

Abstract

The proposed concept for a combination of hybrid modular construction and adaptive reuse consists of the insertion of volumetric modular spaces into existing buildings which serve as permanent host structures for interchangeable components. This concept helps implement a circular economy within the built environment using multiple circular design strategies resulting in a more sustainable building construction concept that also preserves the cultural and architectural value of older buildings. In this building concept, existing building systems are minimally retrofitted to support the installation of modules while preserving as much as feasible of the original structure, especially the structural and façade systems that are the most valuable for the potential projects. The use of a hybrid modular system provides flexibility to the use of the existing building space over the course of its operational life which is also extended through the application of the new concept. This thesis provides broad guidelines and considerations for such a building concept, taking into account the requirements of each constituent strategy as well as extra requirements arising from the combination. The goal of this thesis is to propose a building concept that can help move the built environment towards less rigid and more sustainable practices that will be necessary to deal with a rapidly changing world. Potential uses for this hybrid modular adaptive reuse concept are proposed as well as possible future avenues of research and refinement that may be necessary.