

THE RIGHT TO CHOOSE

DEMOCRATISING OLDER PEOPLE'S HOUSING DESIGN THROUGH MASS CUSTOMISATION

The population is ageing rapidly.

Retirement homes are mostly seen by older people as undesirable, yet few other options are available.

Many feel lonely and are in need of companionship.

Today's older people live longer, healthier, more independent and active lives!

Most older people own housing that needs adaptation.

There is a LOT of under-used housing surface area!

+90% people 65+ inhabit homes owned by themselves or household members

71.800 live in single-family homes, populated by 65+ people only

70.000 65+ people live alone in their household

typical single-family houses - the characteristics

28,6 m² area per person: all generations average

53,7 m² area per person: persons 65+ average

Detached structure, placed mid-plot, 8x8m - 12x12m footprint size

Levels: basement, ground floor, first floor and/or attic, ground floor often elevated

The plot is used for gardening, parking, leisure activities and pets.

We looked at examples of typical single-family houses, chosen from different regions in Slovenia.

RAVNE NA KOROŠKEM, SLOVENSKA BISTRICA, KRANJ - HRASŤJE, ČRNOMELJ

HIŠA RAVNE NA KOROŠKEM, HIŠA HRASŤJE, HIŠA ČRNOMELJ, HIŠA SLOVENSKA BISTRICA

Four selected typical Slovenian single-family house examples, floor plans gathered from owners in the field.



the problem
How can we transform typical single-family houses into co-housing units for older people?

the question
How can we tackle a wide-ranging design problem while taking into account the need for personalisation?

the strategy
Using mass customisation driven by shape grammars inferred on the basis of case study analysis

house Črnomelj, house Slovenska Bistrica, house Ravne na Koroškem, house Kranj

variation 1, variation 2, variation 3

Inferring the grammar - colour-captioned variations derived by the students in the workshop.

mass customisation
Can be used as a tool to help lower building or refurbishment costs using large-scale production methods, while satisfying the unique requirements of each individual household.

shape grammars
An amalgamation of shape rules applied step-by-step to generate a set or a language of designs. They are both descriptive and generative - the rules can generate or compute designs, and the rules themselves act as descriptions of the forms.

the implications
By using shape rules and a sequence of actions, working as an algorithm, shape grammars enable the development of a wide variety of compositional design solutions to a specific architectural situation by responding to different dwelling requirements.

a speculative testing site
To test the feasibility of using this method on existing typical single-family houses to address the problems of Slovenia's old age accommodation, a workshop was conducted in May 2021.



the workshop
The workshop was a study of Slovenian single-family houses and their potential transformations into co-housing units for older people. Four example houses have been chosen. Three scenarios targeting owners of single-family houses and possible constellations of their cohabitation with other people were tested on each house. The workshop produced 12 variations of co-housing units for older people. From this exercise, developed with architecture students, a shape grammar was inferred.

Determining the design rules based on the changes made to the floor plan - an example.

EXISTING FLOOR PLAN - COLOUR CODED, AFTER INTERVENTION - FLOOR PLAN, AFTER INTERVENTION - COLOUR CODED

basement, ground floor, first floor

RULES

- join parts of the hallway
- if garage is appropriate size, keep it
- if ramp is $\leq 10^\circ$ expand it
- if ramp is $\leq 10^\circ$ expand it
- if ramp is $\leq 10^\circ$ expand it
- storage and laundry room have to be separated
- if laundry room is $< 10m^2$ you have to expand it
- laundry rooms have to be connected
- there has to be sauna in the basement, connected to laundry room without corridor
- bathroom and hall next to it have to be at least 2.5m long on one side
- bedroom has to be at least 14m²
- they only need one kitchen
- terrace has to be 2,7m wide
- there has to be second entrance for physically handicapped people available next to the terrace
- they don't need kitchen in the first floor, they need workshop
- there has to be view on room downstairs from workshop and library
- there has to be view on room downstairs from workshop and library

COLOUR CAPTION

- LIBRARY
- BOILER ROOM
- STORAGE
- LIVING R. + DINING R. + KITCHEN
- LIVING ROOM
- KITCHEN
- LIVING ROOM + DINING ROOM
- KITCHEN + DINING ROOM
- DINING ROOM
- BEDROOM
- BATHROOM
- RAMP
- GARAGE
- WORKSHOP
- LAUNDRY
- COMMUNICATIONS
- TOILET
- TERRACE/BALCONY
- SOCIAL ROOM
- SAUNA
- GYM
- OFFICE

The shape grammar is inferred by identifying and defining transformation rules that help generate designs.

