

**THE SENSIBLE AND INTELLIGIBLE
APPROACH TO COMMUNICATION AND SPATIAL
SENSIBILITY IN ISLAMIC ARCHITECTURE:
EXAMINATION OF DAMASCUS MADRASAS**

M.Sc. Thesis

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AND SPATIAL SENSIBILITY IN ISLAMIC ARCHITECTURE:
EXAMINATION OF DAMSCUS MADRASAS**

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This thesis titled “The Sensible And Intelligible Approach to Communication And Spatial Sensibility In Islamic Architecture: Examination of Damascus Madrasas” has been prepared and submitted by Areej ALCHALABI in partial fulfillment of the requirements in “Anadolu University Directive on Graduate Education and Examination” for the Degree of Master of Science (M.Sc.) in Architecture Department has been examined and approved on 31/05 /2019.

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ABSTRACT

THE SENSIBLE AND INTELLIGIBLE APPROACH TO COMMUNICATION AND SPATIAL SENSIBILITY IN ISLAMIC ARCHITECTURE: EXAMINATION OF DAMASCUS MADRASAS

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Anadolu University, Graduate School of Sciences, May 2019

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The issue of meaning is considered to be one of the extremely polarized issues in dealing with the field of Islamic architecture, especially the role of theology in its own construction. An approach seems to be shunned away from design considerations in contemporary Islamized architecture, this approach could be manifested through the relationship of Al Hissi-Al Aqli (The Sensible-Intelligible) and spatial sensibility in Islamic architecture. this relationship was put under the scope of perennial philosophy as the timeless language that embodies the abstract to comprehend the esoteric, it was totally ignored in the researches of orientalist and was opposed by the rationalist approach. This thesis discusses the problem of Hissi-Aqli by deeply examining the bond between the metaphysical presence of the divine (metaphors of distance-transcendence) and the spatial archetype in Islamic Madrasas during successive periods (11th to 13th century) in Damascus, where both the socio-cultural and theological aspects have witnessed significant changes in the religio-political exchange. the proposed methods associate spatial ordering analysis, perceptual processes “Space, Shape, Surface, Matter and color investigations to define the “Hissi” and (semiotics study) for tracing the relation to hidden theological attributes.

Keywords: Hissi-Aqli “Sensible-Intelligible”, Communication, Spatial Sensibility, Space Ordering, Semiotics.

ÖZET

İSLAM MİMARİSİNDEKİ MEKANSAL DUYARLILIK İLETİŞİMİ İÇİN HİSSEDİLEBİLİR VE ANLAŞILABİLİR BİR YAKLAŞIM ÖNERİSİ: ŞAM MEDRESELERİNİN İNCELENMESİ

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İslam Mimari'sinde 'anlam' meselesi son derece kutuplaşmış konulardan biri olarak kabul edilir, özellikle de bir anlam meselesi olarak teolojisinin kendi yapısındaki rolü. Görünen o ki Çağdaş İslam Mimarlığı'nda tasarım, düşüncelerden uzaklaştırılmış durumdadır. Bu araştırma İslam Mimarisi'nde Al Hissi-Al Aqli (Duyusal-Zihinsel) ve mekansal duyarlılık arasındaki ilişkiyi ortaya koymaktadır. Uzun süredir felsefede zamansız bir dil olarak nitelenen bu durum 'ezoterik' ile özetlenmiştir. Yapılan çalışma ile oryantalistlerin araştırmaları tamamen görmezden gelinerek rasyonalist bir yaklaşımla bu ilişki yeniden ortaya konulmuştur.

Bu tez, onbirinci ve onüçüncü yüzyılları arasında hem sosyo-kültürel hem de teolojik olarak (dini-politik) önemli değişimlere tanık olan Şam şehrinde bulunan İslami medrese yapılarını 'Hissi-Aqli' üzerinden; ilahi olanın metafiziksel varlığı (uzaklık- üstünlük metaforları) ile mekansal arketip arasındaki ilişkisini derinlikli olarak yeniden incelemiştir. Mekansal analiz yöntemiyle algısal süreç olan "Uzay, Şekil, Yüzey, Madde ve Renk ile 'Hissi' nin tanımlaması yapılmıştır. Ayrıca semiyotik çalışmalarla da Hissi'nin 'gizli' teolojik nitelikleriyle olan ilişkisi de ortaya konulmuştur.

Anahtar Kelimeler: Hissi-Aqli "Duyusal-Zihinsel", İletişim, Mekansal Duyarlılık, Mekan düzeni, Göstergebilim.

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This accomplishment would not have been possible without them. Thank you.

Areej Alchalabi

STATEMENT OF COMPLIANCE WITH ETHICAL PRINCIPLES AND RULES

I hereby truthfully declare that this thesis is an original work prepared by me; that I have behaved in accordance with the scientific ethical principles and rules throughout the stages of preparation, data collection, analysis, and presentation of my work; that I have cited the sources of all the data and information that could be obtained within the scope of this study, and included these sources in the references section; and that this study has been scanned for plagiarism with “scientific plagiarism detection program” used by Anadolu University, and that “it does not have any plagiarism” whatsoever. I also declare that, if a case contrary to my declaration is detected in my work at any time, I hereby express my consent to all the ethical and legal consequences that are involved.

Areej ALCHALABI

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AL HISSI	: The sensible in Islamic theology
AL AQLI	: The intelligible in Islamic theology
CHAILLOT	: Centre de hautes etudes de restauration des monuments historiques et conversation de sites archeologiques urbains et naturelles, Paris et Damas, France and SAR
Iwan	: The space opened to the courtyard
Madhab	: Islamic law rites, From Arabic, way of thinking or acting; doctrine, opinion, legal system.
Madrasa	: A college for Islamic instruction.
Mihrab	: Niche
Qubba	: The domed space containing the tomb
Qibla	: Direction towards mecca
RISD	: Rhode Island School of Design
GAM	: Great Amman Municipality

1. INTRODUCTION

Madrasas are considered to be one of the most important structures of Islamic architecture, being the educational institution that was constructed to teach Islamic law, religious and theological concepts, they were the places where most important debates in Islam took a place, the construction of Madrasa has witnessed significant changes whether in the functions it contained, its spatial ordering or in the used structural system. These changes are the result of several effects, adaptation from different cultures (the Orientalist perspective), political propaganda, structural abilities (rationalists' approach) or religio-cultural, theological and metaphysical reflections (perennials approach)

The old city of Damascus contains a noticeable number of Madrasas that were established under the sovereign of different successive dynasties in premodern Islam, although it is geographically bounded, it contains examples of most of the typologies of Madrasas around the world, However, this thesis will focus on the two Madrasas located in Bab Al Bareed street next to each other, the street that contained a big number of madrasas forming an integrated educational axis, the two Madrasas (Al Adiliyya) and (Al Zahiriyya) were established during two different time zones, the Ayyubid and the Mamluk dynasties, this study will examine the minor changes in their spatial sensibility and will explore their intelligible meaning.

