Mysteries In Architecture
[Old & New]

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Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

Master of Architecture
in Architecture

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keywords
Architecture  Tehran  Mysteries  Old  New  Concert Hall  Homa bird  Music
Architecture provides a vessel for people to once again appreciate their past, while simultaneously experiencing the present. We all linger on our pasts while we live in the moment and think about the future. Future is going to be our present, and later on will be caged in our past. Architectural ideas and beliefs, when they become real, can help people to gather and pull out their good moments in past while they celebrate their present together; which will be an ideal foundation for their future. Celebrations which will be create from marriage between old and new. An architecture which reminds people their past and causes them to appreciate their moment. It becomes most interesting when the time scales overlap. Those architectural ideals are successful which do not belong to a certain time, but on the other hand have a future perspective. This project will celebrate the merging of past, present and future.
To my mother Simin
father Ghasem
brother Alireza
for their support and love.

Special thanks to my professors
Paul Emmons Jaan Holt Marcia F Feuerstein
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Within these dark horizons, you are the only one who sings. In these nights which Flower is scared of leaf, and leaf is scared of wind and wind is scared of cloud, In these nights which every mirror is strange with image And every river hides its secrets and lyrics, It’s only you who is awake and sings like the sea.  

“Molana Rumi”
Art lives and travels through moments, and moments become centuries. Paintings, music, sculptures, literature and even meals have survived through centuries and reached to us as a priceless fortune. One of the elements which decrease the harshness of life is music.

In architecture, one can see the trace of music. It acts as a bridge that connects past civilizations to our present; the marriage between old and new.

The view of an ancient monument or a castle or even an ordinary building, indicates the conditions and traditions of that society. Traditions which have passed from one generation to next, and still people appreciate them and live them. The buildings which are designed, nowadays, surely will be a history for next generations and would be a good guide for them to know how their ancestors lived. All these information, by passing the bridge have helped us to build our civilization, and shortly it will do for the future.

The highest goal of this project is to open a window to the merging point of terminal passages; past, present and maybe future. Creating a contemporary architecture based on traditional roots.
PREFACE
Shoor  Abuata  Dashti  Bayat-e-Turk  Afshari  Segah  Chahargah

Homayoun  Bayat-e-Esfahan  Nava  Mahoor  Raast Panjgah
Robaab Tamboorak Binjoo DoTar Tamboore Saz-e-Ashighi Daf Baaghlamaa Tanboureb Tambirey-e-Nobaan Chorgir Setar Taar Gheychak Sorooz Sornaa Kamaancheh Mookash Taal Robabeh Ghichaagh Santoor Tombak
The reason for choosing concert hall as a thesis project in Tehran is because this city of almost ten million people has only one [Talaar-e-Roodai] concert hall, which has been designed for musical purposes. The rest [Talaar-e-Vahdat, Talar-e-Shahr, Milad Hall, ...] are theater halls which also concerts take place in them. Tehran needs more concert halls to fulfill musicians’ needs.
MYSTERIES
in Iranian Architecture
Masjed-e-Shah
*(Shah Mosque)*
Shah Mosque is in Isfahan, Iran standing in south side of Naghsh-i Jahan square. Built during the Safavid Dynasty period (1600), an excellent example of Iranian Islamic Architecture in Persia (Iran). The master architect has designed two passageways being different in length on both sides of the hall to assimilate the axis of the mosque to the direction of kiblah which has an angle of 45 degrees, to cover the change of direction without losing the proportions. After passing the hallway which turns 45 degree, one can not feel that angle change. The 3D geometric pattern in the hallway’s architecture hides the angle changes.

Pigeon Towers
Constructed from brick, gypsum and lime, most of the pigeon towers originated in the Safavid period of the 16th century, and many still punctuate the plains around Esfahan. The open dome at the top allows pigeons to enter easily, while the honeycomb like inner structure provides a home for each and everyone. The function is to collect pigeon droppings to be used as a softener in Esfahan’s leather tanneries, as well as fertilizer for the rich watermelon fields.

Menaar Jombaan-Isfahan
*(shaking Minarets)*
The Menaar Jombaan was built in 14th century. (Isfahan-Iran) Its special feature is that if either of the minarets is shaken, the other minaret will vibrate as well. Because of the ratio between the height and width of the minarets and the width of the eivan, if you climb into one minaret and shake it, the other will shake in unison.
Ameri house-Kashan
Ali Qhapu Music hall-Isfahan

On the sixth floor, the royal reception and banquets were held. The largest rooms are found on this floor. The stucco decoration of the banquet hall abounds in motif of various vessels and cups. this floor was popularly called (the music room) as it was here that various ensembles performed music and sang songs. The rooms were used for musicians, and these hollow places in the walls retained the echoes and produced the sounds of the singing and musical instruments clearly in all parts.

