Architectural peculiarities of the formation and development of the garden at the Rodionov Institute of Noble Maidens in Kazan

Marat Fazleev  
and Alfiya Minibaeva

Kazan State University of Architecture and Engineering, 420043 Kazan, Russia
E-mail: minibaeva-alfiya@mail.ru

Abstract. The article is devoted to the issue of protection and development of historical gardens in Russian educational institutions, since their current state is on the path to degradation. Most of the gardens in educational institutions lost their original appearance, garden fixtures and small architectural forms were lost and therefore there is an urgent need to preserve them.

The main results of the research consist in examining the historical aspects of Russian and foreign experience of designing and development of gardens within educational institutions and the possibility of applying this experience at present. Also, the results of the research consist in comparing and analyzing archival, iconographic and bibliographic materials after using the example of the garden at the Rodionov Institute of Noble Maidens in Kazan to identify the peculiarities of the planning structure, used location of buildings and architectural composition.

The significance of the obtained results consists in revealing the architectural and planning features of gardens at educational institutions, reviewing the list of buildings and structures located in these territories.

Key words: university garden, buildings and structures in the garden, botanical garden, historical garden, landscape architecture, city garden.

1 Introduction

Building gardens within educational institutions is a whole page in the history of landscape architecture [1]. The first gardens associated with learning appeared in ancient civilization which is confirmed by engravings of ancient Egypt and Near East Asia (IV century BC) [2] where gardens were described as a place for thinking and scientific conversation.

First gardens, which were directly associated with educational institutions, appeared in Greece (III century BC) and then spread to other civilizations of the Ancient World [3].

Literary sources widely describe the gardens of the Ancient Greece "gymnasium" which were built for educational needs, i.e. for physical exercises and philosophical conversations. Later, "philosophical" gardens appeared in Greece where classes on scientific disciplines were held.

The most widespread gardens were built in European educational institutions during the Age of the Enlightenment, as a result of formation of a new way of life and developing of exact sciences and biological sciences. During that period many ornamental and fruit plants were imported to Europe to be popularized as medicine that led to botanical science development [4, 5]. The appearance of newly formed scientific societies in academies working in this direction was a kind of response to the general request at the end of the XVII century. With the development of diplomatic and trade relations with European countries, gardens of that type began to gain popularity in Russia. Thus a huge number of
botanical and pharmacy gardens were built within educational institutions that would play an integral role in the future.

Later, in the XVIII century, with the development of landscape gardening art the educational institutions' gardens acquire a new function - recreational and were used as a resting place for students after the school day. Many university gardens of that period have survived nowadays.

Historical gardens at educational institutions represent a monument of human culture, including their buildings and small architectural forms of various eras, park ensemble and a typical layout for a certain time.

Nowadays, gardens within oldest European [6-8] universities are actively developing and, in addition to scientific tasks, solve other social issues such as: communicative [9], environmental [10-13], educational [14-16], recreational and etc. [17-20].

In Russia, the current state of historical gardens at universities is at the state of degradation. Most of the territories lost their original appearance, buildings and small architectural forms were lost and therefore there is an urgent need to preserve gardens of this type.

2 Materials and methods
Research methods are based on the principle of scientific historicism. The subject of the study is considered in specific historical and territorial conditions. The study used the following methods: comparative, system-scientific, chronological and analytical.

3 Results
We used the materials from the National Archive of the Republic of Tatarstan of the XIX and XX centuries and modern cadastral maps. Based on these data was carried out the scientific analysis.

4 Discussions

4.1 Experience in the formation and development of gardens within European educational institutions
The appearance of the first gardens at educational institutions dates back to the late Middle Ages which is associated with the opening of the first universities in Oxford, Paris and other European cities.

In the XV-XVI centuries the gardens at the educational institutions were not large and had a regular scheme. The plant composition was not diverse as well the aesthetic role was absent [21]. For a long time, such a planning solution of park compositions of gardens at educational institutions were the same.

It should be noted that among the educational institutions of that time, academies and universities stood out. A significant difference between academy and university was that in the first case, training was carried out in one narrow direction, and in the second, it was possible to study in a wide range of different programs that were not interconnected. The difference between the views of academic and university' scientists reflected in the functional composition and planning solutions for gardens.

University gardens appeared to be used as scientific laboratories due to the size of the territory, the number and purpose of courtyard buildings, the diversity of small architectural forms and etc. Academic gardens resembled the magnificent gardens and parks of villas of that time since originally the gardens of the villas focused on academic knowledge. This article will examine university gardens.

