

ABSTRACT

Title of Thesis: COMMUNICATING COURTYARDS

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Architecture

This project is for a multiple story residential structure and urban redevelopment near the Shota Rustaveli square. This courtyard building is owned by different families and offers a communal frame supporting family use. The courtyard configuration promotes privacy and provides a safe semi-private space. The design goal of the project is to evolve failing urban fabric and to develop a contemporary dwelling based on the historical and cultural precedent of the Tbilisi Courtyard house.

The main feature of this project is the courtyard style residential building, which will provide multiple uses such as socializing, cooking, play space and more. In addition, the project will attempt to reproduce city traditions via a seamless connection of redeveloped surrounding neighborhoods with the existing city fabric.

COMMUNICATING COURTYARDS

by

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Chapter 1: Introduction

Tbilisi is an outstanding city with its landscape, culture, history, and diversity. People of different nationalities from different parts of Georgia reside in Tbilisi. They have different values, different political views, but they have one thing common that unites all of them. This is the love of their city and the desire for Tbilisi to be better than it was yesterday and better than it is today. In 2019, the city council approved a master plan for the development of the city. The master plan defines conditions for development of each plot of land. There is a need to build new modern residential structures. A new apartment building will allow many residents to move out of unlivable condition. It is the intent of this thesis to discover the design principle that are on one hand common to this region and on the other hand provide modern style of living.

Chapter 2: Understanding History of Regional Architecture

At the origins

Numerous archaeological finds of very primitive tools dating from The Stone Age testify to the habitation of early people on the territory of Georgia during the most remote periods. The Neolithic era is presented on territory of Georgia by numerous sites such as Anaseuli, Ristrik, Sakao, Odishi, Matsitsikhe, Mamati, Samele-klde. In one case, traces of a round hut were found with planks in the form of pillars and wicker twig walls with clay coating. During this period, one can see the main architectural development where the parts of the building are divided according to its function. Despite the primitive forms of living quarters, in the Neolithic era, the phenomenon of separating the housing from the cave occurs, creating a separate building that determined the dwelling's shape and size.



Figure 01 - Imiris Mountain

The culture of the tribes that inhabited Georgia in the Bronze Age was developing intensively. Excavations in the 20th century revealed dozens of settlements from V-IV millennium BC such as residential hills at Arukhlo, Shulaveri, Imiris Mountain, and settlements on terraces in Sadakhlo. The Arukhlo settlement is an artificial hill (100m x150m) up to 6 meters high.

Partial excavations revealed nine round adobe rooms with a diameter of around 3 meters and a wall thickness of 30-35 centimeters. A light hole was found in the wall of one room. In Shulaveri, 20 clay rooms were discovered, round in plan with domed ceilings. The dimensions of the rooms vary depending on their purpose. The larger rooms 12 to 16 square meters were designated for living quarters where smaller rooms could be utilized as storage units¹.

During the end of Bronze Age and beginning of Iron Age, the settlement of Digomi on the northwestern outskirts of Tbilisi stretched along the slopes of the hill and consisted of single room semi-dugouts built of stone. They had a flat roof, adobe

¹ Н. Джанберидзе, *“Архитектура Грузии: От Истоков до наших Дней.”* (Москва: Стройиздат, 1961), 8.

floor and walls plastered with clay. Each house had an oven for baking bread, and a platform with an altar².

A study of architectural monuments on the territory of Georgia indicates that already in the era of the remote times, the main spatial concepts of a round and rectangular plan were outlined. The people's desire to create an artistic image is clear.

Before Christianity

Around VI century BC on the territory of Georgia two new countries formed when many tribes united. Iberia in the east and Kolhida in the west. Starting in the II century BC, Roman expansion to the east began. In 65 BC, the Romans captured the capital of Iberia and later added Kolhida. This period is reflected in the written sources of the Greeks and Romans. Georgia is characterized as a rich country with developed metallurgy and high art of construction. Based on archaeological excavations, it can be argued that large cities existed in Georgia in the Hellenistic period: Mtskheta, Shorapani, Vani, Gori, Sovsamora, Sarkineti, etc.

Advancement in construction can be found in the cladding of the I century building where the wall is articulated with small squares into a pattern. Such mesh masonry "Opus mixtum" was used in the late constructions of Bagineti (Fortress in Mtsxeta near Tbilisi). With the introduction of the lime mortar, masonry of rough-hewn stones of various sizes, laid in parallel rows, became widespread. This

² Н. Джанберидзе, "Архитектура Грузии: От Истоков до наших Дней." (Москва: Стройиздат, 1961), 13.

technique was used in the last centuries BC, although, according to the chronicles, lime was used in Iberia already from the IV century BC.

Urban planning is associated with the development of city plans, which were not so much military-administrative centers, but mainly trade and craft centers. The revival of commodity exchange in Western Georgia was facilitated by the emergence of Greek trading centers on the coast of Black Sea, next to which there were local trade and craft cities. The exchange of goods largely develops in the Hellenistic period, when transit routes of international trade pass through Georgia, connecting the countries of East and West. The presence of trade routes contributed to the involvement of Iberia and Kolhida in international trade, which in turn stimulated the flourishing of cities, mainly along roads and rivers.

An obligatory component of the ancient cities of Georgia was the acropolis (high city). Usually, one or two sides of the high town face the cliff, and the city adjoins it on the other sides. This arrangement characterizes Armaztsikhe, Nokalakevi, Shorapani, Sevsamor. In Armaztsikhe, the ancient residence of the kings of Iberia, located opposite to Mtskheta, at the confluence of the Aragvi and Mtkvari rivers, there was the settlement, which occupied about 30 hectares and was divided into two main parts - the settlement itself on the floodplain terraces and the

citadel on the top of the hill. Excavations here revealed five layers of fortress wall surrounding the city and the citadel³.

