The Peculiarities of Formation of Architecture and Design of the Farmstead in Modern Conditions on the Example of the Western Region of Ukraine

Oksana Diachok\textsuperscript{1}, Oleksandra Kolodrubska\textsuperscript{2}, Svitlana Kysil\textsuperscript{3}, Nina Semyroz\textsuperscript{4}, Mykhaylo Kuziv\textsuperscript{5}

\textsuperscript{1}Lviv Polytechnic National University Institute of Architecture Department of Design and Fundamental Architecture, Lviv, Ukraine
\textsuperscript{2}Lviv National Agrarian University, Department of Design Architectural Environment, Dubliany, Lviv region, Ukraine
\textsuperscript{3}Kyiv National University of Technologies and Design name, Department of the Interior Design and Furniture, Kyiv, Ukraine
\textsuperscript{4}Kyiv National University of Construction and Architecture, Department of Fundamentals of Architecture and Architectural Design, Kyiv, Ukraine
\textsuperscript{5}Volodymyr Hnatiuk Ternopil National Pedagogical University, Department of Fine Arts, Design and Teaching Methods, Ternopil, Ukraine

Ternopil-oks@ukr.net

Abstract. The purpose of the scientific work is to determine the peculiarities of the formation of farmstead architecture and design in modern conditions of formation of united territorial communities on the example of the Western region of Ukraine. To achieve this goal, empirical theoretical methods of research and generalization are used. Rural population surveys, benchmarking, classification and generalizations were used. Studies of the modern farmstead conducted in the villages of the Western region of Ukraine have shown a great variety of farmstead development, which reflects the natural and climatic conditions, peculiarities of the life of the population, folk, religious customs and traditions. The region's peculiar architectural forms of farmstead development are significantly influenced by the location of the territory and the frequent migration of the population abroad. Researchers have shown that residents of farmsteads are changing the way of life, living conditions and activate non-agricultural activities, for which houses and buildings for entrepreneurial and production activity are erected next to a dwelling house. Accordingly, new functional zones are allocated in the structure of the estate: sports, health, technical, sacral, entrepreneurial, production and guest. Based on the labor activity of the inhabitants of rural settlements, the typology of farmsteads was expanded: entrepreneurial, representative and bi-functional types (economic-entrepreneurial, economic-production, production-entrepreneurial and guest subtypes). It is proved that proper organization of the estate development will contribute to creating of comfortable, safe and accessible living space, preservation and multiplication of traditions and regional peculiarities in the formation of the rural environment. The topic of the study remains relevant as changes in spatial planning and integrated territorial development take place in the context of decentralization reform and the formation of united territorial communities. They are to provide the villagers with a modern level of competitive, comfortable, accessible, object-space environment of the new generation, which would meet their needs, opportunities, cultural achievements through the development of new types of farmsteads and residential
homes. In order to implement the new standards, it is necessary to review the existing State Building Standards and bring them into line with EU standards.

1. Introduction
Rural territories occupy a special place in the social and economic life of Ukraine. There are 12 896 505 people living in villages, or 30.59% of the total population of the country (as of 01.01.2019) [9]. The importance of these territories is amplified by their exceptional contribution to the formation of the basics of food security and in the revival of the economic complex of the state, taking into account the lost potential of industrial enterprises of the East of the country in conditions of undeclared war.

Particular attention is paid to rural areas in the context of decentralization reform and the formation of United Territorial Communities (UTCs). The reform began in 2015 and should be completed in the spring of 2020. As of January 10, 2020, the state created 1029 UTCs [11]. Particular attention is paid to the formation of competitive communities.

A sociological survey conducted by the authors in the villages of Ternopil region showed that the majority of the villagers have low income. Few of them are employed in the production sphere and they do not consider living conditions as comfortable. In order to overcome the crisis in rural areas, more attention should be paid to the development of the private sector in agriculture. The spread of different types of entrepreneurial activities of villagers in the structure of the farmstead in the conditions created by the UTC will raise the employment and income, bring the living conditions in the village closer to the urban level, so it is necessary to re-shape the rural environment, while improving the architectural decisions for residence and work.

