Architectural organization of landscaping and landscape design of residential and public buildings

Bahram Kidirbaev

Karakalpak State University named after Berdakh, 742000 Republic of Karakalpakstan, Uzbekistan

Abstract. The article discusses the features of the architectural organization of landscaping and landscape design of residential and public buildings, as the urgency of the problem of designing and constructing buildings with the use of means to improve the environment due to the deterioration of the ecological environment in large cities is currently increasing.

1 Introduction

The world civilisation in its modern development creates scientific, technical, and economic conditions for new forms of human community having global character. Scientific and technological progress and socioeconomic development of society constantly set new tasks for architecture and construction, determine new opportunities and requirements for the formation of design of public and residential buildings.

The basis of modern design solutions of public and residential buildings should be based on scientifically substantiated methods of building formation, progressive functional-planning, architectural-spatial, constructive and technical methods, techniques and means of forming comfortable conditions of human life in cities and buildings.

Today, the urgency of the problem of building design and construction with the use of means of improving the living environment is increasing due to the deterioration of the ecological environment in large cities. This problem is especially important in the sphere of multi-storey housing construction, characterized by the appearance of new technologies and building materials, as well as mass construction of high density. In co-modern residential high-rise buildings, a person feels especially acute detachment from nature, therefore the arrangement of recreational spaces with elements of landscaping should be considered as compensatory measures to improve the ecological background in buildings [2].

Greened recreational space (GRS) is a multifunctional architectural space, which forms an additional zone of recreation on balconies, loggias and roofs, in flats in the form of winter gardens, orangeries, etc.

At the same time, the architectural, ecological and aesthetic structure of the building is improved through various methods of landscaping with decorative plants and the use of small architectural forms [1].

*Corresponding author: arzigull@gmail.com
By improving the air, creating an individual microclimate, expanding the possibilities of psychological and emotional rehabilitation of a person increases the comfort of the flat with additional recreational space. Recreational green space is considered as a complex ecosystem for maintaining comfortable living conditions for a person, and can also be an accent of the architectural composition of the flat and the building as a whole [1].

Landscape design differs from landscape design and is an area of landscape architecture, oriented to a smaller space. Landscape organisation, landscaping and gardening of residential complexes, is aimed at creating favourable and comfortable conditions for the life of the population.

The urban planning stage of the residential complex layout project solves the functional planning organisation depending on the specifics and nature of residential development, the system of squares, streets, highways, public and commercial centre. At this stage, as an object of landscape architecture, the principal placement of open spaces is determined [5], a general solution for nature protection, preservation of relief, existing plantings and water bodies is developed. This approach is developed with a thorough study of the natural conditions of the area and with the direct participation of specialists - architects, landscape architects and engineers [5].

Landscape architecture is the architecture of open spaces, natural elements and elements of external landscaping plays a leading role in its organisation. Relief, greenery, flowers, water, small architectural forms is a specific material of landscape architecture.

Landscape architecture has become a consistent development of garden and park art and includes its artistic design and landscape design. Note that landscape design and landscape architecture are closely connected with the solution of environmental, social, urban planning problems.

2 Materials and methods

With the help of modern methods of landscape architecture systematic analysis of existing conflict situations and forms of their manifestation in the urban landscape is carried out. In order to positively change the qualities of urban spaces it is necessary to comprehensively study the international practice in the field of purposeful transformation [7] of the landscape, to model the methods of reconstruction of the territory, to describe and systematise the methods of using the means of landscape design [4,7].

In recent decades, architects all over the world realise the importance of their role in protecting the environment, they increasingly use elements of the natural environment in landscape architecture.

Nowadays green architecture, restoring the natural environment in urban planning makes a certain contribution to the creation of comfort of designed buildings.

Arthur Quarmby, Obi Baumen, Peter Wetschem, as great architects and designers of the world, made great successful decisions in the creation of green architecture, created certain architectural complexes with green gardens and parterres, where the lines and shapes of designed buildings with natural environment harmonically merged with the geographical relief [3,8,13-20].