A special place in the architecture: culture of ancient Georgia occupies the cave city of Uplistsikhe. The city is located on a high, left bank of the river Mtkvari, not far from modern city Gori. Uplistsixe represented at one time a natural fortress, which in the middle of the 1st millennium BC was turned into a walled city. The city had an entrance carved into the rock, a tunnel descending to the Kura, narrow streets, and many living quarters and halls carved into rock. Along the streets there are caves of one or two floors, and carefully crafted decorated halls⁴.

Residential dwellings discovered by excavations testify that most of them had a simple rectangular shape, sometimes with a portico or vestibule in front. The houses had cobblestone foundations on clay and later, lime mortar. The walls were erected from the same stone, adobe, or poles with clay coating, with wall pillars that supported the ceiling. Undoubtedly, during this period, a dwelling house of the “darbazi” type with a vaulted ceiling and a central hole in the roof also became widespread. The residents described by Vitruvius in Kolhida is nothing more than a “darbazi”, fundamentally preserved to this day. An important feature in this structure

³ Н. Джанберидзе, “Архитектура Грузии: От Истоков до наших дней.” (Москва: Стройиздат, 1961), 22.

⁴ Н. Джанберидзе, “Архитектура Грузии: От Истоков до наших дней.” (Москва: Стройиздат, 1961), 25.

is corbelled cupola (gvirgvini) assembled with hewn logs and beams.⁵

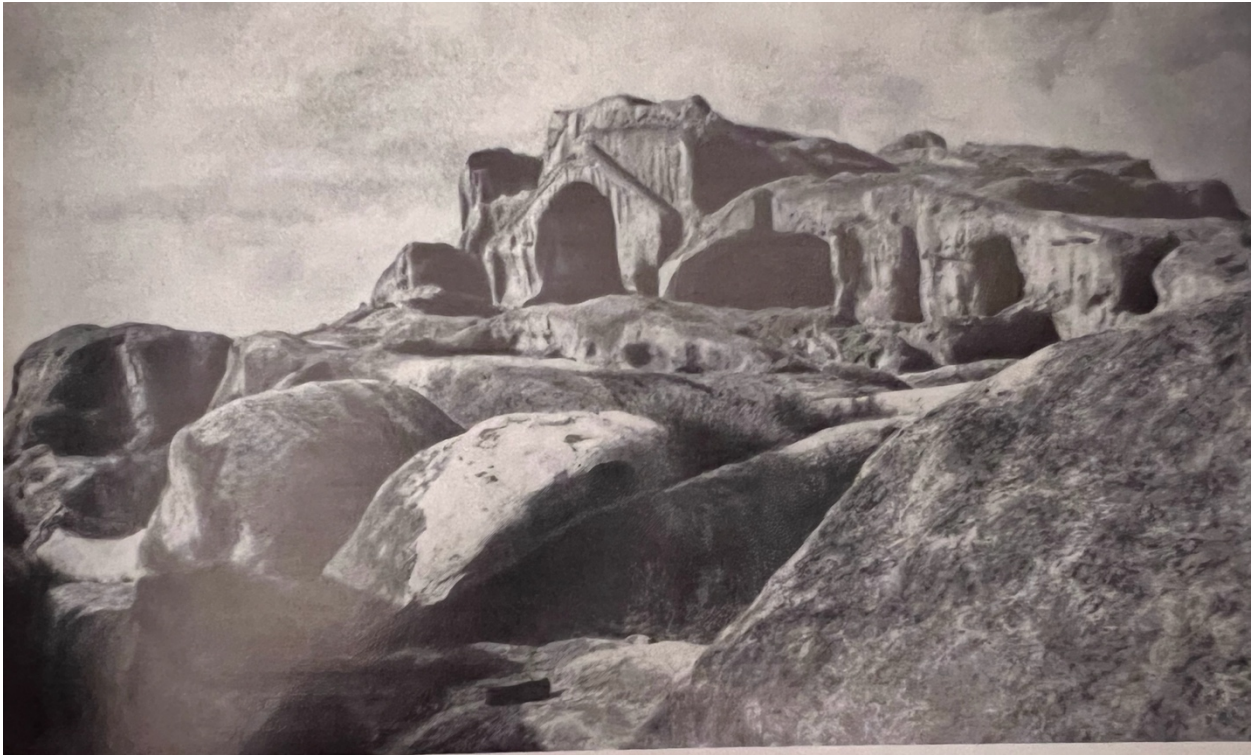


Figure 02 - Uplistsixe

Feudal Georgia

As a result of the long struggle between Rome and Iran, Kartli (Central Georgia) fell under the influence of the Sasanians and became their tributary. The two-century struggle of Kartli for the preservation of state independence hampered the development of the country. In the second half of the 4th century, after the independence from Iran, the so-called “feudal revolution” took place. The transfer of

⁵ David Marshal Lang, “*Ancient Peoples and Places: The Georgians.*” (New York: Praeger, 1966), 119.

the capital from Mtskheta to the more strategically located Tbilisi also coincides with this period. At the beginning of the IV century, Georgia entered the feudal era. Conditions were gradually created for new social relations, a new mode of production. The recognition of Christianity as the state religion contributed to the establishment of feudal relations. The new religious doctrine was used by the king and his supporters, the landowners in their sociopolitical interests to seize the land of the followers of the old faith.

In the era of early feudalism cities with administrative buildings, churches and monasteries, palaces for the king, queen and feudal lords, household and auxiliary buildings were being intensively built. Hospitals and hospices, homes for the elderly, baths and reservoirs, bridges and defensive structures are being built as well. All monumental buildings of the early Middle Ages in Georgia are built of stone with lime mortar. At the same time, different types of masonry are used in different parts of the country based on the availability of local material. There are many examples of monumental buildings that are preserved and available to us. However, residential structures have not been preserved.