A draft Concept of State Policy on Achieving the Objective of the Program of Activity “Ukrainians live in comfortable cities and villages” has been developed in Ukraine [10]. Of course, one of the goals of the draft Concept is to create conditions for safe and comfortable life of people and to provide them with accessible living space.

These and other factors make rural development one of the main priorities of public policy aimed at raising the standard of living of the rural population, increasing the efficiency of the agricultural and industrial complex, improving the environment and improving the quality of human capital.

The purpose of the scientific work is to determine the peculiarities of the formation of rural farmstead architecture and design in modern conditions of formation of united territorial communities on the example of the Western region of Ukraine. To achieve this goal, empirical theoretical methods of research and generalization are used. The rural population surveys, benchmarking, classification and generalizations have been used.

2. Main material presentation
A farmstead is a housing and economic complex that combines the functions of life, rest and activities of its inhabitants [1, 3, 6].

Studies of the modern farmstead conducted in the villages of the Western region of Ukraine (Chernivtsi, Ternopil, Ivano-Frankivsk, Lviv, Trans Carpathian and Volyn regions) have shown the variety of colors of the farmstead, reflecting the natural and climatic conditions, peculiarities of life of the population, folk and religious customs and traditions of the region.

The territory of the study is quite difficult, taking into account the historical conditions in the region:
• a large ethnographic heritage (Podolyns, Bukovyns, Hutsuls, Boykys, Lemkos, Poleshuks and others);
• diversity of religions (Christians (Orthodox, Greek-Catholic, Catholic), Jews, Muslims, and a variety of religious sects);
• borderline location of the territory (frequent migration of the population to the EU, Asia, America and Australia creates the prerequisites for the appearance of architectural forms of estate development that are not peculiar to the region (Figure 1)).

![Figure 1. Modern farmstead: 1. Ternopil region, 2. Trans Carpathian region (photos from O. Kolodrubska’s archive).](image)

All this, of course, has left a mark on the development of rural areas, has manifested itself in the architecture and design of the farmstead and residential development, has determined the current state of rural settlements and requires a comprehensive study in connection with the need to solve new problems of comfortable living in the conditions of creating a UTC.

Studies show that the structure of farmsteads has not intensified agricultural activity. Many residents of farmsteads, along with a dwelling house, erect houses and structures for entrepreneurial and production activity (shops, food establishments, pharmacies, private doctors' offices, family kindergartens, workshops, provide hospitality services, etc.) (Figure 2, 3).

The Christian religion is part of the cultural heritage, an integral part of the lifestyle and plays a special spiritual function in many territories, in particular in the Western region of Ukraine. Belief in God was and remains the unwavering foundation of the moral and ethical foundations of the rural
population. Shared religious beliefs play an important role in bringing together and organizing the rhythm of life of the village community and are also reflected in the life of villagers [2].

According to the research, many residents of farmsteads want to show "the presence of God", not only in their souls, but also in their lives. To do this, they surround their homes and farmsteads with elements of religious symbolism – memorial signs, religious charms (crosses, sculptures (figures), icons, chapels, etc.) (Figure 4, 5).

Figure 2. Establishments of entrepreneurial activity in the structure of the farmstead:
1, 2. Ternopil region, 3, 4. Chernivtsi region 5. Ivano-Frankivsk region, 6. Lviv region (photos from O. Kolodrubska’s archive)
As we can see, there are various functional processes on the infield: physiological, reproduction, labor, recreational and cultural and leisure, cult, economic, household, technical, production, business and hospitality [2, 7]. These activities require the appropriate zoning of the plot, the presence or absence of certain premises, buildings or territories in the structure of the farmstead [1, 5, 8, 9].

