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FLEXIBLE PLANNING SOLUTIONS AND TRANSFORMATION OF LIVING SPACE.

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Abstract: The article considers the importance of flexibility in the design of living spaces in the context of demographic, social and economic changes. The aim of the study is to identify the main approaches to the formation of adaptable housing units that can respond to the changing needs of families with different compositions, lifestyles and work modes. The methodological basis is the analysis of realized projects in Europe and Asia, as well as a comparative analysis of housing typologies. The article formulates recommendations for the design of transformable residential layouts.

Keywords: flexible layout; adaptive housing; modular architecture; transformable spaces; individualization of housing; sustainable design;Van B; Sharifi-ha House; Flex Block; social adaptation of space.

1. Introduction

In the 21st century, the housing needs of the population are undergoing significant changes. The spread of remote work, the growth of single and small households, and the need to care for elderly family members require more flexible architectural solutions. However, mass construction is still focused on outdated typical layouts. There is a need to develop spatially transformed, adaptable housing that can scale depending on the situation.

2. Materials and methods

The following methods were used for the analysis:

Comparative review of implemented projects in Iran, the Netherlands, and Germany;

study of typological solutions of flexible residential cells (open plan, mobile partitions, "housing-constructor");

assessment of the impact of flexible planning on social and behavioral aspects of users' lives.

The main source of information is publications in scientific journals on architecture and urban planning, project reports, and interviews with architects.

1. Sharifi-ha House (Tehran, Iran). Designed by Alireza Taghaboni (Next Office), the house has

three rotating "boxes" that can rotate 90° and protrude, creating open terraces. This allows you to adapt the space to the season, lighting, and the mood

of the residents.

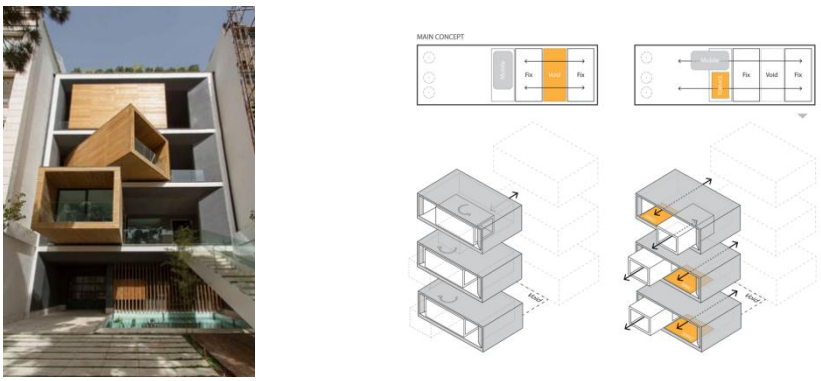
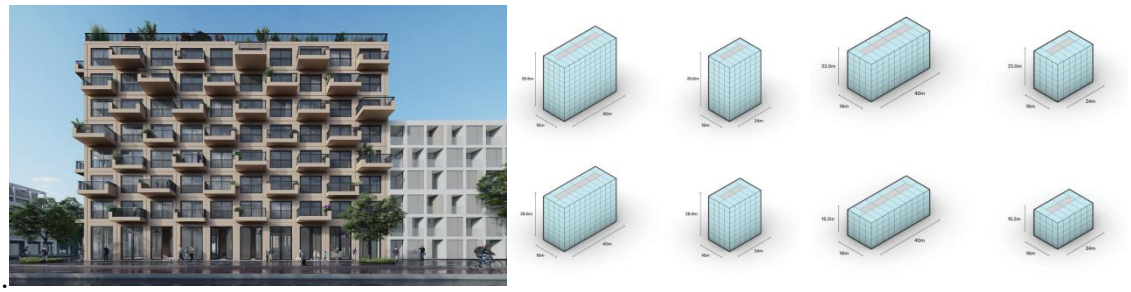


Fig.1. Facade and concept of the Sharifi-ha House [1].

Advantages: high aesthetics, transformation of layout, bright architectural image, focus on local cultural features.

2. Flex Block (Netherlands). This is MVRDV's flexible housing concept in collaboration with Boom - a modular wooden block system that can be easily combined and adapted to various contexts. The project is focused on affordable, sustainable, and diverse housing with the ability to individualize facades, layouts, and include green spaces.

Advantages: rich modularity and variability of design, environmentally friendly materials, aesthetically expressive facade with a variety of forms and textures.



3. Fig.2. Facade and variants of residential buildings adapted to various contexts Flex Block (Netherlands) [2].

4. Van B (Germany). UNStudio and Bauwerk created a new "analog smart" concept of urban life for Van B residences in Munich, Germany. A completely new form of housing redefines the future of urban life, satisfying changing demographics and numerous family constellations. Thanks to the adjustable partitions and the connectable furniture system, the design allows for easy configuration changes. "Quality meters per square meter."[3]

Advantages: high degree of adaptability, the concept of flexibility is implemented through a modular approach, each element can work in different configurations, and the resident can choose an individual plan configuration based on a catalog of nine elements.

Fig.1. Viewframe and transformed interior of the Van B residence (Germany) [3].

Modern housing is increasingly being designed not as a static structure, but as an intellectually adaptable environment capable of reflecting changes in lifestyle, technology, and space perception. This involves not only the technical integration of "smart" systems, but also the reinterpretation of the architectural paradigm itself. As Ben van Berkel, founder of the UNStudio architecture bureau, emphasizes:

"What makes Van B truly special and unique is that it offers a completely new form of "smart" life. This is not reasonable in the usual sense of technical integration; instead, it involves reinterpreting ideas from the digital world to improve the analog, physical spaces in which we live" [3].

This approach actualizes the role of the architect as a mediator between digital transformation and the humanistic essence of the residential environment.

Comparing such projects with the architectural and cultural context of Uzbekistan allows us to determine how visual expressiveness, modularity, and adaptability can enrich the practice of low-rise residential construction while preserving its traditional features.

Including these examples in the research allows us to demonstrate current architectural trends in modular housing, emphasizing the pursuit of balance between aesthetics, functionality, and flexibility in spatial organization.

3. Results

3.1. Typology of Flexible Spaces.

Projects such as "Sharifi-ha House" in Iran, "Flex Block" in the Netherlands, and "Van B" in Germany have demonstrated successful implementation of flexible solutions: mobile walls, multifunctional niches, and two-dimensional spaces with zoning capabilities. These solutions allow residents to independently adapt the space to current needs.

3.2. Social effect.

In families with elderly or disabled people, the flexibility of the interior contributes to a more comfortable and safe life. Young couples can easily convert premises into work areas or children's rooms without major changes.

4. Discussion

Adaptable housing meets the challenges of the times: migration, a changing economy, a new family structure. However, mass construction still retains the inertia of typical layouts, which necessitates the transformation of the regulatory framework. It is necessary to introduce design standards that provide for at least one module in an apartment with the possibility of

transformation. It is also important to provide for technical capabilities for re-planning (distribution of communications, neutral construction, access to light and ventilation).

5. Conclusion

Flexible planning solutions are becoming an integral part of sustainable and human-oriented housing design. Their implementation requires both architectural elaboration and regulatory support. Adaptive housing not only increases comfort but also extends the building's life cycle, making it suitable for different generations and life scenarios.

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