Imam[Shah] mosque- Isfahan

All the walls are ornamented with seven-color mosaic tile. The iwan of the mosque is 33 meters high and has two minarets being 48 meters high. In front of the mihrab there is a stone surface on the floor. If one stands on that spot and make a sound, the sound will echo back seven times. This is because of the complicated three dimensional geometric patterns along the interior surfaces.
Fin Garden, or Bagh-e Fin, located in Kashan, Iran, is a historical Persian garden. The settlements of the garden in its present form was built under the reign of Abbas I of Persia (1571-1629). The garden covers 2.3 hectares with a main yard surrounded by ramparts with four circular towers. Like many of the Persian gardens, the Fin Garden employs a great many water features.

Seeing water and listening to its sound arouses the sense of joy and life in viewers. It gives the architecture space a vivid spirit. The combination of buildings and water features have been always attracted architects.

A lovely lady has come to the lip of the stream. Let's not muddy the stream. Beauty is doubled. “Sohrab Sepehri”
Water comes from Qantas located in hillside behind the garden, and the water pressure is such that a large number of circulating pools and fountains can be constructed without the need for mechanical pumps. The garden was designed in the way that one cannot feel slopes anywhere. The mystery is that all these fountains work without any mechanical systems on a flat site without any sloops.
**Chehel sotoon-Shiraz**  
*(Forty columns)*

The name, “Forty Columns,” was inspired by the reflection of the twenty wooden columns supporting the entrance pavilion in the pond, which seems to be forty in the pond.

**Ali Ghapu Palace**  
There is a pool and a fountain in the balcony of Ali Ghapu’s top floor (6th) where the king used to watch polo games and horse-racing below in the Naqsh-i-Jahan square. Now days the fountain does not work, but still it is a mystery that how the water had been pumped up in to the 6th floor.
The windcatcher (Baad Gir), an early and very effective form of air conditioning, has in fact been around for about 500 years and was developed from the early Wind Towers first built about 2,000 years ago in Iran. So effective has been the windcatcher in Persian architecture that it has been routinely used as a refrigerating device (yakhchal) for ages. Many traditional water reservoirs (ab anbars) are built with windcatchers that are capable of storing water at near freezing temperatures for months in summer. High humidity environments destroy the evaporative cooling effect enjoyed in the dry conditions seen on the Iranian plateau. The temperature difference between the outside and the basement by going down just 10 steps can reach up to about 60°F.
SITE ANALYSIS
Tehran is the capital and largest city of Iran, and the administrative center of Tehran Province. Tehran is a sprawling city at the foot of the Alborz mountain range; the highest point in the Middle East (18,406 ft) with an immense network of highways unparalleled in Western Asia. Tehran is famous for its numerous ski resorts on the Alborz slopes, large museums, art centers, and palace complexes.

Tehran is the largest city in the Middle East and is the most populated city in South Western Asia with a population of 7,404,515 and approximately 15 million in Greater Tehran. Tehran county borders Shemiranat county to the north, Damavand county to the east, Eslamshahr, Pakdasht, and Ray counties to the south, and Karaj and Shahriar counties to the west.

In the 20th century, Tehran faced a large migration of people from all around Iran. Today, the city contains a mix of various ethnic and religious minorities, and is filled with many historic mosques, churches, synagogues and Zoroastrian fire temples.

In old days, Tehran was a suburb of Ray (one of the old cities in ancient Iran) about 3000 years B.C. This region has been among the most important centers of population and one of the main routes connecting the east to the west. Therefore, the city of Rey and its perimeter up to a radius of about 100 km has been the birthplace of one of the most important human civilizations which has been known as “Central Iranian Plateau Civilization” and dates back more than 8000-12000 years.

Existence of the renowned Silk Road through this city, presence of permanent rivers like Halileh Roud, Jajroud, and Karaj which reach the plateau of Rey as well as major alluvial regions created by the said rivers in addition to suitable climatic conditions have kept the region alive throughout the history and have helped the city survive through centuries close to its main origin, which is currently known as Tehran.

These days all that is left from the city of Ray are antiques in museums and a name of a neighborhood in south of Tehran. We can say that Tehran was a village near Ray city. Tehran by itself is one of the newest cities in Iran; it became the capital about three hundred years ago. Compared to other previous Iranian old capitols, it’s a young city.
Shahrak-e-Gharb is a planned town built as a massive project of modern apartment buildings and villas in the north-western part of Tehran. Originally built based on the model of upscale American suburbs, today it is considered one of Tehran’s neighborhoods. In Farsi, Shahrak-e-Gharb means: “the West Town”.

