The influence of traditional architecture on the design of social housing by masters of modernism

I Kudryashova, A Martynenko, O Remizova
Department of Architecture Fundamentals, Kharkiv National University of Civil Engineering and Architecture, 61002, Ukraine

kudryashovaiv21@gmail.com

Abstract. The work is devoted to the study of the influence of folk architecture on the professional practice of housing design by modern architects. The study focuses on the use of traditional heritage techniques in the design of social housing in modernism in the period 1910-1970. The procedure of reproducing the experience of traditional (vernacular) architecture is described as a process of translation, which involves the decoding of folk heritage by professional architects in order to identify the characteristics and techniques relevant to the "modern movement". The task of designing housing for the working class is observed throughout the period of modernism in various regional areas, from European countries and America to Egypt, Algeria and India. Historical analysis of the architecture of modernism helped to identify such valuable for its representatives’ qualities and properties of traditional architecture as: functionality, utilitarianism and archetypal. It has been proven that modernists were inspired by the architecture of traditional Mediterranean cities. It is shown that in the period of modernism, along with engineering innovations, architects introduced traditional design systems, materials, technologies and rethought their compositional potential, which significantly diversified the morphology of social construction and enriched its symbolic language. Thanks to the borrowing of traditional features, modern architecture has become clear to the consumer, and such morphological elements as a flat roof, white walls, simple rectangular columns and so on have become a new and quite understandable language of modern architecture.

Relevance of research. From the beginning of their work, the architects of the modern era declared a break with the academic culture of the past and refusal to rethink the historical heritage. Denying the decorative approach of eclecticism and secession, a new generation of architects fought for the assertion of a new aesthetic in architecture. They were interested in the process of mastering new building materials, structural systems, construction technologies, which appeared due to colossal technological and industrial progress, updating outdated notions about form and tectonics in architecture. Modernists used a rational approach in design and construction, highly elevated the ethical function of art. Among the ethical principles of modernism should be noted the idea of social housing, the impact of architecture on human health in particular and society in general [1; 2]. All this has to be reflected in the new avant-garde style or architectural language and its symbolism.

The state of the issue. Rethinking the legacy of modernist architecture, modern scholars find evidence that it is more closely linked to traditional architecture than previously thought. The relationship between the professional architecture of modernism and non-professional folk architecture is evidenced by the research of a number of scholars. Among them: Emma Dummett [3], Francesco Passanti [4], Sigfried Giedion [5], Sheila Crane [6], Jean-Francois Lejeune [7; 8], Francis E. Lyn [9], Tom Avermaete [10],
Gio Ponti [11]. But the question of the influence of traditional architecture on the formation of methods of housing design was almost not raised by representatives of modernism.

Therefore, the aim of our article is to study the influence of folk architecture on the professional practice of designing social housing by modernist architects in the period 1910-1970.

**From a methodological point of view**, the procedure of reproducing the experience of traditional (vernacular) architecture should be described as a process of translation that involves decoding folk heritage by professional architects through identifying symbolic and morphological features and syntactic techniques relevant to the construction of “modern movement” language.

**Results of the research.** At the beginning of the XX century architects first faced design tasks for the working class. Architects faced the difficult task of typifying and standardizing social housing to reduce its cost and mass construction. Hermann Muthesius noted that the appeal of architects to tradition served as a catalyst for design during this period. The object of interest and study was primarily the spatial and functional organization of buildings of folk architecture, which served as a model of rationality and efficiency in construction. Traditional architecture has also been used as a starting point in the central concept of housing standardization [12]. For example, Le Corbusier first characterized "folk art" as a norm, a measure, the standard of which - man [13]. Le Corbusier's work for many years was accompanied by the idea of finding a system of proportionality in architecture. The result of his developments was the measuring system Modulor, in which a person with a raised hand determines the height of living spaces 2.10-2.20 m, adopted "... in all harmonious works, both folk architects and professional architects" [14]. Modular measuring system is laid down in the original design of the cottage, called "Barn Le Corbusier" ("Cabanon Le Corbusier") built in 1952. The building, like a hut, has modest dimensions (in terms of 3.66 m by 3.66 m, height 2.26 m) and is equipped with everything you need (bed, closet, desk, sink, toilet) (Figure 1), which is very similar to the traditional hut of different European countries.