1.1. Problem Statement

Meaning in Islamic architecture is considered to be one of the most polarized issues among researchers, this issue is responsible for the situation of the contemporary Islamic architecture, that in turn open the door for wide-range discussions about what contemporary architects consider Islamic architecture is, some of the contemporary huge structures standing in some of the Gulf countries in specific and in the Islamic countries in general, relying on rupturing visual symbols and historical forms from their wholeness and using them as sperate elements, even more as separate structures to represent their identity, reflects a misunderstanding of their meaning.

Meaning in its theological and metaphysical aspects in the field of Islamic architecture was totally ignored by Orientalists, then two approaches appeared, the first is the rationalist approach that eschewed away from the significance of ontological

Meaning and the diversity of religious schisms, instead its domain was focused on the unity of social and cultural concepts (Rabbat, 2012, p. 8)

The perennials, on the other hand, relying on symbolism as a methodology that emphasizes on the importance of symbols as a language that could articulate multiple levels of meanings. This approach was challenged by art historians and rationalists, relying on two reasons, first, the shortage of the textual resources that prove their perspective, second, the multivalent nature of symbols that differ according to the reader.

Therefore, a return to the premodern Islamic architecture becomes a necessity to examine the sensible elements of its structures seeking for their intelligible messages, hence meaning.

1.2. Aims And Objectives:

The first aim of this thesis is to Understand the concept of sensible-intelligible in philosophy in general and in Islamic philosophy in specific,

The second aim is to Emphasis on the importance of seeking for the intelligible meaning in the speculation and restoration of Islamic architectural structures, in addition to the importance of such approach in future designs.

That will be achieved through the following objectives:

- Explore the intelligible meaning of the sensible forms in Islamic architecture, in general, to investigate Madrasas' spatial ordering and elevations in specific.
- Assess the influence of major theological believes that were widely spread in Damascus in a specific period on its architecture in parallel with other attributes considered by art historians and rationalists.
- Emphasis on the importance of the semiotic tool in identifying the sensible-intelligible relationship.
- Develop a framework to assess the sensible-intelligible approach in architecture.

1.3. Research Methodology

The research methodology conducted in the investigation of the Hissi- Aqli relationship in Islamic architecture consists of the following:

- Firstly, investigate the Hissi elements, in which a descriptive and geometrical analysis is conducted
- Then the sets of sensory experiences and perception of the (SSSMC) space, shape, surface, material and color are documented.
- Define the signifiers and the sensible perceptions
- Collect the codes that legitimize the signs and prevent from fallacy in the process of their interpretation
- Conduct an integrated semiotic reading for the sensible elements.

1.4. Limitations:

Chosen Case studies include the two Madrasas in AL Bareed neighborhood in Damascus close to both, the Umayyad Mosque in the old city of Damascus in the south, Damascus Castle in the west, inside that neighborhood a set of six schools could be found, (Al Zahiiriyya, Al Adiliyya, Al Aziziyya, Al Jaqmaqiyya, Al Smisatiyya, Al Nuriyya) referring to different dynasties, Fatimid (being destroyed and replaced with Mamluk one) Zangid, Ayyubid and Mamluk. Which make Al Bareed neighborhood as an integrated educational complex, the chosen two madrasas are Al Zahirriyya madrasa and Al Adiliyya madrasa being the most controversial and the fact that they are next to each other and from two different dynasties (Mamluk and Ayuubid) the first was built in (1277), the second during the period from (1172-1223) basically during the (Ayyubid) dynasty, however, it extended to contain (Zinged, Ayyubid and Mamluk) dynasties attention was paid to the metaphysical expression and political attributes in their intelligible message.

2. BACKGROUND ON THE HISSI-AQLI: THE SENSIBLE-INTELLIGIBLE CONCEPT

2.1. The Sensible-The Intelligible Concept In Philosophy.

Hissi Aqli conception (the Sensible and the intelligible) has been discussed widely by ancient philosophers, they distinguished between the sensible object and the intelligible object (Adams, 1997, pp. 801–825.), the first is the receptivity and being perceptible by the senses, the word origin comes from the Latin word “Sensus”, depending on the knowledge gained by sensible experience, the second is based only on the intellectual knowledge gained by intelligence. However, the notions of “sensible-intelligible” contain lots of attributes that define what is the meaning of it, and how to distinguish them from each other.

2.1.1. Platonic distinction of sensible-intelligible.

According to (Smith, 2010, p. 12) Plato’s distinction of the two categories “the sensible, the intelligible” was motivated by Socrates’ analogy of “the divided line” based on the conception of provocative thoughts caused by sensory experiences. Where he asserts on the difference between the intelligible (the longer line referring to the degree of clarity) forms the “more real object” than the sensible “the less true”. Thus, the visible is the “image” of the “Original” thing “the intelligible”. For example, the mirror presents an “image” less real to the “original” the is real Socrates.

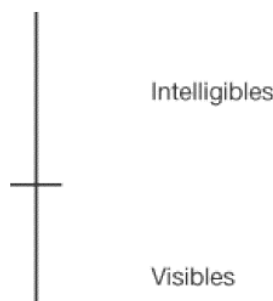


Figure 2.1. *Socrates divided line (Smith,2010)*

However, Plato specify furthermore, that the image of Socrates has a special relation to the “original”, they do not only represent the original, they also represent themselves as “images for something else” which is considered to be the “forms”. Plato also links between the visible and the intelligible by applying a “mental states”, which

Consists “imaging or illusion” to the lowest level of the sensible, “common sense” to the upper section of the sensible, “thinking” to the lower section of the intelligible, “Understanding” to the heighest section. To understand the “Forms”. According to him, the sensible is “the object as original” the intelligible is “the object as image”. Some interpretations of Plato’s work considers “object as images” an intermediate layer between the “objects as original” in the sensible and the “form” in the intelligible realm (Smith, 2010, p. 16).

Plato’s cave parable indicates that human only deals with the sensible shadows of the figures, “which represent the real, the intelligible forms that reside outside the restraining boundaries of the cave of physical existence.” (Akkach, 2005, p. 39)

This thesis will focus on the objects that could be thought as the originals of the sensible realm, at the same time when they will be employed by architects and percieved by users they will be seen as images of higher realities.

