ISLAMIC ARCHITECTURE

HISTORY, CULTURE, and ENVIRONMENTAL ADAPTATION
The Islamic world, with its vast geographical expansion and rich cultural history, has shaped a unique tangible and intangible heritage. This heritage has enriched human history with its scientific and artistic achievements, and contributed both within and outside of Islamic borders to the beginning of the modern time.
The field of Islamic architecture is a key example of this rich inheritance. As a manifestation of Islamic civilization, architecture is a physical expression of the unity of Islamic ideals that respects and presents both societal and regional boundaries.

This lecture introduces the history of Islamic cultures through their most materialistic signs: the ultimate Architecture that spanned for fourteen centuries and over three continents — Asia, Africa, and Europe. The lecture presents Islamic architecture both as a historical tradition and as a cultural means that influenced and was influenced by the civilizations with which it came in contact.

From the Islamic West on the shores of the Atlantic and the Mediterranean Sea to the Far East of Asia, architecture demonstrated the embodiment of Islamic values through the exploration of various forms and styles while stimulating the local and regional creative genius.
ISLAMIC ARCHITECTURE

Egypt from Alexander to the Islamic Conquest & Foundation of al-Fustat:

• Alexandria: the Ptolemaic capital of Egypt, was a great center of Greek learning throughout Antiquity. It was famous for its Pharos (Light-tower), Royal Library, and Museum which was considered as a major research institution.

• 332 B.C.: Alexander the Great of Macedonia conquered Egypt from the Persian and soon laid out the plans of Alexandria located on a natural harbor west of the Western branch of the Delta from which could be controlled the Mediterranean trade of the country.

• Amru ibn al-`As: The Muslim army general and who conquered Egypt in 640-41.

• Fustat: The first capital of Islamic Egypt established in 642 by Amru ibn al-As around Babylon, the old Roman fortress on the eastern bank of the Nile and guarded the head of the Delta which was built by the end of the 1st century.
Umayyad, Abbasid and Tulunid Architecture (Fustat & al-Qata’i)

Ibn Tulun moved the government to N.W of Fustat, created al-Qata’i, a new urban development inspired by Samarra near Baghdad.

The mosque of Ibn-Tulun: View of the mosque courtyard with 13th century fountain dome in the center & the mosque's famous spiraling minaret with same design concept of Samarra mosque in .

Minarets of Mosque of Ibn-Tulun and the Great Mosque of Samarra.
Fatimid Architecture

**Al Qahira (CAIRO):**

The new royal city of Egypt established north of **Fustat** by the Fatimids upon their conquest of the country in 969. It had a regular plan running parallel to the Nile, with a main north-south main road.
Fatimid Architecture

Monuments:

The Fatimid History of al-Azhar Mosque

970: Jawhar al-Siqilli, the commander of the Fatimid army, lays its foundation.
972: First Friday prayer held at mosque.
988: First organized teaching at al-Azhar, 35 scholars are housed and paid by the Fatimid state.

Characteristics of Fatimid mosques
- The use of projected portals and domes over mihrabs for ceremonial purposes.
- The use of keel-shaped arches in porticoes and arcades.
- The wealth of fine stucco decoration.
- The dependence on iconographic inscriptions, especially on the entrance facade.
Fatimid Architecture
Architectural terms:

Qubba: Literally "dome", but the word often signified the mausoleum of an amir or a pious man, which was usually, but not always, a cubical structure covered with a dome.

Mashhad: A complex term that means either a memorial for a shahid (witness of the greatness of God, but later exclusively meaning martyr) or a memorial for a true vision, which mostly involves the Prophet or members of his family.

General view of the Mashhad al-Juyyushi on top of the Muqattam before restoration.
**Muqarnas:** One of the most distinctive architectural elements, called usually the pendentives or honeycomb vaults. Muqarnas units appear in domes' transitional zones, in cornices and friezes, in conches above entrances, and on friezes supporting balconies of **minarets**. The origin and date of first appearance of muqarnas are not clear. It is used for decorative purposes and several symbolic meanings have been proposed for it.