![Figure 1](image)

In the early twentieth century in many European countries, solving the problem of mass housing for industrial workers became a state task. The implementation of social housing construction programs included the development of building statutes and sanitary norms. Historian Carlos Sambricio noted that the search for a model of a typical budget building was to bring the standard of public housing, solving
problems of building a reasonable price and its hygiene [16]. The architecture of housing construction in the north-western countries of Europe (England, Denmark, Finland, Sweden, etc.) acquired a special character.

English architects of the beginning of the century continued to consistently develop the typology of the cottage. The basis for the development of social housing was a traditional village house - cottage - a building on two or three floors with a separate entrance from the street and a small garden. In the period between the First and Second World Wars, an individual or paired cottage became widespread. In the postwar period, the cottage replaced the more economical terraces - block houses on two or three floors (they were built by English architects Richard Shephard, Hugh Wilson, J. Lewis Womersley, Sir Frederick Ernest Gibberd), which were widely used in the XVII - XIX centuries in urban development (Figure 2, 3). The typology of the terrace house had an impact on housing construction in Belgium, the Netherlands, and Germany. Until the middle of the XX century. England remained mostly two-story. It is important to emphasize that the multi-storey gallery-type building housed the basic residential unit of an English country house - the apartments are located on the traditional two levels (Philip Powell, Hidalgo Moya, Jean Conder) [17]. In 1905 the German architect Hermann Mutezius (1861-1927) published a three-volume book called The English House (Das Haus Englische). In this book he described the arrangement of a traditional English house, its functional structure and encouraged fellow architects to follow the example of the British, who in the development of mass housing willingly relied on the traditions of their ancestors [18].

Figure 2. Block house "terrace house", consisting of a number of apartments of the traditional type, which retain a separate entrance from the street, UK. Source: [17 p 127]

Figure 3. Terraces building in London, UK. Source: [17 p 129]
In Germany in the 1930s and 1940s, residential architecture for the poor and middle classes was conservative, even when attempts were made to apply new constructive methods. For example, in the half-timbered houses of the architect P. Schmitthenner elements of factory production were sometimes used. But the layout, interior design and exterior of the buildings reproduced the features of a traditional German burgher house. The houses built by the Atelier Breuhaus architects (house in Dortmund), Hans Gerson and Oskar Gerson (Nordquist house in Great Flottbek, Hamburg), Thiloo Schoder (Wilhelm Ernst Meyer House – single-family house in Gera), Martin Elsaesser (Heinrich Landfried house in Heidelberg) and others also had a traditional look.

The use of the traditions of folk architecture in Sweden in the 1930's and 1940's was conditioned by the search for national identity and was called the "new empiricism". This direction arose at the junction of the spread of "international style" and the wave of national romanticism of the early twentieth century, and was implemented in mass housing construction [19]. The features of Swedish national architecture are most noticeable in low-rise construction. Architects turned to tradition to search the most appropriate architectural solutions in cold climates, methods of interaction between the building and the landscape, ways to use local materials (especially wood). Architects Gunnar Asplund, Sven Markelius, Ralph Erskine, Sven Backström, Leif Reinius and others took an active part in this direction.

For example, in his own wooden house in Kevinge (1945), S. Markelius used the following spatial planning features of a traditional Swedish house: L-shaped composition of the volume of a one-story building, gabled roof. Also, the architect, according to tradition, organically inscribed the house in the landscape. S. Markelius placed the building as close as possible to the street and facing north, thus giving the lion's share of the site to a large garden, which opened to the rays of the southern sun (figure 4, 5).