In the Age of Enlightenment, the biology was enriched with new information about the world of plants after great geographical discoveries and the development of trade relations in agriculture. Thus, university gardens were expanding, since the development of botany and gardening as scientific disciplines stimulates the growth of botanical parks at universities [22].

Large universities began to introduce new faculties of botany which strengthened existing small gardens into botanical ones. Universities gardens began to function as experimental open-air laboratories for scientists to work.

The gardening architecture were regular based on a system of circles and squares dividing the territory into a certain number of parts. Each part was planted with a certain type of plant. The range
of plants mainly consisted of medicinal species. Plantings were gathered into rather large botanical
groups which made it easier for students to identify plants.

Such a solution of the landscape gardening was convenient not only for growing plants, but also
was a reflection of the ideas for ideal proportions used by architects of that time.

The development of trade routes has influenced all life spheres of European population, including
landscape gardening art.

The culture of East Asia at the beginning of the 18th century had a huge impact on university
gardens. The "Gardens of Scientists" in China and the gardens of Buddhist monks and pilgrims in
Japan that were created for intellectual work and reflection stroke the imagination of European
travelers. Focusing on these principles of the gardening architecture the European universities gardens
began to conduct classes there and use them as a resting place for students after the school day.

In the XIX century public gardens were actively developing, scientists and gardeners of university
gardens began to analyze the artistic features and dendrological properties of various plant species,
how to use design methods and techniques as well as some options for combinatory plantings in parks
and other important conditions to create a garden landscape.

4.2 Creating and development of gardens within Russian educational institutions

It is recognized that pharmacy gardens which began to appear in Russian park-building in XVI-XVII
centuries were the first prelude to creating and development of gardens within Russian educational
institutions. Many gardens of that type were developed by European gardeners reflecting the
architecture and planting of European gardens within educational institutions. They had a regular
layout and a clear segregation of plants by type.

It is also thought that gardens at educational institutions were under the influence of monastery
gardens. They had a regular planning structure turning into a landscape style. In the monastery
gardens, medicinal and fruit plants were grown.

The first educational institutions’ gardens appeared in Moscow and St. Petersburg in the XVIII
century. Many of these gardens have retained their historical layout to this day. Their structure was
represented by a regular layout, turning into a free landscape style.

The gardens of educational institutions of that time could be divided into botanical and
recreational. The functional features of the gardens determined the species composition of plants and
the planning structure. Botanical gardens were the most important part of those educational institutions
as they contributed to the development of botany, which was in demand within many social fields.

Since many educational organizations had insular nature, university gardens became the only
possible places for pupils and teachers to walk outdoors. Depending on whether the park was built
specifically for the educational institution or it was inherited from the previous owners, the size of the
territory and its planting composition could differ significantly.

In the XIX century a lot of changes took place in the world that affected the field of gardening in
general. Thus, public city gardens for recreational activities appeared as well many gardens within
educational institutions and hospitals became publicly available [23].

Many exhibitions and various entertainment events began to be held in the gardens of educational
institutions. For example, in the garden of the Medical and Surgical Academy in Moscow were held
public lectures and exhibitions. This practice had a positive impact on scientific activity in connection
with attracting new people to the development of science. A characteristic feature of the universities
gardens at that time was an attempt to reproduce the landscape of different countries, giving visitors
the opportunity to study different places of the planet. Many university gardens turned into expositions
for vegetation of the Earth, the history and evolution of plants, the relationship between plants and
humans. Museum activities focused on the general public were carried out on the territories of
research institutes, academies, and etc.

Botanical gardens at universities held the role of secondary tutorials by holding exhibitions for
scientists and students. In such gardens there were numerous training and experimental sites. Access to
their territory by the general public was limited.
Planning principles of gardens in the XIX century remain steady, they were also based on a regular landscape solution of park areas.

4.3 Formation and development of the garden at the Rodionov Institute of Noble Maidens in Kazan during XIX-mid XX centuries

The garden of the Rodionov Institute of Noble Maidens was located on the northern outskirts of Kazan near the Arskoye Field (Bolshaya Krasnaya / Tolstoy St.) and was a part of the architectural complex of the Rodionov Institute of Noble Maidens which was built in 1842 by the funds of the landowner A.N. Rodionovova upon the project of architects F.I. Petondi and A.I. Pesque.

The garden was built after construction and starting of the Institute of Noble Maidens as its aesthetic improvement works.

During its opening in 1842 the garden had a two-part structure (the characteristic of the architect Petondi’s creativity is most clearly traced in this planning solution, where the compositional solution of the building’s geometry is harmoniously linked with the environment)[24].

The planning structure of the place is typical for Russian educational institutions' gardens of the XIX century. It should be noted that, despite the fact that this educational institution was intended for females, it harmoniously fitted into this planning structure.

