Georgian Landscape architecture

Urban planning and ecological problems
(on the example of c.Tbilisi)

Landscape architecture Professor Doctor
Tinatin Khimshiashvili
Traditional architecture of Georgia, including dwelling as of village as well as of city, are the harmonious parts of environment. And the old part of city as if is written in landscape, which may not be said about the generation of contemporary architecture, which often abrogates harmonious of nature.

Location of initial building of c. Tbilisi mostly was conditioned by the character of landscape of situation and it is about good understanding of the meaning of conditions of nature by first inhabitant (there were ravines of rivers, acclivity, shore plain, rocky banks of Mtkvari, good protection from strong storms, there also were hot mineral springs, rich verdures). Greece always chose advantageous places and districts with beautiful landscapes, for building their cities, states (policies) 

According to same principle and of course with the point of view of strategic, the place was chosen for building city Tbilisi.
Aerographical situation of c. Tbilisi stipulated specific of disposition of the whole city as well as its separated components.

At the beginning c. Tbilisi was built from the right lap and afterwards began assimilation of the left side of river Mtkvari.
Location relief had the greatest influence on the organization of structure of planning of old dwelling districts, on which were depended situation of buildings, methods, tightness, stories and laying the streets with asphalt.

Gradual building of the laps of mountain and ravine, with correctly situated passages had good results on the point of view of airing and insolating of houses. As it seems in ancient era architects foreseen the combination of temperature of breeze with underlay inversions.

The old buildings were combined with environmental, natural area and expressed plasticity of relief. Many contemporaries of old Tbilisi indicated that building of steeps sides of city were arranged in such way that the roofs of houses situated below, were the yards of following houses. From these elementary, principles it seems that building was in interaction with relief of situation, and expressed its forms. One of the original decisions of city-buildings of old c. Tbilisi, were building traditions of houses of simple
city-dwellers and nobles, on steeps, falls and even on the top of river. On this point of view houses reserved in old parts of city and balconies, which were built at the edge of ravine are very interesting. The pillars fastened in the steeps, hold hung balconies. From there is a wonderful sight. Such situation ensures good winnowing of house, especially in the evening of summer, which is possible with inversions of fresh air temperature.

Maximum using of originality of landscape and natural-climate conditions in planning and building of old city, were one of the main principles for architect’s activities. Old streets of feudal Tbilisi were mainly situated along the river Mtkvari, which ensured winnowing the lowest parts of the city by the north-west winds, dominated in the ravine of Mtkvari.

In old building, jointly built tight streets were covered with long shadows; they kept of streets from hot rays and made good conditions for on foot walkers. Like in many hot climate cities, in old Tbilisi, the trees were planted along the tight streets.

Dwelling blocks of city, where even were a few green areas, ecological balance was preserved, due to wide gardens and big green territories which surrounded city.
Feudal era Tbilisi, in spite of tightness of buildings, lacking of internal block areas and intensive planting greenery, was not torn away and set off against nature. Environment, nature and sense of using them variously, were actively involved in life and accordingly in city architecture.

There are facts in some historical sources that old Tbilisi was surrounded by gardens and forests, which supported climate conformability; unfortunately it is not the same today.

French traveler, representative of trade house J.Sharden was writing:, surrounding of Tbilisi are decorated with entertainment houses and beautiful gardens, where ,, are a few orchards, in return for this there are many plants which adoring the gardens and spreads coolness and shadows.

The picture about the gardens of Tbilisi was painted in details by Vakhushti Bagrationi at the time of describing Tbilisi (in 1733). 11 gardens are mentioned by him, as within the bounds of city, as well as around it. At the time of invasion of Aga-
Mahmad-Khan in 1795, with city the gardens, green plantations, fountains, water-pipes were also destroyed.

We have a map which was painted in 1800, according to it south-east of the city were mostly covered with gardens. The whole Sololak was covered by gardens of king and queen and from this square to south and north territory was laid out with Giorgi Bagrationi’s garden.

Deforestation of above mention gardens began in 1824, when the whole territory was transferred for building houses. As consul Gabma wrote in 1826, „Irakli’s beautiful garden, famous with its north orchards and poplars, now is transferred for building new district“. Only two fragment remained from above mentioned gardens in district of old Sololaki: „Gardens of Georgian kings“, In the district of Gelva-Khevi, was used as the base of building botanic garden, and also was used the part of garden of Giorgi XII (which we have to treat very carefully in order to preserve it for our future generation). New social-economical formations and especially capitalism by ruling private property
on land characteristic to it, supports distraction of the gardens and building cities on these sections.