**The Ayyubid Period (1171-1250)**

**The City and the Citadel**
- The Crusades: A series of campaigns launched by Christian Europe against the Islamic east, to liberate the Holy Land.
- Salah al-Din (Saladin): A general in the zangid army (Muslim Turkish dynasty of Syria and north Iraq). He was sent to Egypt & managed to destroy the Fatimid caliphate in 1176 and to restore Sunnism to the country. He later established a new dynasty, engaged in a war against the Crusaders, and encircled the two cities of **Fustat** and **al-Qahira** in one wall and built the Citadel of Cairo.
The Ayyubid Period:

Monuments:

The Citadel of Cairo: Built by Salah al-Din’s 1176-1183 as a royal residence and barracks for the troops and reorganized and enlarged several times in the 13th-14th century. It became the seat of the sultanate and remained the center of government well into the 19th century. To this day, it still dominates the Cairo skyline.

Dar al-`Adl: The palace of justice, an institutional building that appeared under the Ayyubids and was used by the sultans and their deputies to publicly judge petitions submitted by subjects.
Transforming the Religious Landscape of Cairo in the Ayyubid Period:

Concepts

The Sunnis: The word comes from sunna (those who stick to the standard Islamic practice of the Prophet). They are the majority of Muslims. They follow the four Tashree3 schools: the Shafi`i, Hanafi, Maliki, and Hanbali. The Fatimid predecessors were Shi`ite.

Shoura: A favourable principle followed, its practice reflected later on the design of residential units, madrasa and religious buildings.

Iwan: Usually a vaulted hall, open at one end. By the twelfth century, iwans became important organizational elements in plans of residences and religious structures alike to the point that the word acquired a new meaning as the name of an entire structure, usually a royal one.
Transforming the Religious Landscape of Cairo in the Ayyubid Period:

Madrasa: An institution of learning that appeared in Asia in the 10th century, and spread later all over the Islamic world. It was adopted to promote higher religious education. Madrasas usually follow an Iwan-based plan and they contain a mosque, classrooms, and lodgings for students and teachers.
Architecture of the Mamluks

The Mosque of Sultan al-Nasir Muhammad in Cairo (1318 & 1335). This hypostyle structure is distinguished by the arrangement of alternate courses of red and black stone in its arches and niches, and by its two unusual minarets.

Main facade of the Wikala of Sultan Qaytbay.

View of the Madrasa of Amir Khayerbak from the South on al-Darb al-Ahmar Street.
The Ottoman Architecture

Concepts

The Ottomans: A Turkish dynasty named after its founder. The Ottomans eight centuries in conquering Constantinople (renaming it Istanbul) and formed the largest Islamic empire of its time which comprised the Balkans, Greece, Anatolia, Syria, Iraq, Egypt, the Holy Cities of Arabia, Algeria and Tunisia. The empire was dissolved after the First World War.

The Church of Hagia Sofia (Ayasofia): (532-37) The building that most affected the Ottoman architects and patrons as an object of admiration and imitation. Its huge central dome on four elephant piers was a masterpiece of engineering that many Ottoman architects and patrons felt the need to surpass. The most famous Ottoman architect is Sinan.
Religious Architecture by the 20th Century

The Mosque of Muhammad `Ali, Cairo Citadel:

Begun in 1830 and not finished until after the death of Muhammad `Ali in 1848, it stands at the highest point of the Citadel and is visible from almost every location in Cairo. The mosque, which is a pure central-domed plan, has two slender pencil minarets that soar to a height of 82 meters (almost 27 fl height). The mosque is designed to emulate the early style of royal Ottoman mosques of Istanbul. The ablution fountain in the center of the courtyard and the clock tower of Napoleon III in the background are shown.
COMPETING NEO STYLES IN THE EARLY TWENTIEST CENTURY:

Bank Misr: A composition informed by several Mediterranean types, yet heavily "Islamicized" by different motifs from Andalusian (Moorish) to Mamluk, designed by the French architect Antoine Lasciac.

Muslim Youth Association Center: A deliberately "Islamicized" building done in 1935, which nonetheless shows some attempts at symmetry and simplicity, both considered modernizing aspects.
Islamic architecture and the environment:

**General:**

Islamic architecture and urban planning in old Islamic cities coped with the environmental constraints in various areas and different climates and turned them into constructive design tools.

