the story of why and how the Waste House team went on a journey from a zero waste in construction build that locked carbon, to a completely different building project that re-used material discarded by others. We will consider how emerging legislation (EU & UK), research initiatives (Prof. Jonathan Chapman, Dr. Joan Farrer, Dr. Ryan Woodard and others) and programmes such as RSA's 'The Great Recovery', as well as exemplar design and architecture practice, working methods and teaching (Rural Studio, Lacaton & Vassal, Rotor, Superuse Studio), have informed this different approach. We will also consider the legacy of the Waste House which was constructed by over 360 students and visited during this time by over 750 school pupils, and since its opening in 2014 has been published around the World on over 400 occasions.