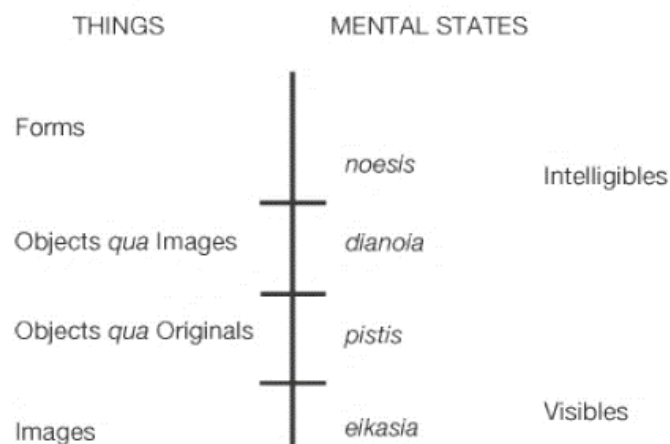


Figure 2.2 *Plato’s divided line of the sensible-intelligible*, (Smith, 2010)

Table 2-1. *The sensible-intelligible according to Greek philosophers Socrates and Plato*

Philosopher	The things in the sensible “the visible”	The things in the intelligible	Cause of Difference in the divided line
Socrates	Objects qua images	Objects qua original	Clarity, Truth
Plato	-Images -Objects qua original	-Objects qua images -forms	
Plato	The mental states of the sensible	The mental states of the intelligible	Mental independent
Plato	Eikasia “imaging or illusion” Pistis “common sense”	Dianoia “thinking” Noesis “understanding”	Knowledge preexists in mind

2.1.2. Aristotelian conception of the sensible-intelligible: abstraction

Aristotle distinguished between the sensible and the intelligible by referring to the “objects as images” as the result of “abstraction” which is described as the process of separating in thought something from something else, that comes to be abstracted from the concrete sensory-experience without keeping a distance from it, instead of “mind-independent” in the platonic case, the cube for instance, is separated from the physical box when considered by mathematicians. (Smith, 2010, p. 22)

The main difference between Platonic and Aristotelian conception is that Plato considers preexisted knowledge is the source of the intelligible, while Aristotle considers the understanding of the sensory experience relying on understanding the nature of the sensible things are the true way of gaining knowledge and constructing the intelligible.

Table 2-2 *The sensible-intelligible according to Greek philosophers Aristotle and Plato.*

Plato method of distinction	Aristotle method
Sensible objects are barriers in the way of the Intelligible knowledge	Abstraction of the sensible leads to the intelligible
Intelligible knowledge preexists in mind Mental dependent	Intelligible knowledge is acquired by the sensory experience, independent

2.1.3. Perennial philosophy and the sensible-intelligible: symbolism

The sensible- intelligible in the perennial philosophy is based on the Platonic-Aristotelian conception, it relies on the notion that material objects are able to manifest abstract aspects that are out of the reach of sensation and materiality, that confines the notion of symbolism. The Perennial philosopher distinguished between a sign and a symbol relating to their referent, the symbol resembles a verb that refers to ideas “immaterial objects” (Akkach, 2005, p. 39) while the sign is the figure which refers to things “material objects”, however, both of them are considered to be used to refer to something else, And one thing could be both a sign and a symbol at the same time, like the cross.

Perennial philosophy considers symbolism as the “language” spoken by the divine, to explain the existence and its relations, relying on ontological inquiries, to discover the hierarchy of being, in the pursuit of the esoteric language. using explanations of artifacts and architectural forms as being appropriate to act as symbols. following are the different kinds of symbols specified by the perennials proposed by (Akkach S. , 2005)

- Universal “natural symbols”: “from the innate nature, like geometrical or numerical symbols. Considered to be transcultural” (Akkach S. , 2005)
- Particular “conventional” symbols: relate to particular tradition. Contains a particular interpretation of the universal symbol, they are considered to be arbitrary and accidental. (Akkach S. , 2005, p. 40)

Symbolism is capable to reveal the “intelligible” nature as “the sacred”, relying on the sensory experience “the sensible” they add meanings to objects, and capable of being “multivalent” however they reveal unity and continuity between the different levels it reveals, it is discovered rather than intentionally constructed. Eliade indicates:

“A religious symbol conveys its message even if it is no longer consciously understood in every part. For a symbol speaks to the whole human being and not only to the intelligence.” (Eliade, 1959b; Akkach, 2005, p. 40)

Table 2-3. *The sensible-intelligible according to Perennials approach*

Perspective	The sensible	the intelligible
Nature	The material object	The immaterial object The sacred The esoteric
Effective Factors	Subject	Intellect
Knowledge gaining Method	Sensory experience	Abstraction Symbolism universal and particular

2.1.4. Descartes conception of the sensible-intelligible: the seen- the intellect.

Descartes in his “Fifth meditation” refers to the sensible and the intelligible as the “seen and the intellect”, referring to the seen-sun for instance as being small, yellow, hot, flat, while he refers to the “intellected-sun” as the colorless sphere that is much greater than the earth . in another example, Descartes used Aristotelian abstraction method when he abstracted motion and shape from the body “an extended thing” (Smith, 2010, p. 10) however, it cannot be conceived in complete if isolated from the original body. In many cases Descartes uses a mixture of Platonic and Aristotelian methods, when he was discussing the “true and immutable nature of the triangle” (Smith, 2010, p. 11) claiming that the nature of triangle can’t be existed outside of the thought, however it is not generated by it, which implies the Platonic “mental independence.”

Table 2-4. *The sensible-intelligible according to Descartes.*

Philosopher	The sensible	The intelligible/ method
Descartes	The seen-body	The intellect-mind
		Aristotelian abstraction method
		Platonic mental independence

2.1.5. Immanuel Kant conception of the sensible and intelligible form

According to (Bennett, 2017, p. 5) the sensible is the “ability to be on the receiving end” (Kant, I., & Meerbote, R., 1992), it is the effect that the objects impose on the mind

Of the conceiver, it is necessary to refer to the two factors that affect the sensible experience:

- Subjective characters of the perceiver, which is the ability to be affected by the sensitive elements. In which the precepted thing, in this case, becomes the representation of what it appears.
- Objective character, which is any knowledge that is not related to the status of the perceiver, and only concerned with the “Object”. In which the precepted thing becomes the representation of what it really is.