Figure 3. Establishments of entrepreneurial activity in the structure of the farmstead: 1, 2. Ivano-Frankivsk region, 2. Lviv region, 3. Volyn region, (photos from O. Kolodrubska’s archive)

Figure 4. Sacral elements in the structure of the farmstead: 1,2,3. Ivano-Frankivsk region, 4,5. Ternopil region (photos from O. Kolodrubska’s archive)
Studies show that in modern conditions the number of functional zones in the structure of the farmstead has increased significantly. In addition to the traditional – residential, entrance, household, family (leisure and playroom), garden and fruit trees area, there is a need to allocate new areas, namely:

- technical (provides a place where waste should be stored and processed, energy supply systems, autonomous engineering support (well, water storage, boiler room, heating, transformer substation, solar panels, wind generator, garbage can, composting pit etc.));
- fitness and health (provides a place for the placement of sports and health grounds);
- sacral (provides a place for the placement of memorials, religious charms (crosses, sculptures (figures), chapels, etc.), an area which, due to religious orientation, the traditions of the region's population has been revived and will continue to develop;
- entrepreneurial (provides premises with servicing, educational, commercial or other functions for the main activity, premises for visitors, office, storage, utility rooms (according to technological requirements for a specific type of activity));
- production (provides industrial buildings and premises for the main activity (occupation of folk crafts, production, processing and sale of agricultural products), office, warehouse, utility rooms, premises for commercial production of livestock, vegetable, fruit and berry or other products (according to the technological requirements for a particular type of production));
- guest (provides a house or part of a guest house (tourists, employees) with bedrooms, bathrooms, living room, kitchen), aimed at developing tourist attractions and finding the uniqueness of the territory [2].

Due to the different features of life, social stratification of the population and types of their labor activity (single farm, farming, entrepreneurial and industrial activity), there is a need to develop new standards for the construction of the farmstead, expanding its typology there can be distinguished:

- economic type – for the villagers (single villagers) who live the usual rural way of life (grow vegetables and raise livestock and poultry for their own needs, need farm buildings for keeping livestock and poultry and storage facilities for vegetables, supplies);
- representative type – for villagers who live an urban lifestyle and do not require outbuildings, except for erecting a garage and sauna;
- bi-functional (multifunctional) type – for the villagers who, besides the usual farm, are also engaged in business or production activities.

The bi-functional type includes several subtypes:

Figure 5. Sacral elements in the structure of the farmstead:
1,2. Lviv region, 3,4. Chernivtsi region
(photos from O. Kolodrub's archive)
• economic-entrepreneurial subtype – for the villagers who, besides the usual farming, are also engaged in entrepreneurial activity,
• economic-production subtype – for residents of the village (villagers-producers) who, besides the usual economy, are engaged in the production and processing of agricultural products, folk crafts,
• production and entrepreneurial subtype – for the inhabitants of the village, who, in addition to the usual farming, are engaged in the production, processing and sale of agricultural products, products of folk crafts, etc.,
• guest subtype – for the villagers who, in addition to the usual farm, provide hospitality services.

In the conditions of formation of UTC, a considerable part of functions of population service could be assumed by the villagers and conduct private individual labor and entrepreneurial activity. This requires a whole new approach to the decision of a rural dwelling house and a farmstead. Some of the activities can be organized in premises that are integrated only in a dwelling house, some can be attached to them, and some of them require the removal of some functions from the volume of a dwelling house for a farmstead. It is allowed to place objects of the social sphere in dwelling houses on the land plots, with obligatory observance of state construction, sanitary, fire-fighting rules and rules and availability of free territory to ensure the size of land plots under the objects in accordance with the requirements. Work space for individual work may be located on the red line of the building.