The first part of the garden which was adjacent to the buildings of the institute had a regular layout. Included such buildings and structures as: cold wooden services, outbuildings, laundries, workshops and wells. Also in this part there were greenhouses and vegetable gardens.

The second part of the garden was an extension of the first but with expanding landscape design towards the Kazanka River to the relic wood with numerous picturesque hills and ravines which were existed at that time (figure 1).

![Figure 1](source: National Archives of the Republic of Tatarstan).
The institute’s garden combined areas of natural forest vegetation and man-made plantings in the form of shrub plantings along alleys and flower beds. The site features in the first part was flat, in the second was ravine-hilly. Linden and birch trees prevailed among the others (figure 2).

![Plan of the Rodionov Institute of Noble Maidens of Kazan mid-XX century](source: National Archives of the Republic of Tatarstan).

**Figure 2.** The plan of the Rodionov Institute of Noble Maidens of Kazan mid-XX century (source: National Archives of the Republic of Tatarstan).

Literary sources indicate that the garden had a fountain and some benches in the XIX century. Students of the Rodionov Institute gave various names to the picturesque corners of the garden – "Fairy Grotto", "Romanovskaya hill", "Silent hill", "Dreamy alley" and others [25].

After the revolution the first model school (commune) named after K. Marx was located in the building in 1918. Children of dead Red Army soldiers and victims of the White Russians’ terror were studying there, supported by the government.

Then the building alternately hosted Eastern Pedagogical Institute, Tatar Pedagogical Institute and Kazan Pedagogical Institute.
In 1933-1936 the third floor was built on the main building upon the project of architect Ashmarin. Some changes in the garden layout were taking place such as losing a clear regular layout of the first part and destroying the laundry and some maintenance buildings. The layout of the second part was lost too but some new alleys had appeared (figure 3).

During the World War II the building used as a military hospital. From 1944 till the present days this building is used as Kazan Suvorov Military School of the Ministry of Defense of the Russian Federation.

Nowadays, the original outbuildings, gates and fences have been lost but the main building of the institute has been preserved (figure 3).

**Figure 3.** The plan of the Rodionov Institute of Noble Maidens of Kazan mid-XXI century (source: http://okn.tatarstan.ru).

The garden practically does not exist and its historical boundaries are partially preserved. The territory of the garden of the Rodionov Institute of Noble Maidens is an object of regional significance cultural heritage [26].

**5 Conclusion**

Nowadays, the protection and designing of gardens and parks within modern and historical educational institutions of both higher and secondary schools is a strategic pathway.

Due to changing social and environmental conditions, the presence of gardens at educational institutions will favorably affect the psychological and physical condition of younger generation [27], and it may diversify the educational process.