The sensible representations consist in Kant’s opinion of the following:

- Matter “sensations” which is the generated sensation, depending on the subjective conditions of the ability to be affected by the thing.
- Form “relations” which is the classification of the sensory content, constructing its relations and their qualities depending on the “sensea” that order things according to its own laws to a “structured whole” (Kant, I., & Meerbote, R., 1992)

It is highly important to mention that the sensible experience interrelates with the intellect in its domain, the sort of intellect that pays attention to the concepts themselves rather than their origin, which is described as “the logical use of the intellect” however, the result would still be considered as “sensible”, here we can distinguish between two kinds of sensible knowledge:

- Appearance “empirical” which is the raw unprocessed sensory result before the intervention of the intellectual logical use (Bennett, 2017, p. 9)
- Experience “phenomena” which is the resulted “reflexive” knowledge gained by applying the intellectual logical use, to organize relations between appearances to each other. (Bennett, 2017, p. 9)

The intelligible, on the other hand, is the higher level of intellect “the pure intellect” that concerns with the sources of the conceptions, which in philosophy contains “Metaphysics” which are resulted by processing the concepts that aren’t the primary concepts that preexists in mind, they are instead the acquired knowledge through experience, as Kant indicates:

“When your mind has the experience, that is because laws that are implanted in it operate on some sensory appearances; your mind attends to those operations, and from the laws at work in them, it abstracts the concepts that are involved in metaphysics. They include the concepts

of possibility, existence, necessity, substance, cause, etc., along with their opposites or correlates. These are never parts of any sensory representation, so there's no way they could be abstracted from any such representation". (Bennett, 2017, p. 10)

The form of the sensible in his opinion contains all the foundations for the relationships constructed by experience, it does not include any immaterial or unable to be perceived by the senses, while the form of the intelligible world consists of all the things that exist by themselves.

The principle of the form of the sensible contains the notion of time and space as following:

Kant asserts on the symbolic approach in human intellectual knowledge, whether universal "abstracted", or singular in the concrete "intuition".

And it contains the concepts of time and space:

- Pure mathematics deals with space as geometry
- G with time is the interest area of pure mechanics
- Arithmetic deals with Numbers.

Time according to Kant is a singular idea that is presupposed by the senses; however it does not come from them, in which we conceive things "situated in it rather than under it" (Kant, I., & Meerbote, R., 1992), it is presupposed to have existed before constructing any relation between the sensible experience. Accordingly, time is a continuous non accidental thing that is totally subjective constructed by pure intuition of The human mind, and the way the dealing with senses occurs by supposing it happening in a "simultaneous or temporally successive way" (Kant, I., & Meerbote, R., 1992)

Space according to Kant (Bennett, 2017, p. 12) is a singular concrete subjective, ideal representation, unable to be abstracted because it contains all the spaces within itself, a pure intuition, is not constructed out of sensations however it is the basic form of all sensations. It is all related to the concept of geometry, in which "space has three dimensions, we can draw only one straight line between two points, and we can draw a circle from a point and a line on a surface." (Kant, I., & Meerbote, R., 1992) geometry concentrates on the spatial relations "the systems of relations" based on the sensations and presupposed intuition.

The intelligible form contains the interlocking of substances that creates Harmony, which is the universal interaction among the substances.

2.2. AL Hissi-AL Aqli “The Sensible-The Ineligible” Concept in Islamic Theology.

Islamic theologians whose work was established and developed on the basis and tools used by the Greek philosophers maintained the Platonic distinction between the sensible and the intelligible as the “Al hissi-AL Aqli” (Akkach, 2005, p. 39) relying on the interpretation of Quran which referred to this duality in several verses. Similar to all religious perspectives physical and spiritual realities that define the world and have visible and invisible characteristics.

Table 2-5. *The sensible- intelligible according to Islamic theology*

	The sensible	The intelligible
Islamic theology	AL Hissi	Al Aqli

2.2.1. Al hissi al aqli in Qur’an: the seen and the unseen

Quran has implicated this duality in which several verses provide a description for the unseen world, upon which Muslim philosophers constructed their interpretations:

"هُوَ اللَّهُ الَّذِي لَا إِلَهَ إِلَّا هُوَ عَالِمُ الْغَيْبِ وَالشَّهَادَةِ هُوَ الرَّحْمَنُ الرَّحِيمُ" (Quran (22:59))

“He is God, the only Lord, who knows the “unseen and the seen”. He is the Beneficent and All-merciful One.” (Quran (22:59))

In this example God was described as the knowledgeable of the unseen “Alim Al-Ghaib” “the supreme knower of all unseen” and the seen or perceptible “Al Shahadah” in this context “Al Ghaib” and “Shahada” means the secreted and the manifested, future or past, exoteric and esoteric, exterior or interior. (Abd-Allah, 2002), which are “semantic pairs in classical Arabic. Izutsu (Izutsu, 1966) refers to such words as “correlation words,” each of which presupposes the other and derives its full significance from this integral correlation, even when used in isolation.” (Abd-Allah, 2002)

In other verses God is named according to the levels of his knowledge with the seen and the unseen, “Alhakim, Al Khabir” it means “the all-wise, having knowledge of all things especially hidden things” another name “Al Batin” means “the knowledgeable Of the hidden interior abstracted things” “Az-zaher” “ the ultimate knowledgeable of the exterior apparent knowledge” (Abd-Allah, 2002)

According to (Akkach S. , 2005) the unseen “intelligible” world is only known by God, yet these aspects could be discovered, and it is the duty of Muslims to believe in the

Existence of the intelligible and seek for intelligible unseen knowledge, and God reveals the methods for gaining such knowledge, when the Quran contains verses that describe the matter of the unseen by the realm of the seen. Accordingly, the seen is described as the “world of natural realities” that can be perceived by the sense perception, whereas the unseen is the “world of spiritual realities” that can only be perceived through imagination, which in turn is enforced by the principles of “analogy and metaphor” (Akkach, 2005, p. 57) analogy is the access of imagination to the linkage between the manifested and the abstracted, to comprehend the spiritual.

