

Chapter 1

Re-Coding Homes: A Mass Customization Tool to Create Flexibility for Housing Units

ABSTRACT

The research project Re-Coding Homes aims to create flexible interior design solutions for standard mass housing units and differentiate them according to different user needs. The study consists of three basic steps defined as case study, development of the design model, and development of the user interface. The design model is characterized by a flexible expert system that leads to different spatial variations by multi-parametric layout generation based on parameters determined by user needs. In this sense, the design model acts as a mass customization tool that gives the possibility to create complete living environments together with all furniture and necessary equipment.

INTRODUCTION

In Turkey especially until the 1980's the priorities of housing design and production have started to change as a result of the increase in urban density, the decrease of available urban land and the changes in socio cultural aspects. After the devastating İzmit earthquake in 1999 that destroyed thousands of buildings, the renewal of old and risky buildings started to be handled by urban regeneration projects. These projects were generally realized by demolishing informal settlements and building apartment blocks with standard housing units. Informal settlements are shelters built by the migrants themselves with limited sources and skills in order to integrate with

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the city as soon as possible (Saglar Onay, Garip, 2016). So these settlements are shaped in a way as to be independent from the formal and regular decision-making and planning procedures (Duyar, 2005). Generally Informal settlements do not have very healthy living conditions because of the insufficient infrastructure. On the other hand, they strongly reflect the ways of living on their inhabitants and space created in these neighborhoods is the result of their particular social dynamics as a process of mutual interaction and negotiation of inhabitants. Nalbantoğlu (1998) defines the space in *gecekondu* as fluid and multifunctional, which is a result of the tactics used by its inhabitants. As a result of urban regeneration projects, great part of these settlements were demolished. The most important actor for these projects was the Housing Development Administration (TOKİ), which was founded in 1984 in order to solve the problem of public housing. But most of the mass housing applications failed to evaluate the social and cultural background of inhabitants. The dwellers were not involved in decision-making processes and were only given a chance to be homeowners within the rules and regulations determined by the state. As a result, in some areas urban transformation has caused the removal, displacement and marginalization of the inhabitants of Istanbul's *gecekondu* settlements. In other areas where the inhabitants could be accommodated near to their previous settlements, the spatial characteristics of new housing options offered to the displaced residents were not suitable for their ways of life (Saglar Onay, Garip, & Belek Fialho Teixeira, 2016). Therefore this rapid shift from self built houses to standard housing units caused significant adaptation problems.

The research project *Re-Coding Homes* aims to create flexible interior design solutions for standard mass housing units and differentiate them according to different user needs. The concept of flexibility is handled in two different scales in the process of interior space design. On the upper scale, the design model creates scenarios for different family structures and changing number of family members. And on the lower scale, it is foreseen that the interiors of housing units can work as a flexible system in itself in order to be used in different times of the day with increasing number of people and guests. This flexibility is maintained through the use of modular interior components that can come together in many different configurations according to changing needs. The modules are all designed to fit in a 3D grid defined within the interior envelopes of housing units.

The Istanbul Maltepe Başibüyük Housing which is chosen for the case study of *Re-coding Homes* can be regarded as one of the notable examples of urban regeneration and slum transformation projects in Turkey. The most important reason for choosing this site was the diversity of users as they were originally coming from different parts of Anatolia. This diversity was considered as an aspect that could feed the design process in creating flexible solutions and increasing the widespread effect of the project.

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