In addition to scientific and recreational purposes, gardens within educational institutions could be also used for various exhibitions and open air lectures repeating the experience of the past. These activities attract citizens and visitors and stimulate them for learning various branches of science.
References
[1] Leila Faraji, Mojtaba Karimi 2020 Botanical gardens as valuable resources in plant sciences Biodiversity and Conservation. doi: 10.1007/s10531-019-01926-1
[2] Esmaili F, Pontia F, Shahla Mahdavi 2020 Ancient Urban Gardens of Persia: Concept, History, and Influence on Other World Gardens Hort Technology 30 (1), pp 6-12. doi: 10.21273/HORTTECH04415-19
[3] Alessia D’Agostino, Angelo Gismondi, Gabriele Di Marco, Mauro Lo Castro, Rosaria Olevano, Tiziano Cinti, Donatella Leonardi, Antonella Canini 2019 Lifestyle of a Roman Imperial community: ethnobotanical evidence from dental calculus of the Ager Curensis inhabitants Journal of Ethnobiology and Ethnomedicine 15 (62). doi: 10.1186/s13002-019-0334-z
[4] Sanders D, Ryken A E, Stewart K 2018 Navigating nature, culture and education in contemporary botanic gardens Environmental Education Research 24. doi: 10.1080/13504622.2018.1477122
[5] Madalina Petran, Dorin Dragos, Marilena Gilca 2020 Historical ethnobotanical review of medicinal plants used to treat children diseases in Romania (1860-1970) Journal of Ethnobiology and Ethnomedicine Vol. 16(15). doi: 10.1186/s13002-020-00364-6
[6] Stephen Harris 2017 Oxford Botanic Garden & Arboretum: A Brief History, Oxford: Bodleian Library.
[7] Clare Hickman 2019 The want of a proper Gardiner: late Georgian Scottish botanic gardeners as intermediaries of medical and scientific knowledge BJHS 52(4), pp 543-567. doi: 10.1017/S0007087419000451
[8] Sutherland Forsythe, Donna Cole 2016 Discover the Botanic Cottage, Edinburgh: Royal Botanic Garden Edinburgh.
[9] Sheri Dorn, Milton G Newberry III, Ellen M Bauske, Svoboda V Pennisi 2019 Are We on the Same Page? Exploring National, State, and Local Educationalresponse Themes for Extension Master Gardener Coordinators and Volunteers Hort Science 54(3), pp 68-575. doi: 10.21273/HORTSCI13679-18
[10] Laura Irish, Cynthia Haynes, Denny Schrock 2019 Knowledge Change and Donation Intentions of Field Day Attendees Hort Technology 29(5), pp 659-664. doi: 10.1017/S0007087419000451
[11] Carlo Calfapietra, Lucia Cherubini 2019 Green Infrastructures: Nature Based Solutions for sustainable and resilient cities Urban Forestry & Urban Greening 37, pp 1-172. doi: 10.1016/j.ufug.2018.09.012
[12] Alessandro Di Mennodi Bucchianico, Maria Antonia Brighetti 2019 Combined effects of air pollution and allergens in the city of Rome Urban Forestry & Urban Greening 37, pp 13-23. doi: 10.1016/j.ufug.2018.04.001
[13] Maciej Blaszak, Eliza Rybska, Olia Tsivitanidou, Costas P 2019 Constantinou Botanical Gardens for Productive Interplay between Emotions and Cognition Sustainability 11. doi: 10.3390/su11247160
[14] Melero Y, Stefanescu C, Palmer S C F, Travis J M J, Pino J 2020 The role of the urban landscape on species with contrasting dispersal ability: Insights from greening plans for Barcelona Landscape and Urban Planning, 195. doi: 10.1016/j.landurbplan.2019.103707
[15] Dianshuang Wang 2019 Manufacturing and agricultural pollution, private mitigation and wage inequality in the presence of pollution externalities Agric. Econ. Czech 65, pp 51-58. doi: 10.17221/79/2018-AGRICECON
[16] Ivana Zelenika, Tara Moreau, Oliver Lane 2018 Sustainability education in a botanical garden promotes environmental knowledge, attitudes and willingness to act Environmental education research 24(11). doi: 10.1080/13504622.2018.1492705
[17] Mary Rogers, Illana Livstrom, Brandon Roiger, Amy Smith 2020 Growing North Minneapolis: Connecting Youth and Community through Garden-based Experiential Learning Hort Technology 30 (1), pp 25-30. doi: 10.21273/HORTTECH04308-19
[18] Daniel Staub, Sarah E Colby, Melissa D Olfert, Kendra Kattelmann 2019 A Multi-Year Examination of Gardening Experience and Fruit and Vegetable Intake During College Nutrients 11(2088), pp 2-14. doi: 10.3390/nu11092088

[19] Francisco J Escobedo, Vincenzo Giannico, C Y Jim, Giovanni Sanesi, Raffaele Laforza 2019 Urban forests, ecosystem services, green infrastructure and nature-based solutions: Nexus or evolving metaphors? Urban Forestry & Urban Greening 37, pp 3-12. doi: 10.1016/j.ufug.2018.02.011

[20] Sarada Krishnan, Tara Moreau, Jeff Kuehny, Ari Novy, Stephanie L Greene, Colin K Khoury 2019 Resetting the table for people and plants: Botanic gardens and research organizations collaborate to address food and agricultural plant blindness Plants, People, Planet, pp 157-163. doi: 10.1002/ppp3.34

[21] Simon J Hiscock, Paul Wilkin, Sarah Lennon, Bennett Young 2018 Plants matter: Introducing Plants, People, Planet Plants, People, Planet 1, pp 2-4. doi: 10.1002/ppp3.14

[22] Barbara Schaal 2019 Plants and people: Our shared history and future Plants, People, Planet, pp 14-19. doi: 10.1002/ppp3.12

[23] Kolyada Ekaterina Mikhailovna 2012 University Gardens in European culture: History and prospects for development Proceedings of the St. Petersburg State Institute of Culture.

[24] Staraya Kazan, http://oldkazan.narod.ru/01/rodi1, last accessed 2020/03/17.

[25] Picuki, https://www.picuki.com/media/147389038172404796, last accessed 2020/03/16.

[26] OKN tatarstan, http://okn.tatarstan.ru/rus/file/pub/pub_1939573.pdf, last accessed 2020/03/18.

[27] Petra Lindemann-Matthies, Diethart Matthies 2018 The influence of plant species richness on stress recovery of humans Web Ecology 18, pp 121-128. doi: 10.5194/we-18-121-2018