“That is from the news of the unseen which We reveal to you” (quran (3,44))

“Have you not considered how Allah presents an example, “making” a good word like a good tree, whose root is firmly fixed and its branches “high” in the sky?” (quran (14:24))

The method presented here is that God made the analogy of referring to the unknown characteristic of the good word by introducing the characteristics of the known of the good tree. This method is very similar in reasoning and tools to symbolism and signs, which has been mentioned in the following verse:

”بِكَ أَلَّهُ عَلَىٰ كُلِّ شَيْءٍ شَهِيدٌ ۚ فِي الْأَفَاقِ وَفِي أَنفُسِهِمْ حَتَّىٰ يَتَبَيَّنَ لَهُمْ أَنَّهُ الْحَقُّ ۗ أَوَلَمْ يَكْفِ بِرِسْوَتِهِمْ آيَاتِنَا فـ“

“We will show them Our signs in the horizons and within themselves until it becomes clear to them that it is the truth. But is it not sufficient concerning your Lord that He is, over all things, a Witness?” (Quran (41:53))

Table 2-6. *The sensible-intelligible according to Quran*

Perspective	Al Hissi	Al Aqli
Terms in the Quran	Seen “Al Shahada”	Unseen “Al ghayb”
Knowledge types	Exoteric “Zahir”	Esoteric “Batin”
Methods of gaining knowledge	Applying the senses	Abstraction
	“Tubsiroun”	Imagination “Yatasawar”
	Pure intuition	Sign “Aya”
	“Fi Anfousikom”	Analogy
		Metaphor

2.2.2. Al hissi al aqli according to Gnostics and brothers of purity “Ikhwan Al Safa” “measurements, dimensions” “form, matter” “practical, intellectual”

(Akkach S. , 2005) in his book cosmology and architecture explains the perspective of the Islamic philosophers Ikhwan Alsafa on the “hissi-aqli”, in the 8th century, they discussed in their “Rasa’il” The relationship between the sensible geometry and the intelligible geometry the “Al Handasa Alhissiyya, Al Handasa Al Aqliyya” (Akkach, 2005, p. 85) in the context of their “Quantitative” or “Qualitative” as the system of “measures -dimensions” “Maqadir-Ab’ad”, they also set a distinction between “the practical art” which is related to the sensible and the “intellectual art” related to intelligible. They indicate three types of measurements that are able to be conceived by sensible experience of sight and touch which are the lines, planes and bodies, and able to be conceived by the intellectual qualities of length, breadth and depth, the length Represents the intelligible presence of the line, while the breadth the intelligible presence of two dimensional plane and the depth the quality of the three dimensional body.

Table 2-7. *The sensible-intelligible according to Gnostics*

Ikwan Al Safa	Al Hissi	Al Aqli
Term by philosophy	Seen Form “Sura”	Unseen Matter “Hayula-Jawhar-essence”
Process effective factors	Subjective	Intellectual
Representation	Practical art	Intellectual art
Knowledge method and nature	Perception	Imagination Symbolism
Geometry	Al Handasa Al Hissiyya Quantitive Measures “Maqadir”	Al Handasa Al aqliyya Qualitative Dimensions “Ab’ad”
The act of making	Practical Human “Bashariyya” Natural “Tabi’iyya”	Intellectual Psychic “Nafsiyya” Divine “Ilahiyya”
Types of artifacts	Matter of artificial work “Hayula al sina’s” Matter of natural work “Hayula Al Tabia”	Universal matter “hayula al kull” Prime matter” Al Hayula Al Ula”

Ikhwan Al Safa, as (Akkach, 2005) mentioned followed a Platonic method of mental independence of the intelligible, when they referred to the relationship between animals “the seen” and spirits “the unseen” by applying imagination and symbolic tool as an analogy between the 2d painting to real 3d geometries in real world, they considered animals as “2d images” to the spirits “3d objects”. Accordingly applied the differences between “the form” “Sura” “the sensible” and the matter “Hay’ula/ Jawhar: essence” (Akkach, 2005, p. 92) “the intelligible” which are contained in every manifested work whether made by man or by nature, from every matter a diversity of forms could be produced.

2.2.3. Al hissi al aqli according to Sufism:

The sensible and the intelligible in Sufi tradition consists of the lower “inferior”, and the higher “superior”, being the first reflecting the second, the materialized one reflecting the immaterial one. According to Sufis every sensible existence has its mirrored spiritual one, Ibn Sian for example, (Avicenna) suggested that the sensible beauty cannot exist without an intelligible being reflecting it, (Murata, 2017)

Table 2-8. *The sensible-intelligible according to Sufi tradition*

Ibn Arabi	Al Hissi	Al Aqli
Term by philosophy	Superior Manifested	Inferior Spiritual
Process effective factors	Subjective	Intellectual
Representation	Materialized	Immaterial
Knowledge method and nature	Perception	Imagination Dreaming Analogical reasoning Symbolism
Geometry	Determined manifestation, Sensible movement	Undetermined, Unmanifested Intelligible movement

The methods of obtaining knowledge according to Sufism are both “symbolism and analogical reasoning” (Akkach S. , 2005) has mentioned, by applying imagination and

Dreaming, being the first voluntary and engage the following phases “sensible object, sensory experience, memory, imagination, symbolism, analogical reasoning, intelligible image, memory, senses” In order to explore both “form and order in the intelligible movement” through the sensible.

Therefore, a deep insight to the methods of obtaining Knowledge and exploring the Hissi-Aqli relationship is required.

3. AL HISSI AL AQLI SYNTHESIS TOOL: SEMIOTICS AS A COMMUNICATIVE TOOL: THE ONTOLOGY OF THE SIGN AND THE REFERENT

Synthesis as the procedure in which the separate parts being collected to construct a whole integrated idea, is the most convenient process to explore the Aqli intelligible messages from the hissi sensible elements by using semiotic reading which is the “science of signs” (Ramzy, 2013, p. 338) applicable to any medium as a theory to examine the phenomenon that carry the intelligible.

3.1. Semiotics And Semiology In The Interpretation Of Architecture:

Semiotics and semiology are different methods although they share the same origin, while semiotics refers to the study of natural, universal signs as part of their cohesive system, semiology only pays attention to the social aspects of the conventional sign (Wąsik, Z & Wrocławiu,W, 2014) semiotics has an investigational nature, while semiology is considered to be a discipline. Semiotics is meaning bearer and have Communicative properties. And semiology is considered to be a subdivision of the field of semiotics as a discipline.

The history of the field of Semiotics summed by (Wąsik, Z & Wrocławiu,W, 2014) includes significant characteristics: according to (Peirce, 1931–1938; Morris, 1972; Wąsik, Z & Wrocławiu,W, 2014), are the system of signification based on the communicative nature, while it consists according to (Lamb, 1991)of the cognitive and descriptive nature of the network of the relationships between human knowledge, the sign and the memory in meaning making process. (Pelc, 1982; Wąsik, Z & Wrocławiu,W, 2014) refers to the limitation of the field of semiotics depending on the fact that it is related to the human interpretation methods and communication process, However, according to (Barthes, 1984; Wąsik, Z & Wrocławiu,W, 2014) semiotics is dependent on the organizational structure of the objects to form interpersonal signification.

