

который играет значительную научно-учебную и природоохранную роль. Проанализирована динамика численности таксономического состава насаждений и выявлена тенденция к его уменьшению в течение развития. Проведен анализ систематической, биоморфной, возрастной и географической структуры насаждений. Выявлено, что большинство древесных растений является интродуцентами (90%), среди которых незначительная часть занесена в Красную книгу Украины.

**Дендрологический парк Березновского лесного колледжа, интродукция, видовой состав, таксон, структура насаждений.**

*It was shown the results of the inventory of woody plants collections of the dendrological park of Bereznovsky Forest College which plays a significant scientific and educational and ecological role. The dynamic of the taxonomic composition of plantations was analyzed and the tendency of reduce it during development was showed. The analysis of biomorphological, age and geographic structure of plantations has been fulfilled. It was revealed that the vast majority of woody plants are introduced species (90%), of which a small proportion are listed in the Red Book of Ukraine.*

**Dendrological park of Bereznovsky Forest College, introduction, species composition, taxon, the structure plantations.**

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## **PRINCIPLES OF THE UNIVERSITY ACADEMIC BUILDING COURTYARD SPACE ORGANIZATION**

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*The three-dimensional features of the national universities buildings areas and courtyards are described. The main optimization improvement principles are analyzed. Some new approaches to the universities areas decoration that involve distinctive features using (thematic, symbolic, commemorative, etc.) are proposed.*

***Urban environment, higher educational establishment, reconstruction, landscaping, courtyard, three-dimensional composition.***

The reconstruction of higher educational establishment areas is becoming increasingly important due to the urban environment transformation

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caused by the society fast development. The urban development system of Kyiv is characterized by the rapid construction densification process, which results in green areas decreasing and landscaping deterioration that has significantly changed the urban landscape and caused to disharmony. Therefore, there is a necessity for the urban environment reorganization, also for searching of optimal solutions of rational using the landscaping and complete life providing [5]. This situation leads to the necessity of reconstruction of existing territories of general and special using. It should be mentioned that special areas using have a lack of territorial resources for the future areas development. In this context, it is necessary to pay attention to the higher educational establishments territories, that take a special place in the urban planning system [1].

As campus territories require large land areas (10–50 hectares and more) [11], their full functioning areas should consist of the following: educational-training, production, scientific-research, sports, recreational and residential zones [3]. Unfortunately, the realization of new campus projects within big cities territories were not conducted in recent years [6]. Taking into consideration the fact that there are over 800 higher education establishments in Ukraine now, 200 of them are Universities [12]. The question of the new Universities territories development expediency is rather actual. Besides, the problem of intellectual, moral and physical development of young person is rather actual during the years of University studying. So, a special urgency gets further movement towards the Kyiv higher educational establishments existing areas improvement.

It is necessary to mention the fact that 7 of the 18 universities that are the subject of our study is among the top 20 ranking of 200 best universities in Ukraine [9]. And, according to Quacquarelli Symonds company version of the world best higher education institutions rating, Taras Shevchenko National University and National Technical University “Kyiv Polytechnic Institute” take 421–430th and 551–600th places respectively [13]. Undoubtly, National Universities of Kyiv are places where highly intellectual educated people work and study for the prosperity and better future of Ukraine. However, the higher educational institutions territories shouldn't be like “virtual” research centers. In our opinion these areas should fully correspond the best world Universities level and make pleasant impression on the visitor.

**The goal of the research** – to develop the multifunctional space organization principles for multipurpose comfortable time spending of students and staff within the courtyard of the University territory.

To achieve this goal, we have formulated the following *tasks*:

- to analyze the architectural-planning and gardening peculiarities on the territories of National Universities in Kyiv;
- to develop the courtyard higher educational institutions organization principles.

**The object of the research** – the territories of the National Universities of Kyiv.

**Research methods.** The University territories inspection consisted of

field research and the analysis of obtained data. During the territories research the trees inventory in accordance with “The inventory instruction of the plantations in the localities of Ukraine” [4] and photofixation were performed. For the retrospective analysis of the Kyiv Universities territories planning and the changes that occurred in the development process archival materials (iconographic and cartographic), literature and Internet sources were investigated.

The University courtyard territories organization principles were developed on the experience basis of the landscape design receptions using, urban landscape modern trends transforming and research results of the Kyiv National Universities territories present day status.