During the period of the establishment of feudalism, the advances in trade and handicrafts created all the conditions for the development of urban life. During this period, significant cities in Eastern Georgia were Mtskheta, Ujarma, Tbilisi, Bolnisi, Manglisi, Rustavi, Western Georgia - Tsikhe-godzhi. (Archeopolis), Vardtsikhe (Rhodopolis), Shorapani, Snanda, Nutaisi. All these cities are in strategically advantageous places, in most cases on high ground. The cities were surrounded by a

system of defensive walls with towers. The part of the population that did not fit inside the fortress walls lived around them.

In the early Middle Ages, the city of Ujarma, the residence of King Vakhtang Gorgasal, is the best preserved. The city is located on the right bank of the river Iori and consists of two parts - the citadel on top of the hill and the lower fortress. In the upper citadel there is a two-story building with a large basement, the king's palace. The central lot contains a church, grain and water storage facilities, and other residential and commercial buildings. The citadel is surrounded by powerful defensive walls. The lower fortress is located on a steep slope to the river and is a fairly regular rectangle, also enclosed by a powerful wall with nine rectangular towers. All buildings - the palace, the church, residential and commercial buildings and the system of fortifications - testify to the high level of building art.

At the same time, frame residential buildings were mostly one-story and consisted of one or several rooms; some of them were allocated for storage needs. All houses were rectangular. In the center of the residential complex, a hall sometimes stands out - a large room with a fireplace. Around the hall are grouped residential and utility rooms - a place for storing wine (marani), storerooms, rooms for livestock. The buildings are covered horizontally on wooden beams with a flat earthen roof. The exception was houses of the "darbazi" type, the crown of which stood out in the residential complex.

In the era of the reign of David and his successors George III and Queen Tamara (XII and early XIII centuries), Georgia achieved unprecedented political

power, the flourishing of the economy and culture, expanded its borders, annexing or patronizing neighboring principalities and states and becoming the strongest state in Upper Asia. The state of high feudalism relied on agriculture with irrigation systems. A flourishing economy in turn advanced monumental architecture. Most of the monumental churches were built from stone, although there are also churches built entirely of brick (Kintsvisi, Timotes-Ubani). During this period, the inner walls of temples are no longer treated so carefully since painting becomes obligatory on all walls and vaults.⁶

In the era of high feudalism, the cities of Tbilisi, Kutaisi, Rustavi, Dmanisi, Samshvilde, Gori, Telavi, Manlisi, Akhalkalaki, Mtskheta, Akhaltsikhe, Artani, Khornabuji, Artanuji, Tmorvi, Zhinvali were known. The ancient settlement of Dmanisi, about 100 km southwest of Tbilisi, is the ruins of a city that flourished in the 11th–13th centuries. In the center of the city, below the high town, there is the Dmanisi Sioni - the main temple, erected in the 7th century. Its rich portal, added at the beginning of the 13th century, stands out in particular. In addition, there are several churches of high feudal era and a bell tower. Unlike other churches, Sioni is lined with hewn squares of greenish tuff. Residential buildings of the city are built from local basalt. Brick is used for fireplaces and built-in wardrobes. The buildings

⁶ Н. Джанберидзе, *“Архитектура Грузии: От Истоков до наших Дней.”* (Москва: Стройиздат, 1961), 55.

have jars for wine smeared with clay and dug into the ground, pits for storing grain and clay torne (bakery).

Excavations in Tbilisi revealed the walls of the outer fortification of the city, which directly adjoined the area of ceramic workshops, in particular, seven kilns, auxiliary premises, and the remains of a water supply system, a mass of finished and semi-finished products (dishes, tiles). The workshops worked intensively in the 12th and 13th centuries, however in the second half of the 13th century they were destroyed.

Among the monuments of high feudalism, a special place is occupied by the cave and monastery city of Vardzia, carved into a sheer rock on the left bank of the river Mtkvari, 15 km from Akhalkalaki. The construction is associated with the names of King George III (1156-1184) and Queen Tamara, however, it can be assumed that there were caves here in an earlier period. The cave rooms, the number of which exceeds 600, occupy a length of over 900 m and are stacked in five, six and seven levels. Each upper tier in relation to the lower one recedes somewhat inward.

Most of the rooms have vaulted coverings, so that the load of the rock is distributed more evenly.

