**Dwelling and technology: adaptable design and building system for low-cost housing in Portugal**

Keywords: Architectural Design; Digital Fabrication; Low-Cost Housing; Portugal.

Igor Lacroix

**Streamline**

My current research focuses in developing an architectural design and building system directly informed by behavioral and sociological data. The main reference is Portuguese architect Nuno Portas’ evolutionary housing theory, which considers the relationship between architectural design and sociological information. The purpose is to create a building system for digitally fabricated low-cost housing in Portugal’s context. In order to accomplish the task I have the support of Digital Fabrication Laboratory – DFL of Faculty of Architecture from University of Porto. For more information read the abstract of my PhD proposal here.

**Abstract**

This PhD proposal, approved at Faculty of Architecture from University of Porto, intends to research the architecture of a digital fabrication process for construction of low-cost housing in Vila Nova de Gaia, at Porto’s metropolitan region. The research focuses on maintaining the dwelling quality by considering Nuno Portas’ evolutionary housing theory, since it systematizes architecture according to information about the inhabitants, in order to present solutions that can respond to different characteristics of the assisted families or individuals. Portas developed and tested it, in the 1960s, at National Laboratory of Civil Engineering – LNEC, in Lisbon, together with architect Alexandre Alves Costa. Then, he published it, in 1972, together with Francisco Dias Silva, and officially applied it in Ambulatory Local Support Service – SAAL, a Portuguese housing program, from 1974 to 1976. Idealized by Portas, SAAL program was one of the main accomplishments of modern Portuguese architecture that, for example, helped launch architect Álvaro Siza’s career internationally. Therefore, the research main goal is to continue Portas’ work with the perspective of parametric design and digital fabrication, in order to respond to the problem of building systems quality. In this sense, we propose a research that could automate an entire chain of digital production, from design to building, which could facilitate the use of evolutionary housing method. The main expected result is a building system directly informed by an architectural design capable of managing the inhabitants’ needs, and, consequently, giving shape to the process of digital fabrication of low-cost housing in Portugal.