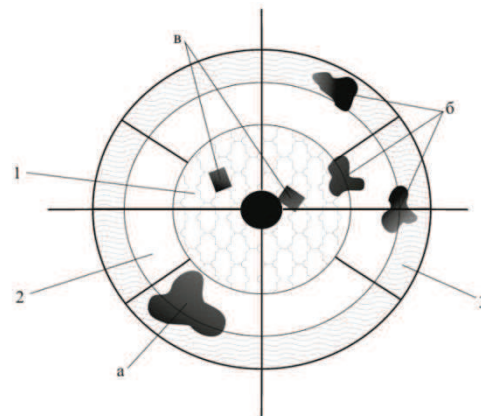
**The research results.** According to the information from the Ministry of Education and Science of Ukraine, there are 49 higher educational institutions of state property of III–IV accreditation level in Kyiv, 18 of them are National Universities. During 2012–2014 the modern state comprehensive analysis of this educational institutions territories was conducted, a major aspect of which was an evaluation of their architectural and landscaping organization. According to the result, National Universities of Kyiv are located in its central, aroundcentral residential and peripheral areas, that provides different territorial conditions of academic buildings location. Therefore, we have identified three main types of the Kyiv National Universities academic buildings placement:

– local – all academic buildings are concentrated within the campus (National University of Life and Environmental Sciences of Ukraine, Kyiv National University of Trade and Economics, National Aviation University etc.) (fig. 1);

– locally-ramified – academic buildings placed by groups in different parts of the city, at the same time they have their own surrounding area with distinct borders and zoning (Taras Shevchenko National University of Kyiv, National Economic University named after Vadym Hetman etc.) (fig. 1);

– ramified – academic buildings solitary placed in many parts of the city, at the same time they may not have their own surrounding territory for greening. In some cases, universities are located in premises with shops and catering facilities (National Pedagogical Dragomanov University, National University of theatre, cinema and television of Karpenko-Kary etc.) (fig. 1).

On the territories of some universities with local placement are created



**Figure 1. Placement scheme of the Kyiv National Universities academic buildings:** 1 – central part of the city; 2 – aroundcentral residential part of the city; 3 – peripheral part of the city; a – local placement; б – locally-ramified placement; в – ramified placement

university squares, devoted to certain theme. For example, on the National Technical University of Ukraine “Kyiv Polytechnic Institute” territory there is a square with monuments to famous scientists and students of the University – E. Paton, O. Mikulin, S. Korolev and others.

An identical planning is noticed on the Universities territories with locally-ramified placement of the academic buildings, nevertheless the total areas of them are in several times less than on the territories with local placement.

The ramified type of placement is characterized by the academic buildings single placement in different parts of the city and bounded around surrounding territories. Thus, academic building territory of National University of theatre, cinema and television of Karpenko-Kary (Khreschatyk Street, 52), occupies a small area near the main entrance, which is a piece of asphalt pavement, while nearby surrounding areas serve as the parking area for visitors of other buildings (fig. 2).

The common characteristic of the National Universities academic buildings territories is that in most cases the main entrance to the building is fixed by an axial composition of the parade area. These areas have regular planning, which includes a network of rectangular paths, regular geometric shapes of flowerbeds, a lot of molded hedgerows and trees with pyramidal, columnar and ovoid shapes crown, that gives a parade view to territories (fig. 3). Besides, there are no any thematical decorative elements. As a rule, the inscriptions or emblems of higher educational establishments at the central campus buildings have the role of identifiers.



**Figure 2. The entrance of the National University of theatre, cinema and television of Karpenko-Kary academic building on Khreschatyk Street, 52**



a)



b)

**Figure 3. Territories around the main entrance of the academic buildings of: a) National Aviation University; b) National University of Defense of Ukraine named after Ivan Chernyakhovsky**

In contrast to the academic buildings parade zones, the vast majority of the Kyiv National Universities territories recreation areas do not fully perform its function as a result of several factors. The analysis has shown the following shortcomings: insufficient number of landscape equipment of general use (benches, urns and lighting appliaces), no decorative structures, gardening has a random character (trees and bushes grow randomly without taking into account principles of plants selection).

Another common feature of National Universities recreation areas is the fact that in most cases they are located in courtyards ranging from 300 m<sup>2</sup> to 0,7 hectares, for example the academic buildings territories of the National University of Life and Environmental Sciences of Ukraine (building number № 1 (General Rodimtsev Street, 19)) (fig. 4) and building № 6, (Vasylkivska Street, 17), Kyiv National University of Construction and Architecture (Povitroflotsky Avenue, 31), National Economic University named after Vadym Hetman (buildings № 5 and 6 in Melnikova Street, 81), National University of Physical Education and Sport of Ukraine (Fizkultury Street, 1), Kyiv National Linguistic University (Velyka Vasylkivska Street, 73), National University of Food Technologies (Volodymyrska Street, 68) (fig. 5), Kyiv National University of Technologies and Design (Nemirovich-Danchenko Street, 2), National Pedagogical Dragomanov University (Institute of Sociology, Psychology and Management building, Sarativska Street, 20), Taras Shevchenko National University of Kyiv (Institutes of Journalism and International Relations building, Melnikova Street, 36/1) and National University of “Kyiv-Mohyla Academy” (buildings № 4, 4<sup>a</sup>, 5, 6 i 7, Voloska Street, 10).