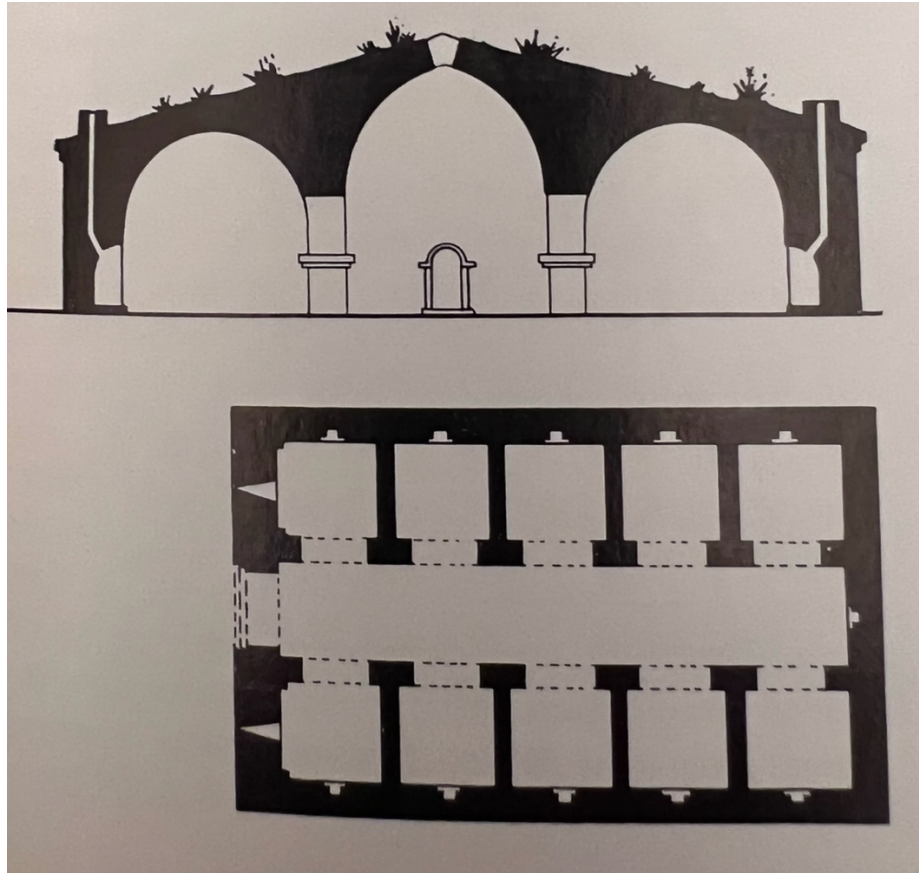


Figure 03 - Caravanserai

The development of handicrafts, agriculture and trade caused the construction of trade routes and structures such as caravanserais and bridges. On the trade route from Tbilisi to Meskhet-Javakheti, near the lake Paravani, there is a preserved caravanserai of the 12th century. This is a large (26 m long) rectangular building, divided into three parts. The middle part is a corridor with an entrance; on both sides of it, rooms for people and goods are separated by arches 4 meters wide and high.

Each of the rooms has a fireplace in the niche. The building was built of processed stone and brick.

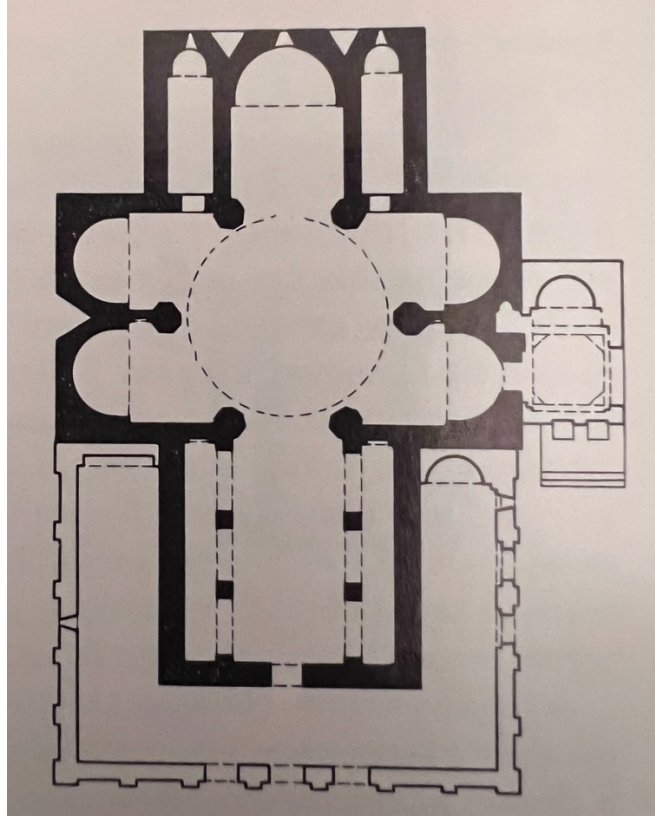


Figure 04 - Kumurdo

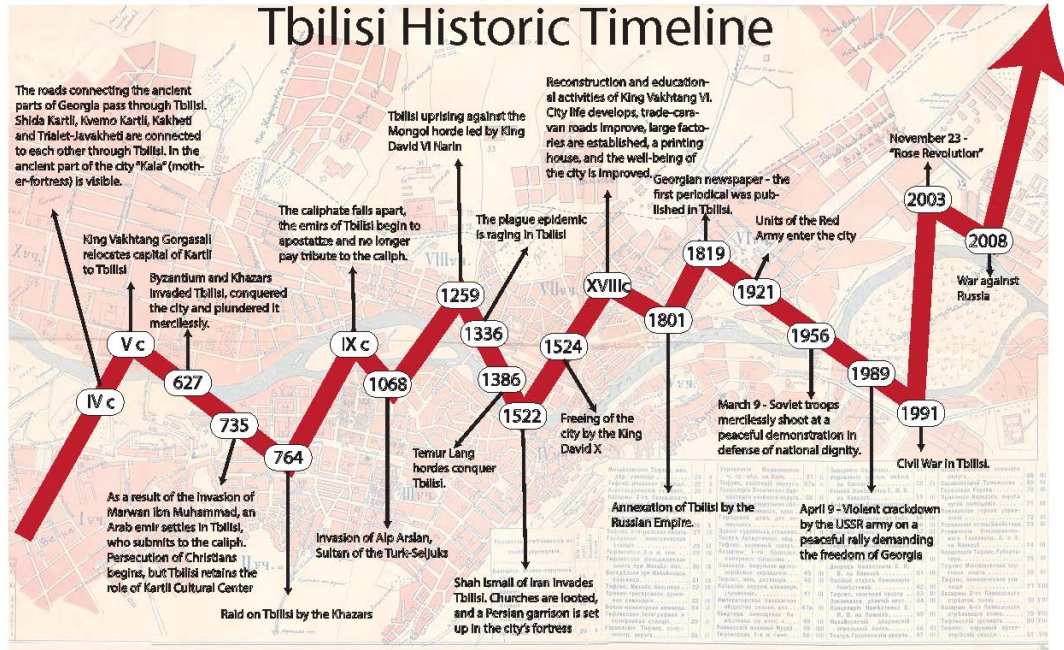
Eventually, at the end of the feudal era, becomes popular the cross-domed church where the nave is an elongated rectangle with a dome on a free-standing pillar. This type became the leading one and formed the base for the development of all Georgian monumental religious architecture in the future. Churches of this type represent a combination of basilica and centralized church⁷.