The environmental strategies behind the design of the following selected examples ranging in scale from the region, to the city, the house, the garden, and the single architectural element explores the social, cultural, symbolic, and psychological dimensions of environmental design as developed over time to enrich the Islamic architecture attributes.
Islamic architecture and the environment:

Selected examples:

- Typical urban form of Islamic cities.
- Orientation and the cityscape: streets, openings, houses.
- The Courtyard House: Hasan Fathy's notion on Courtyard houses.
- Movable Architecture: tents.
- Mushrabiya, windcatchers, and other cooling techniques.
- Water Architecture: fountains, sabils, qanat, waterwheel, aqueducts, Hammams.
- Andalusian Examples: Madinat al-Zahra, Alhambra.
- Conceptual applications: Contemporary trials seen in modern examples.
The tent has been a dwelling-place for man since the dawn of history. Varying geographical features and differences in the culture of its dwellers may have altered its design, but its essential qualities are flexibility, and lightweight.

The Bedouin of the Arabian Desert in the early Islamic period used a black tent known as the *beit al-sha’r*, or 'house of hair'. These tents are woven from the hair of goats.

The tent cloth is woven loosely to allow heat dispersal. Although the black colour absorbs the heat, it is still between 10 and 15-degree cooler inside the tent than outside. The tent provides shade from the hot sun, as well as insulation on cold desert nights. During rainstorms, the yarn swells up, thus closing the holes in the weave and preventing leaks. The goat's hair is naturally oily, which has an added effect of repelling the water droplets, so the tent's occupants can remain comparatively dry.
Muslims developed a highly specialized and organized social structure through which they can demonstrate their faith.

**General features**

*Dense urban planning, narrow winding streets, large open courtyards and internal gardens*

**The Mosque**
- Considered the main element that defines a city ‘Islamic’. with a gathering space for Friday prayer.

**The Palace**
- Often situated at center of series of administrative and personal military buildings.
- Other public buildings are located along the main pathways.
ISLAMIC ARCHITECTURE

ENV ADAPTATION: The Courtyard House

• Static cooling system
• The courtyard serves as a reservoir of coolness
• Evening advances
• Suitable applications serving traditional architecture in countries in hot/arid regions
• Example from Egypt is shown to the right, designed by Arch. Hassan Fathy.
• Islamic courtyard houses as Suhaymi house in Cairo illustrate the pleasant atmosphere that can be created.
• The Takhtaboush was developed as a shaded outdoor sitting area at ground level opening on the courtyard and backyard through mushrabiyyah where air is circulated creating a cool draft.
Egyptian style Mashrabiya, projecting alone from part of the room and not reaching to the room floor, hence allowing for a Dakkah or sitting area in front of the window.

Borujerdi Ha House, in central Iran. Built in 1857, it is an excellent example of ancient Persian desert architecture. The two tall windcatchers cool the central zone of the house.

Windcatcher of "Dowlat-abad" in Yazd, is one of the tallest windcatchers/badgeers in Iran.
On a hill overlooking Granada, the Alhambra—a sprawling palace-citadel that comprised royal residential quarters, court complexes flanked by official chambers, a bath, and a mosque—was begun in the thirteenth century. Its most celebrated portions—a series of courtyards surrounded by rooms—present a special combination of the moorish columns and arcades, fountains, and light-reflecting water basins and fountains, found in courtyards—the Lion Court in particular. This combination is understood to be a physical realization of descriptions of Paradise in Islamic poetry. In addition, functional benefits are there; eg. the water is mixing with the air to increase humidity and coolness.
ISLAMIC ARCHITECTURE

ENVIRONMENTAL ADAPTATION

CONCEPTUAL APPLICATIONS: CONTEMPORARY TRIALS SEEN IN MODERN EXAMPLES.

L’institute de monde Arab
SUCCESSFUL???

| Architect | Jean Nouvel |
| Location  | Paris France | map |
| project   | L’institute de monde Arab |

ISLAMIC ARCHITECTURE

ENVIRONMENTAL ADAPTATION

CONCEPTUAL APPLICATIONS: CONTEMPORARY TRIALS SEEN IN MODERN EXAMPLES.

