



## **OBSOLESCENCE and RENOVATION**

### **20th Century Housing in the New Millennium**

Conference: 14-15 December 2015

#### **Abstract / Initial Proposal Form:**

**1. Paper / Proposal Title:** Decoding the DNA. Housing opportunities latent in structural systems of existing buildings.

**2. Format:** Verbal presentation

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**6. Abstract (300 words):**

When explaining their plans for retrofitting existing buildings, architects now often refer to the DNA of a structure—a term borrowed from the biological sciences—as a guiding principle. But what is this DNA and can it be categorized and understood? One of the qualities of buildings that define their re-use is the structural system, which can be seen as forming part of this DNA. This paper, based on analysis of will present those structural system characteristics of existing buildings that influence the single-family stacked housing typology retrofitting possibilities.

The 19<sup>th</sup> Century saw the introduction of new material and structural systems that formed the basis for the construction logic of the 20<sup>th</sup> century. These systems are composed of vertical-, horizontal bearing-, and stabilizing elements. A number of complex configurations emerge when combining these basic elements in different manners. Analysis has shown that these building blocks of the structural DNA retain their

characteristics in the various configurations, which allows for distilling the opportunities they offer for structural intervention.

Stacked housing typologies can too be categorized. In this case by their access configuration; another aspect of the DNA of type, which in turn influences the internal planning and structural system. By marrying the analyses of these two aspects of the DNA of buildings, structure and access types, a range of options for re-configuration of the existing building stock emerges.

This is of interest not only to the adaptation of non-housing to housing but also relevant to extant housing complexes which need to be modified through enlargement or reconfiguration of the existing plans. Case study and conclusion will be presented in graphic form, presenting a concise picture of one of the building blocks of the DNA of existing buildings in tandem with the possibilities for evolution that this holds.

#### **7. Author(s) Biography (200 words maximum for all authors):**

Nicholas Clarke is a South African born architect. He is currently completing a PhD at the Heritage and Architecture Unit of the Faculty of Architecture at the Delft University of Technology where he also teaches in the Masters course. At the same time he is a Heritage Studies Research Associate at the University of Pretoria. He received his undergraduate training from the University of Pretoria, following which he completed an MPhil (Environmental design in Architecture) at Cambridge University.

Vivian Wijburg is a Dutch designer. She completed her Masters Degree in Architecture at the Delft University of Technology in 2015. Prior to this she obtained a Bachelors Degree in Civil Engineering at the Delft University of Technology. During her studies in Architecture she got intrigued by the building transformation process and in particular the relation between the existing building and the new design.

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