**Figure 4. The National University of Life and Environmental Sciences of Ukraine courtyard**



**Figure 5. The National University of Food Technologies courtyard**

In the context of assessing the courtyards territories modern conditions, it is necessary to pay attention for examples of their rational use. So, Taras Shevchenko National University of Kyiv Red academic building (Volodymyrska Street, 60) is a historical building, built in 1837–1843, has a clear system of major and minor buildings axes, that form a parade courtyard [2]. All University events are traditionally held here [8]. In addition, it serves as a recreation area (fig. 6).



a)



b)

**Figure 6. Taras Shevchenko National University of Kyiv Red academic building courtyard: a) the dedication in freshmen (September 1999); b) a modern state (photo 2014)**

According to the research, there are no multifunctional places on the Kyiv National Universities territories, where students life after the educational process could be concentrated. Therefore, the University courtyard may be a closed space not only for some celebrations, but should provide a comfortable timespending for the staff and students during the whole year and also emphasize the scientific and educational significance of the educational establishment. To ensure the specified conditions it is proposed to combine administrative, scientific, memorial and recreational zones in a single space, with the ability to transformation of one into another (under conditions of small yard square). The reconstruction courtyards conception is based on a maximum space optimization, which provides functional possibilities expansion, thematic decoration and greening improving.

The first courtyard territory organization principle is the administrative and scientific zones formation, which envisages an open space area creating. Within its boundaries is possible to conduct lessons (lectures, seminars, conferences etc.), meetings and University celebrations (dedication to students or diplomas awarding). At the same time conditions that allow to isolate the event visitors from other distractions should be provided. The examples of such open lessons organization can be found in history: since the days of ancient Greece, around the educational institutions were public gardens, where philosophers communicated with students [7].

Such places are traditional on the territories of many modern Universities of the world [6]. The area of such territory should occupy 1/3 of the total area. The main components of the composition are furniture for the events participants, that may be located on the trampling resistant lawn, and modular flowerbeds. The flowerbeds should diversify the overall composition by their forms and may be filled with inert materials. Their important peculiarity is that ornaments may vary according to certain event. Other elements may be present under sufficient space condition. For example, in order to make a more close space and visual zone border creating, it is expedient to form green walls with trees and shrubs on the areas perimeter. Besides, for diversifying the overall composition it is rational contrast landscape-regular

groups creating.

The environment transformation is also associated with space sacralization, which is the second principle. In our opinion, this is a very important component of any environment, because it influences the personality formation. Therefore, it is supposed an area organization, which may represent a sacral elements complex and its greening. Sacral elements may be represented by a chapel or monumental architectural constructions – sculptures, obelisks, monuments, that are devoted to outstanding scientists and important events in the country history. It is possible to mix these elements, but it depends on the local opportunities and the opinion of the administration and students. Indeed, at the Kyiv National Universities territories the chapel constructions are not widespread today.

The research shows, that the chapeles are located on the three Kiev National University territories only. However, archival materials show, that on the territory of the Red academic building of Kiev Emperor University of St. Volodymyr (now – Taras Shevchenko National University of Kyiv) were located the Orthodox University Volodymyr Church and Catholic University Church up to the 1920ths. As the Red academic building is the national symbol of fundamental university education it shows the foundation of the religious traditions within students in past centuries.

The greening of such area should be filled with symbols and philosophical content. It is recommended to create a small garden by the Kyivan Rus ancient monastery gardens type. Their compositional basis were paradise trees – *Malus domestica* Borkh., complemented by fruit trees and bushes variety [10]. So this planting area should perform two functions: decorative and utilitarian, which is a very important thing for Ukrainian nation. Besides, the creation of terraces around the Church is actual.

In gardening of the monumental architectural constructions, dedicated to the momentous events in Ukraine, the created composition should correspond the subject, without contradiction to the overall composition. An important element is the flower decoration composition, which focuses visitors' attention by its color accents and awakes certain associations. So, we offer to create flowerbeds with the patterns, that represent the Ukrainian themed ornaments image in national colors (blue, yellow etc.). This may help to emphasize the main idea of three-dimensional composition and awake patriotic feelings.