⁷ David Marshal Lang, “*Ancient Peoples and Places: The Georgians.*” (New York: Praeger, 1966), 132.

Chapter 3: Understanding History of Tbilisi

The Legend

Figure 05



According to the legend, the territory of Tbilisi was covered with forest, the Georgian king (according to one version, Vakhtang I Gorgasali) wounded a deer while hunting, the deer was bathed in a hot spring and escaped from the hunters after being cured. According to another version, the king's falcon attacked a pheasant, the bird fell into the hot spring and died. Due to the healing properties of the hot water and the favorable location of the place, the king cleared the forest and built the city. "Tbili"

means warm in Georgian. The city was called Tbilisi because of mineral hot springs. Later, sulfur baths were built in the historic district of Tbilisi - Abanotubani.

Tbilisi played an important role in the region. It was located on the road that connected the eastern and southern countries of Georgia through the Mtkvari valley through the Eastern Transcaucasia. From here, the road led to northern Albania. The mountains west of Tbilisi and the rocky banks of the river easily blocked the road along Mtkvari. Apart from that, Tbilisi was located on the border of Kvemo and Shida Kartli, the historical border between Gardabani and Shida Kartli passed on the Leghvtakhevi valley. The main citadel of Tbilisi “Narikala” was built before the XVII century.

There are several written reports about the beginning of the XIX century Tbilisi: the official description of 1803, Klapproth's reports of 1807-1808, etc., at the same time the old plans can give us a clearer idea of the city at that time. In the Central Military-Historical Archive (Moscow) the copies of the plans made in 1782 and 1800 are preserved, which contain detailed explanations. Just like in the beginning of the 18th century the main parts of Tbilisi are: Kala, and Avlabari. The main part of the city - Kala - then kept exactly the boundaries it had 100 years prior. These boundaries are: river Mtkvari to the east, Baratashvili Street to the north, the line of Pushkinis Street, Lenin Square, and Shalva Dadian Street to Sololaki mountain to the west, this mountain itself to the south. Kala was surrounded by a wall, and in its

south-eastern corner, on the mountain, Narikala, the ancient citadel of the city, was erected.⁸

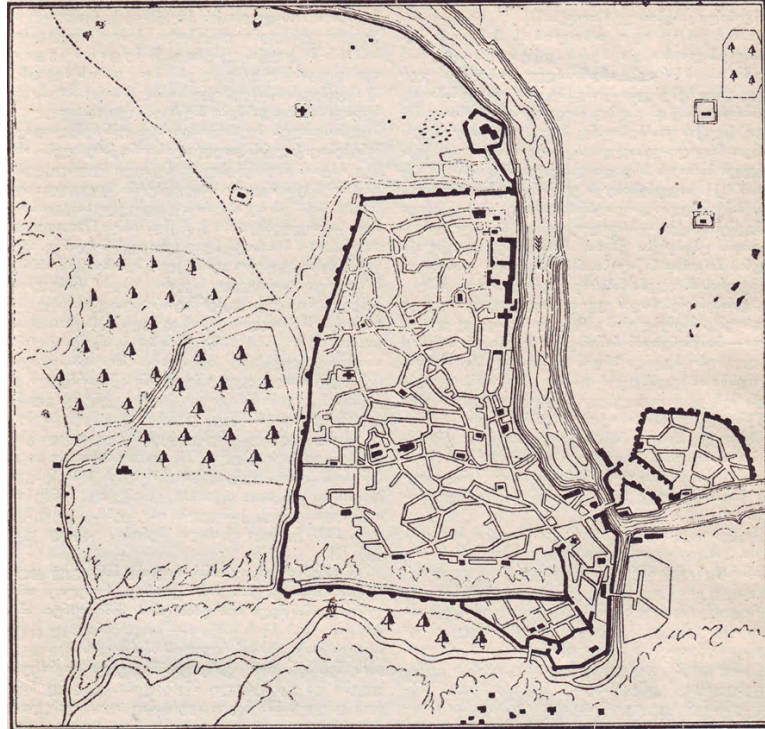


Figure 06 - Tbilisi 1782

Avlabari

There is no exact date of the appearance of the first fortifications in Avlabari on the Metekhi plateau. The arrival date of the first settlers is not clear. Some scholars claim that the construction of the fortifications and the church dates back to the V century, the era of Vakhtang Gorgasali. In the XII-XIII centuries, the importance of this area has increased even more. There was a royal palace and a temple in the

⁸ ვახტანგ ბერიძე, “თბილისის ხუროთმოძღვრება.” (თბილისი: საბჭოთა საქართველო, 1960), 20.

fortress where Queen Tamar learned about the death of her father, King George. During the first invasion of the Mongols, the temple and the palace were destroyed and rebuilt in 1278-1289. In the XV century, new palaces of the rulers appeared on the territory of Avlabari. Since the middle of the XVII century, there are no longer royal chambers because the palaces were built on the right bank of the river Mtkvari. Avlabari continues to have a defensive value for the city. In 1658 Metekhi church turns into a gunpowder warehouse. Between the beginning of the XVIII century and 1748 the Metekhi was owned by the Turks. Soon after the annexation of Georgia by Russia (in 1819), the fortress was destroyed, and a prison was erected from its stones. The Metekhi prison was demolished during Soviet rule in the second half of XX century⁹.