(De Saussure,1983) on the other hand, asserts on the “arbitrary conventional systems of signification used consciously and intentionally by human beings for the purpose of cognition and communication”.

(Eco, A Theory of Semiotics, 1979-1976) expanded the scope of the field of semiotics to include all different domains, like tactile, visual and olfactory communication, all kinds of languages, music and architecture. he considered the semiotic in its wide nature as a network. (Wąsik, Z & Wrocławiu, W, 2014)

3.2. Architecture As A Language

Every language is consciously or unconsciously constructed according to the conventional meaning it bears, in which every letter is a paradigm that may has a certain meaning, adding a set of letters in specific order results in a new syntagms which is the word or the sentences of words, that changes its meaning accordingly with the changes of the order of its paradigms, by changing its paradigms themselves or by changing the dialect of the receiver of the sender, this method is applicable to architectural space, that it is meant to affect the public users as receivers through the architect's conception as the sender, through a set of formal expressions, therefore architecture and language share the same nature, that according to Umberto Eco "buildings become signs because they do not stand for themselves, but for something outside themselves" (Eco, 1984; Ramzy, 2013)

Investigating the linguistical properties of architecture started decades ago, when architects questioned the nature of classical European architecture, and it is still one of the presented discussions nowadays.

Reading the language of the architectural building is both easy and difficult, it demands to read the architectural context in which architectural signification operates, it is hard because the conception of perception of the architectural concept changes by time, "the signifieds pass away, while the signifiers persist" (Barthes, 1994)

It is specifically hard in Islamic architecture to depict the sender of the message, cause most of the decisions are made by patrons rather than architects, except for the Ottoman example (Alami, 2011). which make it as a text written with a combination of different languages, (G.Claflen, 1992). However, reading the architectural context could be easy in the matter of reading its spatial ordering or material systems, while it is harder when relating to the symbolic intention, iconography and likewise (Ramzy, 2013)

According to (Alami, 2011) the three functions of language that do exists in architecture, are: "cognitive, conative and Phatic", the first refers to the denotative nature of the sign, as the in-out circle of the door, etc, while the conative aims to affect the senses of the conceiver, for instance the plans inside a palace unapparent as a secret, however,

The palace itself astonishes the visitors, which is manifested in language using its grammatical structure, while it is in architecture through the plans that cause specific emotions in the conceiver, the third refers to the aim of the sender (the designer or the patron) himself, this aspect of the linguistical characteristics of architecture is the most difficult to depict, cause it requires to gather the documentation that proves this point, the codes that prove the relevance of the signifier to its signified.

It is due to recognize between the two types of architectural contexts distinguished by (J.Taurens, 2008). The first is considering the building as the smallest unit for the semiotic reading, which means that elements of the building on their own do not reveal the whole message, the second considering the architectural context as the unit of the semiotic reading, in which the whole city could be considered a unit. (Ramzy, 2013)

3.3. Sign Structure In The Field Of Semiotics:

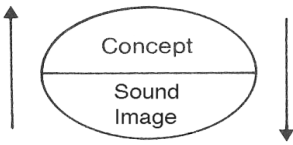
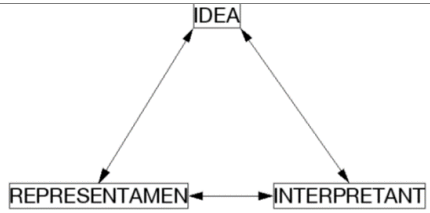
The main unit model of semiotic analysis is the sign; however, semioticians took different positions from the components of the sign, some presented the duality structure of the sign, others suggested triplicity structure, even more, some have introduced a fourth element in the sign configuration.

De Saussure as the father of semiotics in linguistics, proposed the duality of the sign, in which it could be separated into the signifier (sound-image) which has a bodily presence, and the signified (concept) that relates to conventional idea or a tradition of a society he considered both of them as mental trajectories linked by arbitrary relationship which is the language.

Pierce, on the other hand, suggested that the sign is formed by three elements: the representamen, the represented and the interpretant, he proposed the third element as the role of the human intellect as a mediator, following Aristotle methodology, by doing so the universal nature of sign is now related to the interpretant cultural background, the universal become conventional and semiotics become semiology. Pierce also proposed three modes of the sign: the icon, the index, and the symbol.

Umberto Eco asserts on the importance of connotative nature of the sign as a system of a communicational phenomenon in defining the culture of the society. He extended the field of signification system to include architecture as a medium for visual and sensual communication.

Table 3-1. *Structure of sign according to De Saussure and Pierce*

Semiotician	De Saussure	Pierce
Structure of sign		

3.4. The Quadrangle of semiotics: The Sensible-Intelligible Ontology Of The Sign And Referent In Islamic Architecture:

If the ontological relationship of the sign and its referent was considered in the semantic triangle proposed by (Ogden, Charles K(ay), Ivor A(rmstrong) Richards, 1949-1923) a fourth angle should be added to contain all the attributes, which are “the sign itself , the mental image of the sign, the mental image of the object of reference, and the object of reference itself” (Wąsik, Z & Wrocławiu,W, 2014) which is very similar to Kant Interpretation of the sensible and the intelligible nature of the symbol in pervious chapter, however sign according to pierce contains symbol in its terminology, the sign plays the role of stimulus, the mental image is constructed by the sensory experience, and has a function is to communicate the intelligible image of the intelligible object (Guiraud, 1974; Wąsik, Z & Wrocławiu,W, 2014).

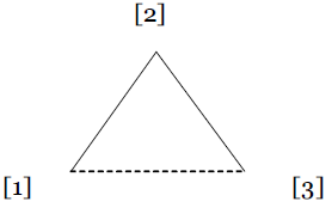
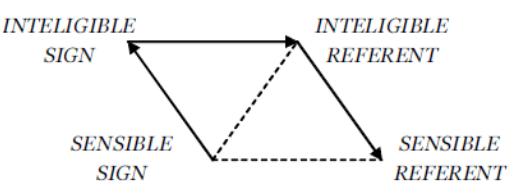
In the field of semiotics regarding the interpretation of Islamic architecture, researchers distinguished between two attributes of signs, they restricted the terminology of the sign to include only the sensible signifier, that refers to the sensible signified, while they considered the sensible signifier that refers to the intelligible signified as a symbol, for instance, in Quran the sensible signifier “Aya” holds the intelligible meaning which refers to the abilities and perfection of God, it is translated to English using the word “sign” however, researchers in the field considered it as a Symbol in this context, while they consider it as a sign when the sun and moon refer to light and darkness.