In most rural settlements of the Western region of Ukraine, it is advisable to reconstruct the existing farmsteads, which should be reflected in changes to the planning of the land plot, dwelling house, premises for work, farm buildings and landscaping. The development of a typology of farmsteads, in turn, contributes to an effective mechanism for planning rural areas. Land plots, premises for business and industrial activity need to be provided with accessibility facilities for people with disabilities and low mobile population groups. Accordingly, the requirements for the layout of the plot, the design of buildings and their energy efficiency, must meet European standards, which will lead to the revision and amendment of the State Building Rules.

3. Results and discussions
1. The article analyzes the activities that take place in farmsteads, gives examples of farmsteads and their structural elements, identifies their characteristic features in the conditions of creation of united territorial communities and decentralization.
2. New functional zones in the structure of the farmstead have been allocated, namely: fitness, health, technical, sacral, business, industrial and guest.
3. The typology of farmsteads based on the labor activity of the inhabitants of rural settlements has been expanded: economic, representative and bi-functional types (economic-entrepreneurial, economic-production, production-entrepreneurial and guest subtypes).
4. It is proved that the proper organization of the farmstead development will help to create a comfortable, safe and accessible living space and preserve and multiply traditions and regional peculiarities in the formation of the rural environment.
5. It is necessary to bring State building standards to European standards.

4. Conclusions
The topic of the study remains relevant as changes in the area of spatial planning and integrated territorial development change as united territorial communities develop and it will provide the villagers with a modern level of competitive, comfortable, accessible, object-space environment of the new generation, which would meet their needs, opportunities, cultural achievements through the development of new types of estates and residential homes. To implement the new standards, it is necessary to revise the existing State Building Standards and bring them into line with European standards.
Union standards, especially those relating to comfort and safety in the living environment for people with disabilities and low mobility.

References

[1] A. Kalinichenko, H. Shapovalov, M. Babiy, Farmstead building, Kyiv. 263 pp., 1993

[2] O. Kolodrub ska, Principles of formation of architectural and planning decisions of farmstead in the West Podillya, Abstract of the dissertation … Cand. arch.: 18.00.02, Kyiv. p.20, 2007

[3] Yu. A. Kosenko, V.I. Romanchuk, I.D. Shulchin, V.A. Bugayev, Farmstead: A guide to the tuner, Kyiv. 352 p. 1985.

[4] V.A. Nikolaenko, Typological and Methodological Problems of Forming Individual Low-rise Residential Buildings in Ukraine: Abstract of the dissertation. … Dr. Arch.: 18.00.01, Kharkiv, 35 p. 1999.

[5] Z.A. Petrova, I.I. Slivka, Rural dwelling house in the Carpathians: A guide to the tuner, Uzhhorod, 159 p. 1987.

[6] S.B. Fomonov, Second dwelling of the townspeople, or House in the nature. Urban-ecological aspects of urban housing evolution, Scientific Monograph, Novosibirsk. 472 p. 2004.

[7] V.P. Samoilovich, People's Architectural Creativity, Kyiv. 232 p., 1977.

[8] Yu.V. Samoilovich, Architecture of a farmstead in the Western region of the USSR, abstract of diss. … Cand. arch.: 18.00.02, Kyiv. 1987.

[9] Population of Ukraine as of January 1, 2019, Available at: http://database.ukrcensus.gov.ua/PXWEB2007/eng/publ_new1/2019/zb_chnn2019.pdf

[10] The Ministry of Regional Development held a public discussion of the draft Concept of the state policy on achieving the goal "Ukrainians live in comfortable cities and villages", Available at: http://www.minregion.gov.ua/press/news/minregion-proviv-publichne-gromadske-obgovorennya-proektu-kontseptsiyi-derzhavnoyi-politiki-po-dosyagnennyu-tsili-ukrayintsizhivut-u-komfortnh-mistah-ta-selah/

[11] What happened in Community development in 2019, the decentralization monitoring data. Available at: http://www.minregion.gov.ua/press/news/shho-u-rozvitku-gromad-i-territoriyvidbulosya-za-2019-rik-dani-monitoringu-detsentralizatsiyi/