Some fragments of fortifications can still be seen at the edge of the Avlabar near the palace of Queen Darejan. From the high feudal buildings, the character of the layout has been preserved in a small area, which in the 18th century was surrounded by a fortified wall. Part of the old buildings, the so-called "country quarter" of Avlabari, were completely destroyed in 1795 and were restored disregarding the old street routing. Apparently, having not captured the Metekhi fortress (the buildings behind its walls remained untouched), the Persians turned all their anger on the part of Avlabar that was not protected by walls and destroyed it to such an extent that there was no point in even using the old foundations. Avlabar intensively began to be

⁹ Тенгиз Квирквелия, *“Архитектура Тбилиси.”* (Москва: Стройиздат, 1985), 144.

built up in the second half of the 19th century. A majority of interesting residential buildings have been preserved from this time.



Figure 07 - Metekhi

From the Metekhi mountain rock, the development of Avlabari continues towards the railway, crossing it. The railway track evenly separates the flat part from the mountainous area. Buildings on the slopes mainly appeared during the years of Soviet rain. In the flat area residential fabric was formed in the second half of the 19th and early 20th centuries on the site of the villages that existed here and therefore

have an irregular, random layout. The border of Avlabari in the southeast runs approximately at the Samgori railway station.

A peculiar symbol of Avlabari is the building on the edge of the Metekhi mountain, crowned with the structure of an ancient temple. Metekhi - the Church of the Virgin, looks as if it grew out of the mountain. The silhouette of the Metekhi Church is clearly visible in the skyline from many parts of Tbilisi. According to legend, the first temple was built in the V century and destroyed by the Mongols. The fact of the existence of the temple before the construction of the current one is confirmed both by chronicles during the reign of Queen Tamar. The cross-domed church that has been preserved to us was erected in the 80s of the XIII century¹⁰.

Origins and Style of “Tbilisian” Courtyard

The so-called “Italian courtyards” have been appearing in Tbilisi since the 19th century. Until then, Tbilisi was a “banyan” (common in folk architecture with a green roof) city. It was said that you could walk around the city from one place to another without having to set foot on the ground. At the beginning of the 19th century, the city was burned. It was decided to turn Tbilisi into a European-style city, therefore the construction of banyan houses was prohibited by law. The city could not reconcile European classics and modernity and began to transform it: Europe on the outside, Tbilisi on the inside - this is how a new cultural phenomenon was created.

¹⁰ Тенгиз Квирквелия, “*Архитектура Тбилиси.*” (Москва: Стройиздат, 1985), 145.

The architecture of the balconies moved inside. Gloomy buildings from the outside created a completely different reality inside, European houses decorated with unique open balconies became the main value of the city. After the Soviet invasion in the 20th century, many different people were placed in such houses, the magnificent structures became communal houses, where representatives of different ethnic or religious groups lived together. Neo-realist films, very popular at the time, played a big role in "baptizing" these courtyards as Italian. The action in these films took place in southern Italy, where there are similarly crowded cities. The people of Tbilisi made the courtyards of their city like the courtyards of the cities from the films and named their courtyards "Italian courtyards". Even though from the architectural point of view the cities of southern Italy are not like Tbilisi, the name "Italian courtyard" has survived to this day.

Chapter 4: Understanding Tbilisi Urban Mobility

Origins

There is a widespread opinion in Georgia that the country has always been an integral part of the silk trade route in ancient and medieval times. Contrary to the popular opinion in Georgia, it should be said that important trade routes appeared in the country only when the main roads were blocked as a result of political events or economic problems. The trade route from north to south often passed through Georgia, which connected Georgia with Iran, as well as with other countries of the Near East. However, there were periods when the main trade routes functioned around Georgia.

Whether the trade routes passed through Georgia also depended on what kind of forces gathered around. For example, in the 19th century, the Russians used the Georgian transit route to transport European products to Iran. But the success of these commercial routes ultimately depended on Russia's political decisions. It is also known that during the Soviet period, Georgia was excluded from international trade routes¹¹.

¹¹ ემილ ავდალიანი, "საქართველო და აბრეშუმის დიდი გზა: მითი თუ რეალობა?" *Forbes Georgia*, May 9, 2019, <https://forbes.ge/saqarthvelo-da-abreshumis/>

Evolution

Tbilisi Transport Company (formerly "Tbilisi Metro" LLC), whose 100% share is owned by Tbilisi City Council, has been operating since 1966, when the first section of Didube-Rustaveli metro was opened. In 2009, by the decision of the Tbilisi City Council, municipal buses and related real estate in the form of three fleets were transferred to the company. In 2012, the cableway infrastructure in Tbilisi and the newly built Rike-Narikala cableway joined the company. The company employs up to 6,492 people who work non-stop to ensure that the residents of Tbilisi and the city's guests receive high-quality transport services and that their journey is as safe and comfortable as possible.

With the increasing urbanization of cities and the growth of their population, the role of external transport is increasing, which provide diverse and continuously growing transportation in suburban and intercity suburban communications. In September 2014, a steering committee was formed, which consisted of the Tbilisi

City Hall, Tbilisi City Council, Georgia Fund for Municipal Development, Tbilisi Transport Company, Tbilisi Fund for Technological Development and Transport.

Modern System

In accordance with the recommendations of the Development Bank, an Initiative Action Plan was developed:

1. Complete renewal of the city road network.
2. Support for the sustainable development of the road network.
3. Expansion of the public transport network to meet demand and reduce traffic jams.
4. Increasing the quality of public transport service.

This conceptual approach was made by the government of Georgia. The link between transport planning and land use has been restored to improve public transport and reduce citizen complaints. The project's aim was to limit the flow of personal

vehicles and increase the use of public transport. Transport plans and projects reflect the opinion of citizens and the long-term strategy of the city.