SUCCESSFUL???

Sherefudin's White Mosque, Visoko, Bosnia (1980). Designed by the architect Zlatko Ulgjen, it masterfully assimilates modern influences, especially Le Corbusier's Ronchamp Cathedral, and traditional Ottoman forms and elements. This mosque is firmly anchored in the present, but whose indebtedness to its past is well-articulated.

___ View of the Mosque's roof and minaret.
THE FUTURE OF ISLAMIC ARCHITECTURE:

Almost every architectural structure addresses, in a direct sense, cultural identity and philosophy within a physical context.

If we want to understand, appreciate, and evaluate the architectural quality of a building, we need to develop a sense of dimension, topography, climate, material, structure, and proportion, and of the surrounding physical environment -- both natural and human-made. This sense goes far beyond the building's ability to serve functional needs.

The Islamic world -- and the Middle East in particular -- is undergoing a transformation today unprecedented in its history. Oil wealth, along with social and political change, have threatened Islamic culture and traditions. Direct imitations of Western models that were designed for another culture are creating an alien environment in Islamic communities.

THIS IDENTITY CRISIS, READILY APPARENT IN THE ARCHITECTURAL DESIGN, LOST ITS RESPECT AND HARMONY WITH THE ENVIRONMENT, A VALUE THAT NEEDS TO BE REGAINED.......
Glossary of Terms

• Ablution Fountain: A feature frequently but not always encountered in mosques. It is usually put in the center of the mosque's courtyard for the worshipers to perform their ritual washing before prayer.

• The Iwan Mosque: Mosque in which the prayer hall is an iwan, or more, up to four iwans, surrounding a courtyard. It was the most popular type in the medieval period.

Khanqah: Institution for Sufis which usually contains a mosque, quarters for a number of Sufis, and a meeting hall where the hudur is performed. Its introduction into the urban environment in major cities marked the recognition of popular religious practices.

• Madrasa: The specialized institution of learning that was adopted to promote Sunni teaching. A madrasa usually contains a mosque, classrooms, and lodgings for students and teachers.
ISLAMIC ARCHITECTURE

Glossary of Terms:

• **Maqsura**: A private area in the prayer hall enclosed by a wood screen for the ruler and his entourage.

• **Mashhad**: A complex term that means either a memorial for a shahid or a memorial for a true vision, which mostly involves the Prophet or members of his family.

• **Mihrab**: A wall recess, mostly in the form of arched niche, in the qibla wall, indicating the position of the prayer-leader facing the direction toward **Mecca**.

• **Minaret**: A tall slender tower, circular or square in section, built next or in a mosque, from which the Muslims are called to prayer. Mosques may have one, two, three, four, and up to six minarets.

• **Minbar**: The pulpit, mostly made of wood, put in a mosque near its mihrab, upon which the prayer-leader stands when he gives the congregational prayer's sermon on Fridays and in holidays.
ISLAMIC ARCHITECTURE

Glossary of Terms

• **Khan:** Hospice, sometimes attached to a mosque for the free lodging of wandering dervishes and travelers.

• **Waqf:** Endowment deed. In the medieval period, amirs and rich citizens endowed charitable structures both for social reasons and as a means to preserve some of the wealth generated by their revenues.

• **Sabil-Kuttab:** A charitable structure composed of a sabil (drinking fountain) on the ground floor, and a kuttab (Qur'anic school for boys) on top, which was usually a room open on all sides.

• **Muqarnas:** Also called honeycomb, one of the most distinctive Islamic architectural elements used in domes transitional zones, in cornices and friezes, in conches above entrances.
Glossary of Terms

• **Qa‘a-Mosque Type**: Probably a development borrowed from residential architecture, this type has a *qa‘a* plan (the most common hall type in Egypt), which normally has two iwans facing each other on the main axis, with wall recesses on the two remaining sides, while the central space is covered with a wooden cupola.

• **Ribat**: Originally designated a building type that was both military and religious in character. It was a fortified barrack for those volunteers (murabitun) whose piety led them to devote themselves to guarding the frontiers of the Islamic state.