![Figure 4. S. Markelius. Villa Markelius in Kevinge, a suburb of Stockholm, Sweden, 1945. Source: [20 p 17]](image.png)
The famous Finnish modernist architect Alvar Aalto (1898-1976) executed several projects of typical residential buildings using the traditions of building a Finnish house. Among them: wooden standard housing in Varkaus (1937), in Tampere (1940-1941), VOK Standard Houses, A. Ahlstrom Company, Pihlava, Pori (1946) (Figure 6), Enso-Gutzeit Company, Summa, Hamina (1958–1964).

The need to build new housing in Europe increased again after the First World War, which had severe consequences for the population. Interestingly, in the south-western countries of Europe in housing construction it is important to note the tendencies to turn to the typology of the traditional Mediterranean house. In Greece active construction work was carried out to restore 400,000 houses lost during the war. There was an increase in the number of economical multi-storey buildings, a characteristic feature of which was the presence of roof terraces and loggias-balconies. This feature is reflected in the flat roofs of modern buildings and in the five principles of Le Corbusier. The national features of the Greek house were used mainly in the construction of single-family country houses for the wealthy. Among them is the house of the architect Patroklos Karantinos, built for the artist Spyros Vassiliou in Athens (1958);
houses in the park areas of Athens Demetrios Pikionis, many country villas. A feature of traditional Greek housing, which belongs to the Mediterranean type, is the multilevel location of the house on a steep slope with the use of courtyards and terraces, asymmetry of spatial planning solutions, conciseness of forms, use as flat roofs - terraces (on the islands of Skyros, Andros, Mykonos), and vaults or domes (on the island of Thira). During the reconstruction of the village on the island of Santorini (Thira), destroyed during the 1956 earthquake, architects P. Vasiliadis, A. Spanos and others applied the motives of folk architecture.

In the second half of XX century in Spain, in order to attract farmers to develop infertile lands, new settlements were built. In 1961, at the VI Biennale of Arts in Sao Paulo, Jose Luis Fernandez del Amo received a gold medal in the nomination "Urban Cluster Planning" for projects in the cities of San Isidro de Albatera (1953), Villalba de Calatrava (1955), Vegaviana (1956), El Realegto (1957). In the architecture of these cities the architect combined the ideas of modern movement with the techniques of the Spanish traditional house. The architect used ceramic tiles, natural stones bleached with lime, which preserves the texture of the stone. This technique can be traced in the bare concrete surface of modernist buildings and in brutalism. Based on the prototype of the geometry of the Spanish folk dwelling, he designed a number of typical houses, compositionally close to a traditional home. Later in an article Jose Luis Fernandez del Amo wrote that while traveling to different parts of Spain, he learned a lot from anonymous architecture. Looking at the apartments, built on the basis of local traditions, the architect noticed the life wisdom of architects in understanding human needs. Del Amo also discovered the hidden techniques of spontaneous organization of villages and small towns, built without the participation of professional architects, which he repeatedly used in his practice [22]. The Spanish architect Alejandro de la Sota (1913-1996), like his compatriot Jose Luis Fernandez del Amo, took part in the state program of rural development. Between 1952 and 1963 he designed and built the city of Esquivel, located in the municipality of Alcalá del Río near Seville. The city was based on vernacular and Mediterranean architecture combined with the modern discourse of Modernism. The ideas of modernism manifested themselves in the strict geometry of the master plan, which was organized according to the radial-circular grid of streets. There is a traditional central city square and two public institutions (church and administrative center) are made by the architect outside the city. The settlement of Esquivel is designed for 161 families and consists of six types of houses. Each dwelling has traditional elements of Andalusian village buildings: the patio of a Spanish country house, high lime-whitewashed walls along the perimeter of the plot, small window openings, a roof with a small slope covered with tiles (Figure 7-9).