Public transport system in Tbilisi:

1. Subway system.
2. Bus network.
3. Network of minibuses.
4. Cable cart.
5. Taxi.



Figure 08 - Metro

The main roads in the north of the central part of the city are Rustaveli Avenue and Sanapiro Street. The main administrative, business, cultural and sports institutions are in the city center, Vake and Saburtalo. Therefore, most of the traffic

flows to these areas, which is the cause of long congestion during peak hours. Existing arterial streets cannot handle traffic flow and cannot be modernized. The narrow streets in the city center can no longer accommodate the increased traffic. Crossroads of streets connecting the right bank and the city center are overloaded. Critically overcrowded Saburtalo area; the streets connecting the Saburtalo district in the north-west of the city with the artery on Tsereteli avenue and the banks across the Vakhushti bridge require special attention.



Figure 09 - Cableway

In 2017, according to “Esiti” research, the problem of transportation in Tbilisi is quite acute. As a result of the research, the vast majority of the population of Tbilisi (68%) travel most often by public transport (taxi, bus, subway). Out of all public transport, they travel most often by minibus taxis (29%). Buses are the main means of

travel for 23% of Tbilisi's population, and 16% of Tbilisi's population mainly travel by subway. The research also revealed that a quarter of the Tbilisi population mainly uses their family member's/relative's car for travel. Taxis are used by only 2% of the population of Tbilisi. It should be noted that 40% of men use car for travel, while only 14% of women travel by car. The vast majority of women (79%) mainly choose public transport for travel. The 18-24 age group has a particularly high rate of public transport use. Almost half of the population of Tbilisi (44%) report that they get into traffic jams every day while traveling by different types of vehicles. 69% of the population gets into a traffic jam at least once a week. Tbilisi residents spend an average of 26 minutes in traffic jams. For the vast majority of the population of Tbilisi (84%), the issue of traffic jams in the capital is very disturbing.

In 2018, the Tbilisi parking system with up to 32,000 parking spaces was transferred to the management of the company.

The construction of the cableway connecting Rustaveli Avenue and Mtatsminda Park continues. The cableway, where 21 gondolas will operate, will serve 1,200 passengers per hour. The length of the route will be 845.55 m. It is planned to put the cable car into operation in the summer of year 2023. It will be possible to move from Rustaveli Avenue to Mtatsminda Park and from Mtatsminda to Rustaveli Avenue within four minutes.

Chapter 5: Site Selection

Abstract

The process of the site selection for this thesis will include several strategies. Tbilisi is a very old city with many historic structures. The desired site should be available for development. Because residents in Tbilisi live in deplorable conditions due to the lack of maintenance of their dwellings by the government, a site with a majority of unlivable structures is desired for this thesis. At the same time, the existence of residential communities is an important factor for this project. It should include grocery and convenience stores within walking distance.

Another important factor to consider is proximity to the main public transportation in Tbilisi, such as the subway system. It is the only reliable option because extensive traffic disrupts any above ground public transportation. Furthermore, relative proximity to downtown would help residents in times when the metro is down due to economic or political events. The location must be affordable to the middle-class local population and should satisfy their needs and lifestyle.

Lastly, proximity to public green spaces would allow residents of all ages to have access to many activities without relying on transportation.

Ranking

| | Sites | | |
|------------------------------------|---------------|---------------|------------|
| | Avlabari West | Avlabari East | Mtatsminda |
| Availability for development | 5 | 5 | 5 |
| Existing Structures Quality | 5 | 4 | 4 |
| Community | 4 | 4 | 5 |
| Grocery in walking distance | 4 | 3 | 4 |
| Subway Metro Stop | 4 | 5 | 5 |
| Proximity to downtown | 4 | 4 | 5 |
| Affordability | 3 | 3 | 2 |
| Proximity to monumental structures | 2 | 2 | 5 |
| Proximity to public green space | 4 | 3 | 4 |
| Total | 35 | 33 | 39 |

Table 01

Opportunity Places



Figure 10 – Opportunity Places



Figure 11 – Avlabari East



Figure 12 – Avlabari East



Figure 13 – Avlabari West



Figure 14 – Avlabari West



Figure 15 – Avlabari West



Figure 16 – Mtatsminda



Figure 17 – Mtatsminda

Analysis

Important locations at the selected “Mtatsminda Site”



Figure 18 – Places diagram

Chapter 6: Development of Courtyard Typology

Evolution

Common courtyards stand out in developing countries as they host a variety of spaces, homes and plot configurations that correspond to different stages of migration of migrant workers from rural to urban settings. But more than the physical arrangement of spaces, courtyards provide a family-friendly community framework and are beneficial to city officials in their sustainable land use and planning practices.

The massive rural-to-urban migration of populations around the developing world beginning in the 1950s has made housing an important urban issue with social, physical and economy. The change has manifested in a remarkable trajectory of migration from rural areas to city centers to peri-urban areas. At each stage of this exodus, a distinct form of court played an important role, first in inner-city apartment complexes and then, more specifically, in rapidly sparsely populated settlements quickly spread to the suburbs. Although there are other types of homes in use, they lack the benefit of the court and represent a less desirable situation. For newcomers, young and somewhat naive, the configuration of the courtyard can provide privacy as well as safe, controlled, and shared space in an unfamiliar urban setting. The courtyard houses also provide an alternative to publicly exploitable rental opportunities downtown. Single room units in a non-clustered configuration can easily lead to exploitation. In addition, the courtyards provide a supportive environment and a place to share information about living and working opportunities in the city. Courtyards are more economical than other forms of housing that serve residents.

Residents of multiple apartments save money by using the same utility connection (water, sewer, electricity). Finally, room rentals provide a steady stream of cash flow for low-income landlords/tenants.

Designers in developing nations have seized the courtyard form and improved upon its benefits throughout the course of the last few decades. For all phases of the migrant trajectory, the courtyard has been implemented at various scales, and it has been expanded to solve planning issues. Planning professionals essentially imitate the courtyard form and add official engineering and planning standards on top of it.