”وَمِنْ آيَاتِهِ اللَّيْلُ وَالنَّهَارُ وَالشَّمْسُ وَالْقَمَرُ“ (Quran (37:41))

“Among His signs are the night and the day, and the sun and the moon.” (Quran (37:41))

(Grabar, 1983) for example, considered the conventional Islamic form, the minaret is a sign when it refers to prayer times, and a symbol when it refers to Islam (Ramzy, 2013)

Table 3-2. *Structure of the sign according to Guiraud and Ogden and Richards*

Semiotician	Ogden and Richards	Guiraud
Structure of sign		
Photos (Wąsik, Z & Wrocławiu,W, 2014)		

3.5. Elements of Semiotics Analysis in Al Hissi AL Aqli process

Semiotics reading and signification system conducted in this research include the following elements:

AL Hissi: consists of the sensible signifier and the intelligible signifier, both the physical and the image, the sensible Signifier is the basic physical existent model, the intelligible signifier is the mental image of the sensible signifier.

The sensible in the quadrangle according to (Guiraud, 1974) combines the “sensorial substance with the mental image” (Wąsik, Z & Wrocławiu,W, 2014) that form the first half of the stimulation process caused by the sign

AL Aqli: consists of the intelligible signified and the sensible signified.

Intelligible signified is the mental image of the object of reference, sensible signified is the object of signified itself. The first stimulus caused by the sensible communicates the image of another stimulus (the Aqli with its image and object) (Guiraud, 1974)

Mode of sign: the three modes of sign suggested by Peirce are iconic, indexical or symbolic:

Iconic: when the signified resembles the signifier in form or has a mutual characteristic, the icon according to (Wąsik, Z & Wrocławiu,W, 2014) plays the role of semantic phenomenon that is “non-arbitrary” and “non-conventional stimulus”.

Indexical: when the signified resembles the effect or traces of the signifier, like the smoke indicates fire, (Ramzy, 2013) the index is the “non-associated stimulus” (Wąsik, Z & Wrocławiu,W, 2014)

Symbolic: when the signified proposes a statement of the signifier whether conventional, arbitrary or universal. However, it is intentional, inferred, associated and implicative non-semantic artificial phenomenon (Wąsik, Z & Wrocławiu,W, 2014)

The sign could be one of these, two or all of them combined. (Chandler, 2002)

Code: is the set of conventions that lead to a system of organizing the elements of the sign to bear meaning, they are the element that legitimizes the relationship between semiotic reading of the signifier and the signified. Code from the perspective of (Wąsik, Z & Wrocławiu, W, 2014) is the discourse of social and cultural studies that define the communicational attributions of individuals as a part of “group interaction” from the “observable” person of “subject” into “interpersonal and intersubjective” conventions in the process of creating and interpreting meaning “which are embodied in material bearers forming the verbal or non-verbal means and modes of human understanding.”

In Islamic architecture, the scripts of Quran and Hadith are considered the main codes on the first level of legitimization, Ibn Arabi, Ikhwan AL Safa interpretations of Quran and Hadith are considered to be the secondary codes used in the thesis.

Paradigms: are the smallest unit of sign structure, that independently bears meaning. The concept of paradigm was known and proposed by (Kuhn, 1962-197) as the framework for the investigation process in the “epistemology of semiotics” to detect “modeling problems and solutions”. By focusing on the reason for the existence or absence of one paradigm from the whole as a matter of differentiation of meaning. (Fiske, J & Hartley, J, 1978)

Syntagma is the set of paradigms that delivers second meaning different from the meaning of each paradigm. For example, the syntagms of the sentence delivers different meaning from the paradigms of its words, in this thesis most of the paradigms arrange to form syntagma.

Denotation: the type of relationship between a signifier and its signified that provides a “literal” or obvious signification. (Ramzy, 2013) when a sensible signifier signifies a sensible signified.

Connotation is the socio-cultural or the subjective interpretation of the signifier, (Chandler, 2002; Ramzy, 2013)

(Wąsik, Z & Wrocławiu, W, 2014) discussed (Mill, 1843) proposed a distinction between connotation and denotation, as the difference between the “intentions and extensions” of the sign, therefore meaning becomes related to the characteristics of the signified (Pelc, 1982), while in denotation the meaning holds the characteristic of the signifier. (Ogden, Charles K(ay), Ivor A(rmstrong) Richards, 1949-1923)

Metaphor: is the imaginative clarification that does not connect to the nature of the signifier, it reflects a statement rather than a detail.

Metonymy consists of the shared details between the signifier and the signified. For example, rats in a place are a metonymy for the uncleanness of that place, however, they are a metaphor for snitchers and despicable politicians or people.

Articulation: is the rule that composite paradigms in the signification system, it refers to the degree of complexity of such structure, signification system includes single articulation, double articulation or no articulation system, “ a semiotic code that possesses double articulations can be analyzed in two abstract structural levels” (Noth and santaella, 1999; Ramzy, 2013) in the first level are the smallest units of independent meaning, while in the second level include the whole dependant meaning

Order of the signification system is proposed by (Barthes, 1994) he suggests three levels of orders, signification from the first level of order are the simple structures that Basically depends on denotation in their signification, second order of signification related to connotation depending on conventional signs that interrelate with the network of cultural aspects, the third order of signification is the entire system of cultural beliefs or traditions.

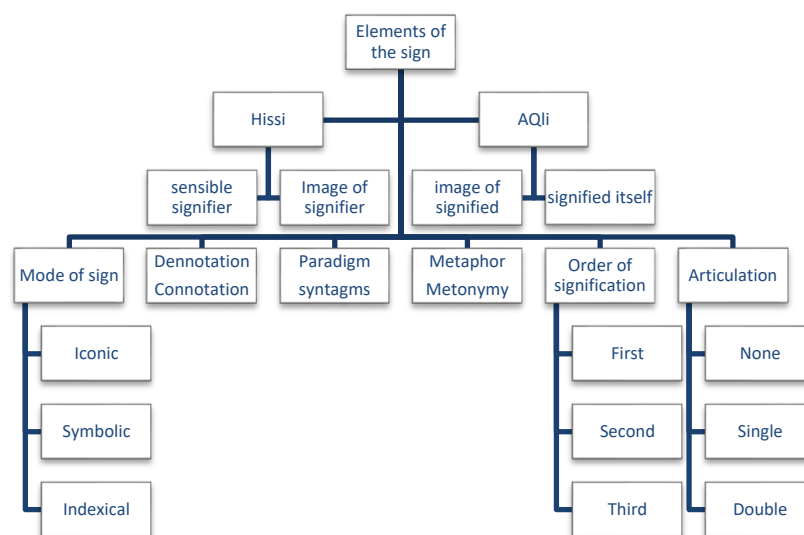


Figure 3.1 *Elements of the sign*

The theoretical background for the general concepts of sensible-intelligible and the methodology of exploring them using the tool of semiotics analysis have been established, therefore, a transition to examine their practical application and proposing a framework is necessary.