According to the interest of private proprietor, dwelling blocks, especially in the center parts of city, high revenue multi-stored buildings were built there, closed the main ways of so called winds of mountain-plain that occurs in the conditions of Tbilisi, which in the daylight moves up and at night down on the ravines and laps (especially on the left bank of Mtkvari).

Lacking transparent and wide streets, which are coming down straight to the river, on its both sides, prevented free flowing of cool stream from mountain-plain to the lowest point of city.

Doctor N. Toropova writes: ,, general situation of the city is quite advantageous, it is built amphitheatrically in cave. This amphitheatre is crossed by Mtkvari as a great purifier pipe, constructed for flowing miasmas and dirtiness. Such situation would be more advantageous, if it wholly will be crossed by narrow and wide streets, toward two destinations, such that one of their parts will go in parallels of Golovini Avenue, and the
others cross them, and go toward the river, it will be the best solution for ventilation of the city. If that will be done, none of the harmful evaporations, and no miasmas would manage to stay in city, because they will be flowing, without interruption till Mtkvari through wide and straight, diametrical streets and the winds will be collected that blows here so permanently by north winds.

Now we see quite opposite. The city as if was built in such way, not to let collected dirty air to go out of it. Even if there are straight streets, they are set against buildings which cross them, or they are in such parts, where any wind in the condition narrowness and croakiness, now only useless and dirty air is shaken in the city, which is saturated with every kind of airs and evaporations, which have no way to go“. Then author summarizes and points out: „In common the orthographical situation of the city is quite advantageous, if something spoils it, it is population themselves, which not only collected here where such settlement was not necessary, but it also closed exit with flow coming from ravine of Mtkvari and Aragvi, as well with miasma which occurs in the same place."
In these years, internal natural dominant of the town, river Mtkvari became sough, where mainly passed private enterprises.

It should be indicated that in Tbilisi, unlike other ordinary cities, enterprise units were built on its whole territory, at the same time unforeseen meteorological factors, without protecting sanitary measures, which had a great negative influence on the area condition of the city.

There were a few green plantations inside the city and its neighborhood; the laps of mountains that surrounded the city were lacking old rich forests. And also the banks of river Mtkvari were not cleaned.
Assimilating of new territories, ignoring growing influence on industrialization and biological environment of urbanization, certainly had negative influence on formation of environment area of c. Tbilisi, that cause abrogation of ecological balance and accordingly deterioration of conditions of city dwellers.

Inadmissible condition of air pond is clearly expressed in c. Tbilisi.

The level of defilement of air pond of Tbilisi is depended on meteorological and physical-geographical conditions.

On the result of totality of factors of natural and anthropogenic, its special microclimate is formed in the city. „warm island“

Intensity of „warm islands“ are depended on size of a city and is growing accordingly to it.

High concentration of aerosol particles in atmosphere of city, make favorable condition for increasing repetition of smog type mists.

Geomorphologic conditions support the circumstance that smog is above the city for some days and is so harmful for population of city.
In capacity of urban-ecology for ecological balance, districts should be separated beyond the bounds of c. Tbilisi that will support self regulation without anthropogenic influence. These territories are buffer compensator zones for city Tbilisi.

Buffer zones can reproduce enough quantity of atmospheric oxygen.

North-west winds have cleaning functions for c. Tbilisi. Now north-west winds will come to city from buffers of „Surami mountain range“ from the side of green plantation. Building a new district of big Digomi should not cross the way of flow.

In order to winnow whole city effectively North-west part should be released from sanitarily harmful industrial enterprises, also there should not be any harmful industrial enterprises in lower parts of the city, because impermissible quantity of harmful admixtures are collected in lower parts of relief, caves and ravines.

Well developed green spaces that pass in buffers of c. Tbilisi should be done between dwellings of city and industrial micro-districts.
Big attention should be paid on planting greenery and re-cultivation of the territories that are between c. Tbilisi and c. Rustavi. Planting trees on above mentioned territories will play a big role of filter; from one side in passing on it north-west winds will enter there from Tbilisi, from the other side south-east winds will enter in the center of the city.

The most dirty central parts of c. Tbilisi are lacking green plantation, it should be better to take account the cost of preserved building, development system of planting greenery should be implemented by the different forms of resting, it practically impossible to be done like new dwelling districts. Responsibilities of function of daily rest should be taken by green sections of yard (yards) that may be implemented in practice as the places of rest of less mobile group of population, adults and young people will spend their spare time in nearest gardens and parks. Considering existence situation of city-building, in case of necessity by using less costly ways, new green sections may be built.
Because of the city is characterized by unwind and less windy weather, big missives of green plantations, are able to cause collection of air. For preserving air movement of this district, wedge-shaped cultivation of system of green plantation is advisable.

Creating green corridors in city building (so called green wedges) connected with landscapes of suburb, will give us effective landscape-ecological skeleton of c. Tbilisi.