Currently, landscaping of cities in the Republic of Karakalpakstan has become an urgent problem. The use of topiary art form in the design of open landscape urban environment, co-creation of green parterres was one of the main moments in landscape architecture of Karakalpakstan. Topiary art includes geometric or fantasy forms created by cutting trees and shrubs. Green plants adapted to certain specific territories are the main element of topiary art [8].

In topiary art a special place is occupied by green plantings, which fulfil the following functions:
3 Results and discussion

Taking into account the experts' opinions, for selection of plant species it is necessary to choose plants that meet the following characteristics: slow growth, ability to form replacement shoots throughout their life and shade tolerance. The Republic of Karakalpakstan has a rich assortment of green plants. When designing topiaries, it is possible to use widespread species such as cotoneaster, Berberis, Thuja, weeping forms of willow (Salix integra, etc.) and others. To create beautiful topiaries on the basis of a ready-made form does not require sculptural skill. It is possible to shape a bush or a tree into the shape of animal figures or national ornaments. When making topiary with artificial turf, quality imported lawn with great durability is used, the look of which is very natural. Metal parts of the construction, which are used in the manufacture of light figures, are treated with a special anti-corrosion coating. Topiary frames can be equipped with an automatic watering system (Fig. 2).

Fig. 1. Landscaping of the boulevard in front of residential and public buildings

Fig. 2. Topiary frames equipped with an automatic watering system

Varieties of topiary art include hedges, green sculptures, Japanese style garden bonsai cuttings, Art Nouveau green columns and spirals, avant-garde style cubes, spheres, pyramids, bast trees, arches and arbours made of trees (Fig. 3).
The use of modular gardens in urban planning is one of the most actively developing trends in modern architecture, as well as one of the elements of decorative arts in architecture. Modular gardens fulfil the task of thermal insulation and aesthetic functions and are designed for multi-storey buildings.

In the design of modular gardens of multi-storey buildings each floor has not only an economical form and efficient layout, but also the quality of space, physical and psychological comfort, light, air and view of the city. Considering the plants used in modular gardens as more than just decoration, which is an integral element of landscape architecture.
The best way to decorate squares in front of architectural buildings is to plant green plants, including natural lawns with uniform green grass. But it is not always possible to grow it, which is due to unsuitable soil, shady location or rapid trampling of a certain area. Nowadays artificial lawns can be used instead of natural lawns:
- if the soil is not suitable for growing live grass;
- if the grass area is quickly trampled;
- if the grass does not grow due to a lack of sunlight.

Artificial lawns are most suitable for sports and children's playgrounds, areas near swimming pools and fountains, artificial reservoirs, recreation areas in front of architectural buildings. Decorative artificial grass is selected to match the colour and density of the natural vegetation of the area, so that the difference is imperceptible.

Artificial lawns are divided into:
- unfilled - decorative lawns are laid lightly with the grass stalks during installation;
- backfilled - in this type of laying the cloth is laid on a special substrate and covered with quartz sand or rubber crumbs. Backfilling gives the possibility to vary the height of the stems, and the substrate makes the covering elastic;
- semi-backfill - only the top is filled in, the filler material depends on the lawn's functionality.

Due to the drying up of the Aral Sea and the environmental situation in the Republic of Karakalpakstan there is a widespread salinisation of soils. Therefore, of great importance are the creation of artificial lawns in urban areas in the modern landscape architecture of the republic [11]. At present in the republic the work on registration of artificial lawns in front of new buildings, economically important objects, parks, squares and squares is established [11].

The analysis shows that in order to apply landscape architecture in urban planning, it is necessary to decorate the surface of artificial lawns with elements of folk applied art. At present, artificial lawns have been decorated in front of the Savitsky Museum, the Savitsky Restaurant, the Savitsky Museum of Art and the Savitsky Museum of Art. Savitsky, Kyryk-Kyz Restaurant, the coast of the "Doslyk" canal, the Amir Temur Park of Culture and Recreation, and others.

By the end of the 20th century, "ART landscapes" stood out as a special group, sharply differing from the traditional trend. "ART landscapes" is a laboratory where new ideas are born, creative thoughts demonstrating the prospects for further development of landscape architecture [3,10,11].