Shahrak-Gharb district is one of the large districts in Tehran which completely complies with international standards for new and modern cities, including easy access to expressways such as Chamran (Park-Way), Hemmat, Hakim, Niyayesh, Sheikh-Fazlollah and Yadegare-Emam. proximity to four major hospitals, as well three large and famous shopping centers (Milad-e Noor, Golestan, Iran Zamin) and numerous parks.

Shahrak-Gharb, thanks to the eastward current of the air in Tehran and its constant purification by the adjacent mountains, is less polluted compared to other northern parts of the city. These and many more advantages have made Shahrak-Gharb area a prime and pleasant location for living, attracting many foreign temporary residents, diplomats and expatriates.
Climate Analysis

Latitude: 35.41’N  
Longitude: 51.25’E  
Humidity: 40% [Tehran]  
        46%[Shemiran]

Wind: West 270 Degree  
Average wind speed: 18 ft. per sec.

Mountain range in the North [Mount Damavand 10406 ft.]  
Highest Temperature: 118 F  
Lowest Temperature: -4 F

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AVERAGE OF MAXIMUM TEMPERATURE IN C

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AVERAGE OF RELATIVE HUMIDITY IN PERCENT

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AVERAGE OF WIND SPEED IN KNOTS

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MONTHLY TOTAL OF PRECIPITATION IN MM

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Tehran is a city that have all four distinguished seasons. Because of Tehran's variety in terms of temperature, humidity, snowfall and rainfall, it is very important to consider sustainability into every aspect of the design decision.

Tehran's climate is largely defined by its geographic location, with the towering Alborz Mountains to its North and the central desert to the South. It can be generally described as mild in the spring, hot and dry in the summer, cool and rainy in autumn and cold in the winter. As a large city with a significant differences in elevation among various districts, the weather is often cooler in the hilly north as compared to the flat southern part of Tehran.
Stereographic Sunpath Diagram

Latitude: 35°N

Hour lines are shown in solar time.
Balance Point = 55 degrees

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View from the 16th floor of residential building [Khayym building]
From Paaknejad blvd. - Looking at Shahrak square + the site-

From Sheikhfazlolah blvd. - entrance to the shahrak square-

From Iranzamin Street - Looking at the site-

From the site toward Shahrak Square
Site Location: Iran-Zamin Street.
Shahrak-e-Gharb, Faze Yek
Tehran-Iran

Square Footage: 158,233 sf.

Value: $7,000 per m²
$700 per sf

Total Value: $110,763,100

Height limit: 20-30 ft

[Exceptions: sites which have been considered for high density]
programs

Concert hall
  - Homa Hall [1844 seats]
  - Konj Hall [391 seats]

tea house

musical restaurant [inside the head]

practice room [Classroom]

outdoor spaces + roof

public indoor singing [musical] spaces

underground parking
DESIGN PROCESS
unction - form
back and forth (between ideas and visible ideas on paper)

-heavy up/right

sketch → design

appearance of concrete with people, to be seen in crisis

hands hugging, people falling, "a" and "n" become "m"

orthographic
[1] Iran-Zamin school  
Height: 35 ft.

[2] Residential buildings  
Height: 200-260 ft.

[3] Pardisaan apartments  
Height: 40 ft.

[4] Single family house  
Height: 20-25 ft.

[5] Iran-Zamin Street


[7] Shahrak Square

Proposal street  
Connecting Iranzamin street to Sheikh-fazlolah street [to avoid traffic around the shahrak square]+access to the underground parking
FINAL DESIGN
LEVEL 3 [STAGE LEVEL] [scale: 1/64"]
1st BALCONY LEVEL [scale : 1/64"]
2nd BALCONY LEVEL [scale : 1/64"]
GROUND LEVEL [LOBBY LEVEL]
[1] konj Concert hall underground
[2] Tea house
[3] Lobby
[4] Back stage
[5] Outdoor
[6] Access to stage level [Homa Concert Hall]
[7] Entrance to Konj Concert Hall
STAGE LEVEL

PLANS [AXONOMETRIC]
ELEVATIONS

scale 1/32” [Elevation from Iranzamin street - N/E]
scale 1/32" [Elevation from shahrak square - S/W]
View from Iranzamin Street
Konj Concert Hall
Homa Concert Hall
REFERENCES


All images, drawings and collages are produced by the author.