

PAPER

*OLDER PEOPLE, SENIORS, ELDERLY, HOUSING, CO-HOUSING
COMMUNAL LIVING, AGEING IN PLACE,
COMMUNITY BASED AGEING, SHAPE GRAMMAR,
DESIGN LANGUAGE, PARTICIPATION*

DDR STATEMENT

The simplified shape grammar method - defining and expanding on the steps and stages of design development - allows us to explore various spatial options possible within the context of single-family houses. A range of variations helps us observe the potential social relationships that can be formed within, which can immediately be used as a talking point with potential inhabitants. We can use them as a tool to evaluate the architectural compositions and their effect on the relationships between communal and private spaces and speculate on the impact they have on lifestyles. This can also aid communication with potential inhabitants to help determine their wishes and expectations. Does one need a private bathroom, or is sharing one an option? Can the bedroom space be opened up during day to allow for communication during long periods of illness or recovery from injuries? What about the use and management of communal spaces? Spreading out all the options can be helpful for both planners and future inhabitants to help them evaluate their needs and recognize the broadness of the options available, even within the limitations of a typical single-family house. The methodology has been chosen in order to facilitate design development beyond the method of finite case-studies, using a system that can continue to expand upon those cases. Developing transformative shape grammars helps us explore and categorise solutions, adapt the input data and feed it back into the design language, making it more insightful and therefore more useful and applicative with each iteration.

ABSTRACT

Organized old age accommodation in Slovenia is mostly institutional, taking the form of large retirement homes often seen as unattractive due to lack of personalization, crowdedness and a limiting social environment. Older people, mostly homeowners, thus prefer to continue dwelling in large single-family houses even if they have become difficult to maintain with the departure of children and the onset of old age. Loneliness is a prevalent issue and an additional indicator of the need to develop community-based ageing housing alternatives. Nevertheless, single-family houses have the potential to be transformed into small co-housing communities for older people. Despite local specifics, certain typical spatial characteristics of single-family houses can be observed throughout the country. This implies that rather than a limited series of case studies, a system of solutions can be developed and widely applied as a support framework for both planners, potential inhabitants and other stakeholders, using simplified transformative shape grammars.

In the past 150 years, the number of people over the age of 65 in Slovenia has increased from 5 percent to almost one fifth of the population (1, 2, 3). Data implies that the Slovenian population is ageing at an even faster rate than the European average (4). Slovenian organized elderly housing appears mostly in the form of large institutions – retirement homes that house over 200 inhabitants on average (5). This has proven unattractive due to the fact that it uproots people from their local environments and severs their social networks, as well as failing to recognize older people as individuals, rather than mere representatives of a homogenous group. Another issue is the irregular geographic distribution of retirement homes and a lack of available rooms (6). This is why older people mostly choose to continue dwelling in their privately owned apartments and single-family houses even after any potential children have moved away. Research shows that they can frequently struggle due to lack of spatial, functional and technological adaptations and are generally more prone to dwelling in older buildings that often exceed their needs in size. Surveys have also exposed the problem of widespread loneliness that has ties to spatial obstructions older people face in and around their homes (7). Nurturing social networks impacts health by providing feelings of acceptance and a sense of value, whereas social isolation produces a chronic stress response that can speed up ageing. Relationships with neighbors appear to be particularly important for older people in Slovenia, frequently acting as a source of informal caregiving (8). For these reasons, this study focuses on *community based housing for older people* as an alternative to institutional dwelling.

Roughly speaking, non-institutional and community based housing for older people usually appears in literature as *assisted living*, *extra care group housing* and *co-housing* that can be *mono-generational* or *multi-generational* (9, 10, 11, 12). This study focuses in particular on *co-housing communities* – a solution that brings together people who are not bound by familial ties, but are seeking to address their communal housing problem through collaboration. Co-housing combines the autonomy of private dwellings with the advantages of community living (13). It is a non-hierarchical and socially, economically and ecologically sustainable housing form that gives inhabitants sufficient private spaces as well as providing communal areas that promote socializing. The inhabitants participate in co-managing as well as co-designing the space in some cases (14). In this study, *participatory design* is seen as an important concept – just as architects are experts in designing spaces, inhabitants are experts in their own lives. Without collaboration, it is impossible to take into account all of their dwelling needs and desires (15).

