A Matter of Sequence

Investigating the Impact of the Order of Design Decisions in Multi-Stage Design Processes

Julia Tschetwertak 1(0000-0002-2373-765X), Sven Schneider 2(0000-0003-3031-0328), Alexander Hollberg 3(0000-0002-9756-2362), Dirk Donath 4, Jürgen Ruth 5
1,2,3,4,5 Bauhaus-University Weimar, Germany

1,2,3,4,5{julia.tschetwertak|sven.schneider|alexander.hollberg|dirk.donath|juergen.ruth}@uni-weimar.de

Abstract. The design as a process is not a new topic in architecture, yet some theories are widely unexplored, such as the multi-stage decision-making (MD) process. This design method provides multiple solutions for one design problem and is characterized by design stages. By adding new building components in every stage, multiple solutions are created for each design solution from the previous stage. If the MD process is to be applied in architectural practice, fundamental and theoretical knowledge about it becomes necessary. This paper investigates the impact of sequence of design stages on the design solutions in the MD process. A basic case study provides the necessary data for comparing different sequences and gaining fundamental knowledge of the MD process. The study contains a parametric model for building generation, a parametric Life Cycle Assessment tool and an optimization mechanism based on Evolutionary Algorithms.

Keywords: Multi-stage decision-making process · Design process · Life Cycle Performance · Design Automation