In the case of monument installation, dedicated to prominent scientists it is expedient to form plantings, that carry information about the origin and activity of the scientist. It is proposed to plant trees – symbols of the scientist's hometown. The flowerbeds patterns may represent native country national motives. Moreover, skeletons for climbing plants or topiary forms installed on the flowerbeds, may have a look of the basic elements of scientific industry. As a result, due to planting decoration of the monument should be possible to get more information about life of the famous scientist.

The third formative principle of the courtyard territory organization is recreation zone, that should become one of the students' favorite timespending place. The main direction of its three-dimensional structure

formation is an open and closed spaces combination and creating the centers of individual and group recreation around them. Important elements of these spaces are trees, with thick crowns for shade. Therefore, it is important to preserve existing trees in the territory organization process, complemented with beautiful flowerbeds. Equipped with a high level insolation the creation of areas with ordinary garden-park or Moorish lawn is recommended.



**Figure 7. “Free street library”**

The installing of benches and small tables for reading, preparing lessons, playing boardgames and communicating during the lunchtime is also possible here.

Besides, so-called “free street libraries” are proposed to be placed on this area. Examples of such “libraries” have been already existing in Kyiv – on the Taras Shevchenko park territory (fig. 7). This is an installation of small boxes of various forms made from metal and acrylic (as this materials are long-lived and almost mechanically not damaged) with books inside them. Such “libraries” work on two principles: you can freely take any book and return it after reading or it is possible to bring any other book for exchange. In our opinion the “street libraries” not only help students in

studying, but also encourage them to get acquainted with books on various topics.

Recreation zone can be filled with other elements that may be related with different scientific areas. For example, various sculptures placed on the architectural higher education establishments territories are appropriate; the decorative groups of trees and shrubs of different species are actual on the territories of the university buildings belonging to the landscape profile as they perform aesthetic and cognitive functions; a medicinal plants can be symbolic elements on the pharmaceutical University academic buildings courtyard territory, etc.

So, it is worth mentioning that the universality is the main principle for greening and landscaping of Universities courtyards.

### **Conclusions**

Nowadays, functional zones of Kyiv National Universities academic buildings territories require a new concept in terms of compositional elements. Analyzing the recreation areas landscaping we have identified, that they are characterized by an insufficient number of landscape equipment for general use, there is a lack of decorative purposes constructions, plantations have a random character. So, we propose three basic landscaping principles of academic building courtyard greening and landscaping, the main of which is to create a multifunctional space for students and university staff.



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*Проаналізовано об'ємно-просторові особливості територій навчальних корпусів університетів та розроблено принципи оптимізації благоустрою їхніх внутрішніх дворів. Запропоновано нові підходи до декоративного оформлення територій національних університетів, які передбачають використання відмітних ознак (тематичних, символічних, пам'ятних та ін.) для ідентифікації та індивідуалізації вищого навчального закладу.*

***Міське середовище, вищий навчальний заклад, реконструкція, благоустрій, внутрішній двір, об'ємно-просторова композиція.***

*Проанализированы объемно-пространственные особенности территорий учебных корпусов университетов и разработаны принципы оптимизации благоустройства их внутренних дворов. Предложены новые подходы к декоративному оформлению территорий национальных университетов, предусматривающих использование отличительных признаков (тематических, символических, памятных и др.) для идентификации и индивидуализации высшего учебного заведения.*

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УДК 712.4:582.675.1

## **ОЦІНКА ДЕКОРАТИВНОСТІ ТА ПЕРСПЕКТИВНОСТІ ДРІБНОКВІТКОВИХ ЛОМИНОСІВ В ОЗЕЛЕНЕННІ МІСТ**

***І. Б. Ковалишин, аспірантка\****

*Здійснено оцінку декоративності дрібноквіткових ломиносів відповідно до модифікованої автором методики. Охарактеризовано декоративні ознаки та властивості досліджуваних рослин порівняно з дерев'янистими ліанами, що належать до інших родин.*

***Дрібноквіткові ломиноси, декоративність, цвітіння, плодоношення, вериткальне озеленення.***

Питання розширення асортименту рослин, що використовується в системі зелених насаджень населених пунктів України та Києва зокрема, потребує постійного аналізу декоративності та перспективності інтродукованих і нових культиварів, придатних для вирощування в конкретних ґрунтово-кліматичних умовах. Попередньо проведені дослідження асортименту декоративних витких рослин у насадженнях

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