At the moment, 90% of older people in Slovenia inhabit privately owned dwellings, the owners being either themselves or other household members. (16). Over 71.800 people live in single-family houses where the only inhabitants are persons over the age of 65, almost 70.000 of Slovenia's older people live alone, making the average per-person surface areas of their dwellings (53,7 m²/person) almost twice the size of those in the general population (28,6 m²/person) (3). This can make maintenance costly and difficult for older people who are especially prone to having lower incomes or are even facing poverty (16, 17). Dwellings can become unsuitable to house older people due to their size, deterioration, general design layout and lack of adaptation. They are also more prone to dwelling in spaces that are poorly furnished and have fewer contemporary infrastructural elements involving plumbing, electronics etc. (3, 16). Taking this information into account, it becomes clear that constructing new, potentially costly purpose-built co-housing is less plausible in our environment, whereas existing typical single-family houses bear potential for redesign and reuse.

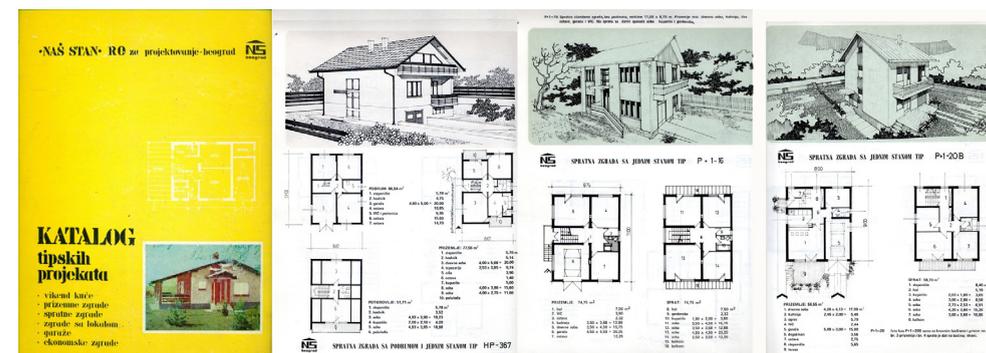


Fig. 1 – A catalogue of 1300 pattern book houses used throughout Yugoslavia

Many older people dwell in single-family houses constructed roughly after WWII. *Pattern-book houses* became popular in this period, being up to 6 times cheaper than having a unique plan drafted by an architect. To narrow our scope, the focus will be on houses constructed in the 1970s – corresponding with the span of projects published in one of the most extensive pattern books in what was at that point Yugoslavia, *Katalog tipskih projekata*, that lists over 1300 projects, as seen in Fig. 1. Homeowners (often self-builders) usually adapted the floor plans according to their own needs and desires, which is why this study refers to them as *typical Slovenian single-family houses* rather than pattern-book houses. They usually take the form of a free-standing building at the center of the plot with a footprint size between 8x8m and 12x12m providing between 120m² and 200m² of habitable surface area. The floor plan usually includes a basement, a ground floor (often somewhat elevated) a first floor and/or attic, topped by a gable roof. The usual plot size is between 400m² in 1000m² and can be used for gardening, parking and keeping pets (18, 19).

METHODOLOGY

The assumption is that favorable, socially catalyzing spatial qualities for designing older people's co-housing communities can be recognized, assessed, evaluated – and used in further planning. Williams (2005) refers to them in her co-housing study as *design for social interaction*: proximity, population density, softening transitions between private and communal spaces, the ratio between private and communal spaces, community size, the quality of communal spaces, positioning of key facilities, activity sites, surveillance opportunities and activity clustering, to name the ones relevant to this case. These factors can be taken into account and further developed to attempt to extract the architectural qualities that can form the basis for new older people co-housing communities, in our case inserted into typical Slovenian single-family houses.