ART landscapes include the following:
- associative links between monumental sculpture, architecture and landscape design;
- the national character of shaping gardens with elements of folk applied art. Modern gardens in the ART-landscape are designed with the use of national culture and traditions;
ART landscapes are a visual illustration of the connection between art and innovative technical achievements in science and practice. "ART landscapes" are a vivid indicator of the penetration of innovations of art and science traditionally conservative fields of art as landscape architecture.

The main goal of ART landscapes is the creation of "formal gardens" as some architects call "modern gardens", "gardens of new technologies", as well as "radical landscapes".

In modern times it is considered more acceptable to use the term "ART landscapes". Modern formation of "ART landscapes" is influenced by traditional landscape techniques, such as planting and caring for plants, decorating them in the form of compositions, sculpture, etc. The term "ART landscapes" is also used in the form of "garden of new technologies", as well as "radical landscapes".

According to Zabelina (2005) in the group of "ART landscapes", there are style directions, for example, as - artifact gardens, kinetic gardens and garden game, gardens with artificial elements, as well as gardens - installations.

In Art landscapes a special place is occupied by the principle of combination of artificial and natural, technology and nature, past and present, kinetic gardens. At the end of XX century kinetic gardens began to be applied in landscape architecture. "ART landscapes" of kinetic direction can be seen in kinetic compositions of famous masters such as Christian Megert, Jean Tengli, Walter Leblanc, Paul Talman (Zabelina, 2005).

The principle of the kinetic garden is based on the use of column fountains made of multicoloured plastic bottles turned upside down with the bottom cut off, and the necks strung on a long steel pipe hidden in the structure. The fountains are surrounded by flowers and plants. The plastic columns are numerous and decorative, which completely dominate the space.

Modification of creation of ART landscapes in urban environment is decoration with elements of folk applied art, modern phytoplastic and art-technical elements.

It should be noted that the use of phytoplastics and interesting forms of cachepots for vertical and am-pel gardening can give uniqueness to the spaces where they are placed. Phytoplastics is a fashionable method of arrangement of garden elements. For the realization of phytoplastics it is necessary to use very reliable and stable plants, which allow to give the garden a unique look and special charm.

**Fig. 5. Phytoplasty**

Phytoplasty is the creation of visual relief by combining plants with different leaf heights and colours, as well as shaping haircuts. Sometimes topiary forms are also used in phytoplastics.

4 Conclusion
Kazakhstan. The “Giant ring” and “Sculpture of rings” on the water-green boulevard, the famous Aldar Kose with a dombra, and Khoja Nasreddin on the Alley of fairy tales in Astana were built in the city. Thus, in the architectural organisation of planting and landscape design of residential and public buildings in the Republic of Karakalpakstan, landscape architecture plays an important role, which includes artistic design and landscape design of garden and park art. Landscape design and landscape architecture are closely related to the solution of environmental, social, and urban planning problems [11].

References

1. A.A. Voronin, Principles of formation of green spaces in residential multi-storey buildings (Moscow, 2013)
3. E.V. Zabelina, Search for new forms in landscape architecture (Moscow, Arkhitektura, 2005)
4. V.V. Kurbatov, Soviet architecture (Moscow, Prosveshchenie, 1988)
5. L. Landscape organisation of territories of limited use, Residential complexes. General regulations - Landscape Architecture with the Basics of Design
6. O. A. Shvidkovsky, Harmony of interaction (Moscow, Stroyizdat, 1983)
8. N. Sh. Rametov, Forum of Young Scientists 7(47), 228–231 (2020)
9. R. R. Safin, E. A. Belyakova, I. A. Valeev, Garden and park art: textbook (Kazan, Kazan Research Technological University (KNITU), 2009)
12. J. O. Simonds, Barry W. Starke. Landscape architecture – A manual of Environmental Planning and Design (USA, 2013)
17. L. L. Patett, Architettura del Peclecttismo (Milano, A.D.A. EDITA, 1988)