The arrangement of rooms, and occasionally tiny dwellings, around an outside courtyard is a classic rural form found in many cultures. Although the land extends outside the complex, this formation helps people keep their pets safe from theft and the walls around the shared space give it a sense of boundaries and protection. These homes typically house large families.

In addition to the potential for more effective land use, the courtyard form's main benefit in the developing world is the supporting social backdrop it affords. The courtyard design is favorable yet vulnerable to abuse. It has the ability to create welcoming rental communities, but when tenants have limited negotiating power, especially when housing is scarce, the setting is conducive to consolidation and abuse of power. Additionally, the internal space's secrecy may make it difficult for city officials to monitor.

Chapter 7: Precedents

Moedani, Tbilisi, Georgia

"Moedan" is a multifunctional complex located on an area of 13 000 m², which combines residential apartments, a hotel, commercial and most importantly, 5100 m² of public space. "Moedani" includes 4 residential buildings, restaurants, bars, cafes and shops are arranged on the first floors. The apartment owners and their guests will be able to use the services of the 80-room hotel.



Figure 19 - Moedani, Tbilisi

Casa Mila, Barcelona, Spain

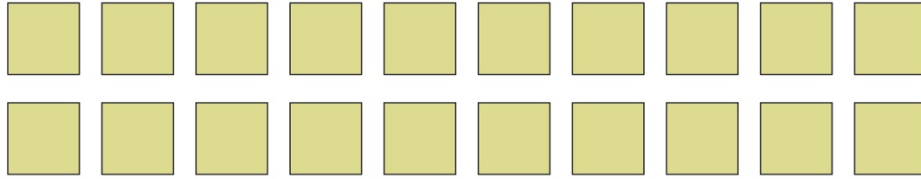
The stone quarry is a modernist building designed by Antoni Gaudi. It was built between 1906 and 1910.



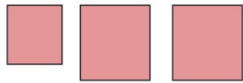
Figure 20 - Casa Mila

Reverse engineering

Residences - (64,050 sqft.)



Commercial - (8,890 sqft.)



Public- (4,412 sqft)



Casa Mila

Gross Square Footage: 97,026 sqft.
Net Square Footage: 72,940 sqft.

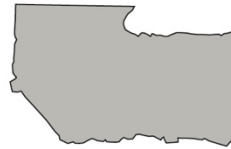


Figure 21 - Casa Mila

Chapter 8: Program

Program needs

Renting an apartment in Tbilisi is a very difficult issue. Demand on the rental apartments is large. On the one hand, urbanization, on the other hand, the desire of young people to live independently increases the demand for renting an apartment in Tbilisi. At the same time people are still actively investing money in real estate.

Research shows that one- and two-bedroom apartments are in high demand.

| QTY | Function | Area (m ²) | Total Area (m ²) |
|-----|-------------------------|------------------------|------------------------------|
| 1 | Entry | 20 | 20 |
| 4 | Support Spaces | 30 | 120 |
| 1 | Security | 30 | 30 |
| 30 | Studio | 37 | 1110 |
| 50 | One-bedroom apartment | 50 | 2500 |
| 40 | Two-bedroom apartment | 60 | 2400 |
| 10 | Three-bedroom apartment | 75 | 750 |
| 4 | Community room | 50 | 200 |
| 8 | Retail spaces | 80 | 640 |
| | Subtotal | | 7770 |
| 1 | Outdoor space | 10% | 777 |
| 100 | Parking | 12 | 1200 |

Table 02

Chapter 9: Design Solutions

The neighborhood

The buildings face the major street that connects to the main square. Entrances to the building and small streets connect to the main street.



Figure 22 – Site Plan

The street



Figure 23 – Street view



Figure 24 – East Elevation

The building



Figure 25 – Courtyard

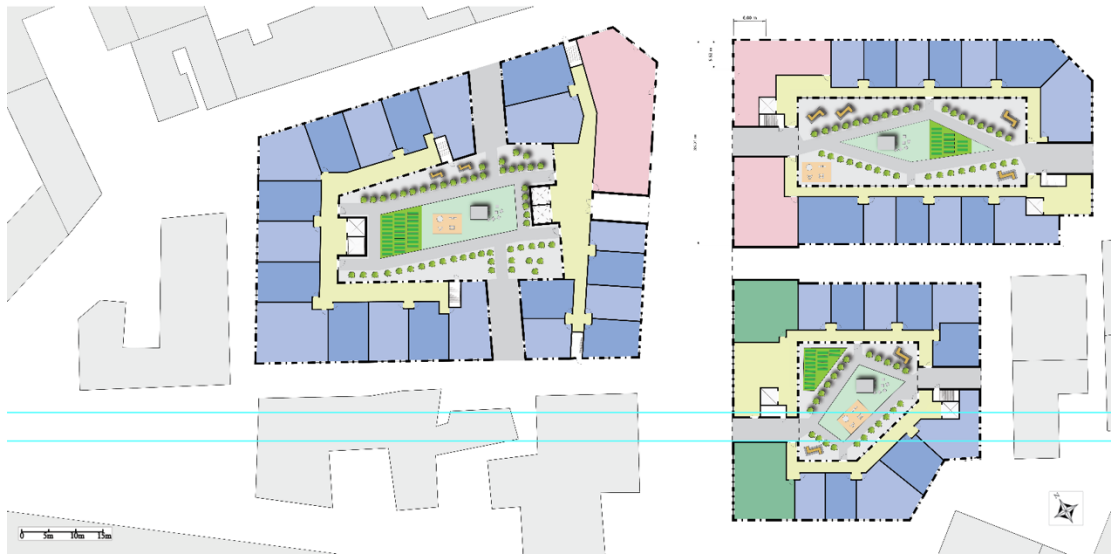


Figure 26 – Ground Floor

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