Redesigning single-family houses will be attempted using a simplified version of *transformative shape grammars*. Shape grammars were developed by Stiny and Gips in 1972. It is a systematic design approach that determines the elements of architectural vocabulary, priorities and the rules of syntax, enabling a wide variety of combinations and possible spatial solutions while taking into account the desired limitations and criteria (20). They can be defined as algorithmic systems that are powered by a set of rules that are applied step-by-step to generate designs (21). In this case, the input data will comprise of a) the geometrical properties of typical single-family houses and their

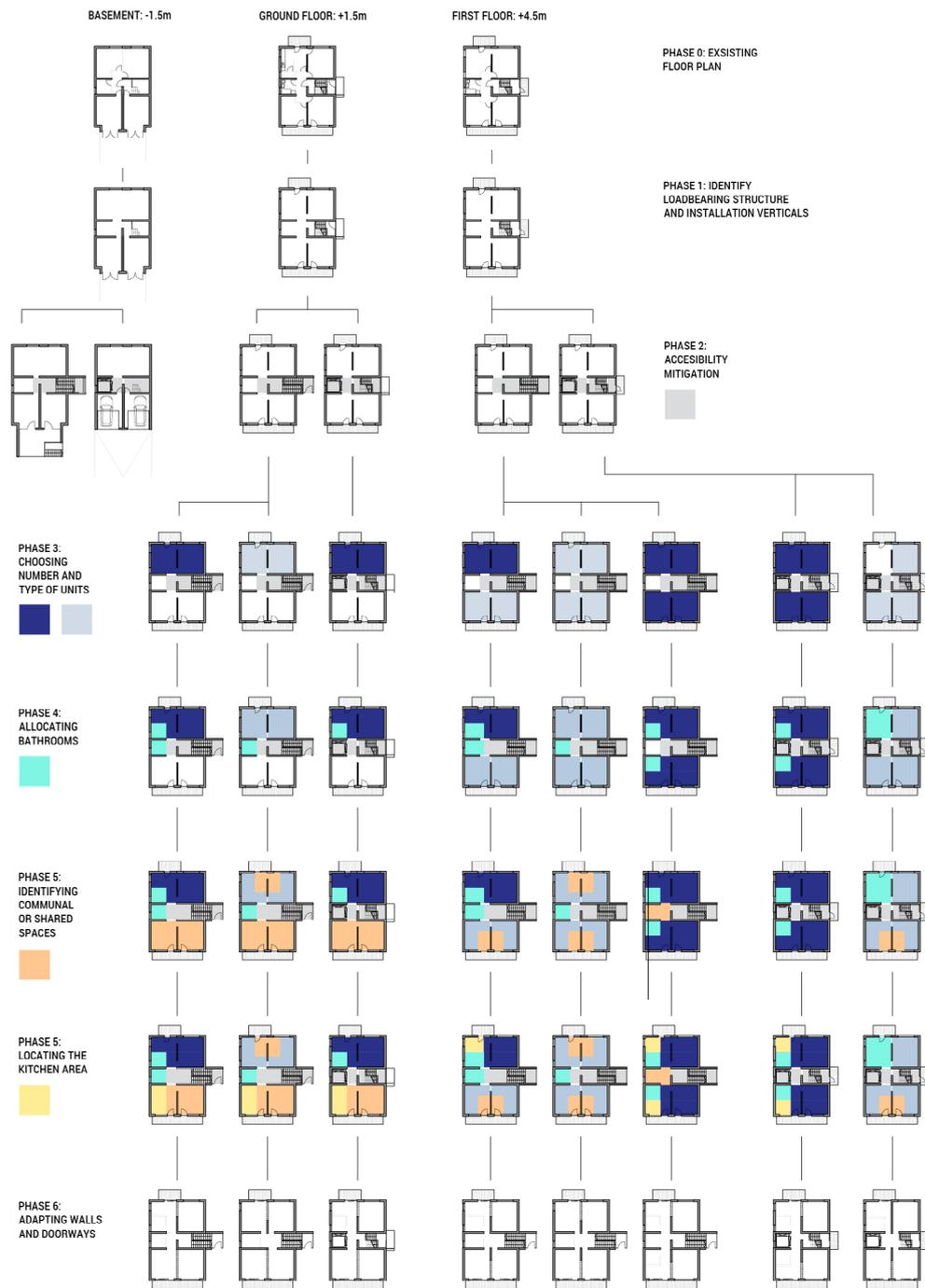


Fig. 2: Example of a simple shape grammar for re-designing the pattern-book house type 2HP-188A into a co-housing unit