Figure 7. Alejandro de la Sota, Jose Luis Fernandez del Amo, master plan of Esquivel, Spain, 1954.
Jose Luis Cert in 1949 in the village for workers in Chimbote (South America) used the Moorish-Spanish patio, which provided residents with isolated private living space [5, p. 16-17]. In Portugal after the overthrow of the dictatorship of Antonio Salazar and Marcel Caetano in 1975 the construction of social housing was organized under the state construction program SAAL (Serviço Ambulatório de Apoio Local). According to the program, late modernist architect Alvaro Siza designed three projects: neighbourhood of Bouca and neighbourhood of St. Victor in the city of Porto; suburban area of rural type Malageira (1977) near the city of Evora. Quinta da Malagueira, which consists of 1,200 one- or two-story buildings, was built over a period of 20 years on an area of 27 hectares. According to the project, the architect provided a courtyard in each apartment. Critics have drawn a strong parallel between Alvar Siza's social housing projects and the Dutch and German settlement projects (siedlungen) of the 1920s, as well as some of Adolf Loos's work. The use of flat roofs, white plaster on the exterior walls, a minimum of windows and doors, the lack of decor - these are the main common features.
Egyptian architect Hassan Fathy (1900-1989) and Indian Balkrishna Doshi (b. 1927), who received a European education, developed an innovative approach to building social housing in their homeland. It is important to note the interaction of a rational European approach with the Arab mentality of the East. Subsequently, this approach became widespread in social architecture. The design conditions for these architects were the lack of specialized professional builders, the shortage of building materials. For these reasons the architects used local materials and labor resources, used some elements of the building traditions of the region, which significantly reduced the construction budget and create comfortable living conditions in hot climates. Hassan Fathy applied these principles in the project of building the village of New Gourna (1945-1948) (Figure 10), Balkrishna Doshi in ATIRA & PRL houses (1957), Neighborhood in Indore (1983). The composition of the buildings of these complexes indicates the affinity with the traditional architecture of their countries.

Figure 10. Hassan Fathy, New Gourna Village, Egypt (1945-1948). Source: [25]

The famous project of the Peyrissac residence with agricultural territory in Cherchell, Algeria (1942), executed by Le Corbusier, in which the architect demonstrated sensitivity to the cultural and natural context. Le Corbusier turned to local folk architecture, as he mentioned in his book Oeuvre Complète (1945). The architect wrote that he designed the villa in such a way that a resident of Algeria could build a building of local stone by building familiar elements: columns, walls, vaults. Le Corbusier created a building from the basic forms of a Mediterranean house, which interpreted the ancient building tradition [1]. In this way, Le Corbusier translated the principle of working with historical non-professional prototypes into modern architecture.

The Indian architect Balkrishna Doshi (b. 1927), who worked closely with Le Corbusier and L. Kahn, used the experience of traditional architecture in the municipal housing complex in Aranya near Indore (1989), in particular, the features of Indian village planning, climatic techniques, adaptations of traditional buildings and cheap materials. This example demonstrates not only the development of traditional methods of housing construction in modern design, but also the close connection between Western and Eastern design methods in the twentieth century.

In conclusion, we note that the main prototype in the development of the principles of typification and standardization of social housing for modernist architects was traditional architecture. Modernist architects used in their decisions the spatial and functional organization of public housing, trying to combine the ideas of modern movement with traditional models and standards of the living environment. The use of traditional local materials and labour resources not only significantly saved the construction budget, but also prompted the decision of climatic adaptation of buildings.
The experience of folk architecture was broadcast through object-morphological and contextual channels of translation. The objects of translation in this case were spatial planning solutions and methods of adaptation to climatic and social conditions, borrowed from traditional architecture.

For architects of modernism the reproduction of the experience of traditional architecture has become a very spontaneous process of translating cultural skills into modern design. But this process has not been reflected in modern science.

It is also important to emphasize that thanks to the borrowing of traditional features, modern architecture became understandable to the consumer, and such morphological elements as a flat roof, white walls, simple rectangular columns and so on became a new and quite clear lexical code of modern architecture. If at first they were perceived as refined elegant and very exotic signs of new architecture, then later, as a result of repeated repetition of these forms, they became signs of architecture "modern movement" and created a widespread modern architectural language.

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