Greening buildings, houses, walls, vertical greening of balconies and etc themselves may be included in green plantation systems of central districts of city.

The quantity of flat roofed houses, stores and private industrial units are growing in the central districts of city, which are good places for furnishing them with „landscape of roof“.
Gardens on roof may become a special element of rest in system of planting greenery in city. Planting greeneries on roofs and balconies will be beneficial as additional green areas. This was implemented by famous architects such as: Le Korpiuz, Franck Loid Rait, Valter Gropus and others.

In order to use better inversion flow of fresh air that comes from height, it is recommended to build dwelling houses like terraces on slopes of city, gardens on terraces and good aeration of districts will give us that ecological effect which is necessary for central districts of city.

New districts of city Tbilisi are lacking greeneries, especially in micro-districts, in Nutsubidze plateau, which is wholly built by high-stored buildings, in the condition of complicated relief, it was possible to choose correctly architecture of individual houses according to character and scale of geographical structure of this district, will organically be harmonized with natural environment.
In Tbilisi, hence from natural-climate, specific problems in architecture, building summer stores in flats should be taken in consideration. The best type of open stores of flat were wooden terraces in old Tbilisi, existents of terraces is well seen on the base of examination of dwelling houses. Terraces are arranged along the front sides of houses, sometimes on its two or three sides. From plans and draughts of old houses seems that often the space of terraces and the rest dwelling stores were of the same size. According to V. Beridze, the main element of house of old Tbilisi was a wooden terrace, it was the direct continuation of the dwelling part of house and it also was an additional store which was used by family from spring to winter. During the period, wooden terraces were replaced by little hung balconies.

At first place should be specific conditions of climate in new architecture of c. Tbilisi; in it should be implemented gardens on terraces and roofs and the most important
summer stores beside the flats. Vertical greening of houses will make the environment of
town more beneficent.

Winds of mountain-ravine are very important for creating ecological city-
buiding skeletons for city Tbilisi, clearly expressed in worm time of year (IV-X months,
that brings fresh and cool air) In worm weather, there are tendency in winds to blow
during the day up to the declivities, the reason is that at night declivities of mountain are
wormer than free atmosphere, cool air blows downside but worm air goes up, therefore
local mountain winds are created, that’s because air goes up on declivities during the
daytime.

Therefore above mentioned winds are characterized with the best attributes, at the
daylight they go upside and at night downside by the declivities of ravines.

As it was indicated, expressed trend in existence structure of city should be
considered adequate and at the time of reconstruction of old city is necessary to develop
similar sources on every side.
But in the last epochs, in this adequate structure of the town, considering the interests of private proprietors, in some places were made distortions such as buildings that cross the ways of winds of mountain-ravine.

Creating wide and long streets and nets of green corridors, makes it possible to winnow as these districts as well as central districts of city.

It is necessary that the airs coming from through corridors of the landscape of suburb, which contains fresh air of streamlets of mountain-plain, to reach the most lower parts of the city. Green plantations, in the bounds of general plan and suburb zones, should be united, in common system of greening, independently from physical-geographical and natural-climate conditions.

on purpose of creation ecologically healthy city, at the time of planning city, two problems should be solved correctly such as: effective winnowing and cleaning of city.
GEORGIAN GARDENS

In Tbilisi gardens of different function during the different periods, for example Alexandrov's garden, public appointment, which is located in the centre of the city, was constructed in 1859. The garden was designed by the gardener Sharer. On the mountain, over the city Mtatsminda (1938) garden is constructed, also there is a Vake park (1950), Park Rike (2007) and many other gardens.

Georgia has rather big history of gardening. In different corners of Georgia historical gardens, in Kakheti - Park in Tsinandali which was constructed by prince Al. Chavchavadze (1889) is constructed.
The garden was designed by the architect A. Regel. The plan of a garden is allowed in style of English gardens. In Borjomi, Likani's garden was also designed by the architect A. Regel.

Here we meet Romanov’s magnificent flight palace, which became dwelling of Stalin later. The Zugdidi garden is constructed by the queen Ekaterina Dadiani, and lands are designed by the Italian gardener Joseph Banani and brothers Zamberlet. The garden represents style of the French garden. Napoleon's known mask is stored in the palace of this garden. On the bank of the Black Sea, in the city of Batumi there is a known Subtropical, botanical gardens. In the Georgian gardens the architectural thinking of the artist and good knowledge of the gardener of existing plants is brightly expressed.

The landscape architecture of Georgia, both in villages, and in the city, is harmonious part of environment.
TINATIN KHMISHIAHAVILI
President of landscape architecture of Georgia, Professor, Doctor

tinatinkhimshiashvili@yahoo.com