Fig. 3. Two possible floor plan outcomes for the pattern-book house type 2HP-188A, generated using the simplified shape grammar

plots, and b) parameters for redesign according to the desired architectural qualities, involving older people as active participants. This generates a variety of solutions forming a new *design language* for the transformation of typical single-family houses into older people co-housing communities can be adapted in accordance with the local cultural and geographic context, spatial legislation and the needs and desires of the users. The example shown in Fig. 2 is a preliminary study of a shape grammar using a pattern-book house and shows a possible set of spatial compositions, two of them developed further in Fig. 3. More similar studies need to be conducted in the future through the gathering and analysis of floor plans throughout the different regions in Slovenia to help further develop the design language. The basic grammar consists of rules to be applied in order to form spatial compositions by defining accessibility criteria, the number, type and self-sufficiency level of private units, shared or private bathrooms that can accommodate for declining mobility, identifying communal or shared spaces and allocating one or more kitchen spaces. The application of each rule produces a variant that gives the spatial solution a unique character. Rules can be expanded and the design language further developed to go beyond compositions and incorporate locating sets of furniture or accessibility aids, for example, making it an expanding system that can grow in complexity.

GOALS, OPORTUNITIES AND CHALLENGES:

The goal of this study is not only to discover an array of key architectural elements that influence the success of co-housing communities, but to organize them into a coherent system that allows for application among a wider community of planners, designers, institutions, investors and also the key users – older people. The intended result is to develop a consistent methodology for addressing the problem of community based housing for older people through the development of a design language for redesigning typical single-family houses. Additionally, a co-housing unit can be aimed at older people exclusively, or it may include other age groups in need of affordable housing, such as young graduates, single mothers, students or migrants. Older people would thus be able to nurture their social networks, receive support, address safety issues and achieve financial sustainability.

At the moment, dwelling opportunities for older people in Slovenia are generally organized on a local level - by municipalities that usually opt for simply building a retirement home, often unaware of other options in the field. The main challenge is informing the legislative bodies on the municipal level of the benefits of older people's co-housing communities, combined with the simultaneous regeneration of neighbourhoods and lowering costs of home care assistance – this way a carer could accommodate multiple older people living in the same building in just one visit. The considerable funds that are usually used to construct a retirement home can be, however, distributed among multiple communal housing projects. With the national legislation expected to boost home care assistance organization in the following years, this is becoming a much more realistic prospect than it was in the previous decades. The main challenge remains in persuasion – municipalities can be reluctant to take on something they deem to be an “experiment”. Dialogue could be achieved through active collaboration of planners with older people societies – over 500 are active in Slovenia at this moment, making them out-number registered municipalities (212) by more than twice. In the future, the hope is to organize pilot projects aided by municipal or national co-financing and in collaboration with older people's societies assisted by architects and other spatial planners. This way, older people could participate in the design process on multiple levels – transforming the organisational framework on a local level, as well as having more control over their personal space rather than relying on the planning of officials. Old people would thus assume more active role and higher levels of autonomy when it comes to co-designing their housing and shaping the way of life they wish to maintain or further develop in their old age.

IMAGES:

Fig. 1: A catalogue of 1300 pattern book houses used throughout Yugoslavia
Source: **Mihailović, Živadin (1979):** Katalog tipskih projekata sa preko 1300 tipova : vikend kuće, prizemne zgrade, spratne zgrade, zgrade sa lokalom, garaže, ekonomske zgrade. Naš stan, Beograd

Fig. 2: Example of a simple shape grammar for re-designing the pattern-book house type 2HP-188A into a co-housing unit. Based on Mihailović (1979), page 682.

Fig. 3: Two possible floor plan outcomes for the pattern-book house type 2HP-188A, generated using the simplified shape grammar. Based on Mihailović (1979), page 682.

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