4. AL HISSI AND SPATIAL SENSIBILITY IN ISLAMIC ARCHITECTURE: THE SENSIBLE AND THE IMAGE OF SIGNIFIER

Madrasas in the Islamic world form a prototype of educational facilities in Islamic architecture, therefore, a profound examination for its establishment and development becomes a requirement.

4.1. Introduction To The Establishment Of Islamic Madrasa

The Islamic madrasa is an institution that was built to comply with the Muslim society's "Ummah" learning needs, especially that learning according to Islamic theology is a lifetime obligation on every Muslim, accordingly the Muslim institutions of education was "opened to all Muslims who sought it" (Makdisi, G., 1981; Arjmand, Mirsafa & Talebi, 2018) it was financially supported by an endowment system *Waqf*.

Mosques were no longer a proper place for holding debates that resulted in interrupting and disturbing the spirituality of prayers. In addition, the need for residence for permanent students, which at first resulted in the existence of Khans "inn" accompanying the mosques, later, the Madrasa establishment as an independent institution, which sometimes was accompanied with Khans. (the case of Madrasa Al Sulaymaniyya in following paragraphs)

The construction of madrasa was developed especially in Iraq, Iran and other parts of eastern Islamic world, which put the basis for a standardized Madrasa construction based on their model, to perform the function of a mosque and a social club for the "Ummah" (Arjmand, Mirsafa & Talebi, 2018). At the same time, it symbolizes the notion of "Ummah" in which it contains religious studies and secular activities in the wider religious frame (Mortada, H., 2003).

Madrasa AL Nizamiyya in Baghdad and Naisabur was built by Nizam Al Mulk the Seljuq governor in the Tenth century, were among the first documented integrated Madrasas "both Masjid and Khan", they were indicated to the teaching of "Shafii" *Madhab* and Islamic law, likewise other *Madhhabs* and Islamic theological thoughts and trends inspired the idea of having independent educational structures to enlarge the scope of their teachings, accordingly the system of the whole city was changing in accordance, Baghdad for the Sunni orthodox, Cairo for Ismailism, Qazvin in Iran as well. (Arjmand, Mirsafa & Talebi, 2018)

The formation of madrasa (Its taxonomy and styles have differed according to cultural aspects), was composed basically of the residential rooms, the courtyard, the *Iwans* as the teaching rooms (in most of the cases each one was inhabited by a *Madhab* teaching), the masjid and sometimes a library. They were considered as religious buildings because they focused mainly on Islamic theology teaching. However, its scope was extended to include all the aspects of science.

4.2. Examples Of Spatial Ordering Of Islamic Madrasas Around the Islamic world

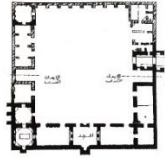
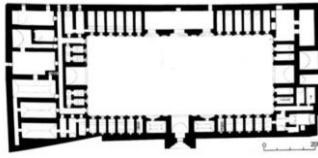
The construction of the madrasa, has witnessed several archetypes located in different geographical boundaries around the Islamic world, following are the taxonomy of spaces of most famous archetypes during premodern Islam.

4.2.1 Spatial ordering of madrasas in Iraq

Spatial ordering and taxonomy of Madrasas in Iraq show a centralized opened space (courtyard) other functions are distributed around it, the courtyard is attached to two small *Iwans* on east and west, the mosque on the southern side. The main construction material for the Iraq model is brick. (Madrasa AL Nuriyya in Damascus was the only example for Syrian Madrasas that were built with bricks, it reveals a possible influence from Iraqi construction methodology) (Rabbat, 1997-1998)

The Madrasa of Al Mustansiriyya was built under the sovereign of Abbasid Caliph Al-Mustansir Billah (1236) its significance comes from the usage of the madrasa for teaching the four theological *Madhabs* (rites) of orthodox Islamic law, its spatial taxonomy reveals a centralized opened space (courtyard) with two *Iwans* from east and west, a mosque on south, entrance from its northern side, the rooms of the students and teachers are distributed on two stories, the Madrasa is thought to have had a library, a hospital and a pharmacy. The Madrasa Al Arbain in Takrit was built in 1085, also had two *iwans*, and two mausoleums in the two southern corners of the Madrasa and a mosque.

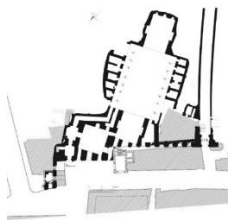
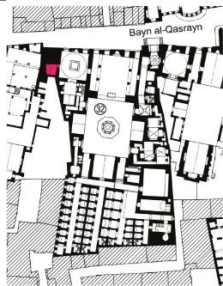
Table 4-1. *Madrasa Spatial ordering in Iraq during Abbasid dynasty*

Abbasid		
Name	Alarbain Madrasa in Tikrit 1085	Madrasa al-Mustansiriya in Baghdad 1236
Plans		
	Kamil Haydar book (Arabic)	Kamil Haydar book (Arabic)
Taxonomy	Open courtyard with two small iwans	Centralized open courtyard with two iwans

4.2.2 Spatial ordering of madrasas in Egypt

The Madrasas built in Mamluk era in Cairo have developed the cruciform shape formed by the courtyard with its perpendicular opposite four *Iwans*, the usage of the dome started firstly during Mamluk dynasty. Al madrasa Al Zahiriyya in Cairo (1263), and AL Madrasa Al Nasiriyya are good examples for such taxonomy, Jakandar Madrasa (1263) and Qatbay Madrasa (1475) are considered the firsts schools to have Domes in it. The Madrasa of Sultan Hasan is the most significant Madrasa complex in Cairo, it also supports the example of cruciform shape, it has libraries offices, rooms and *sabil* (drinking fountain).

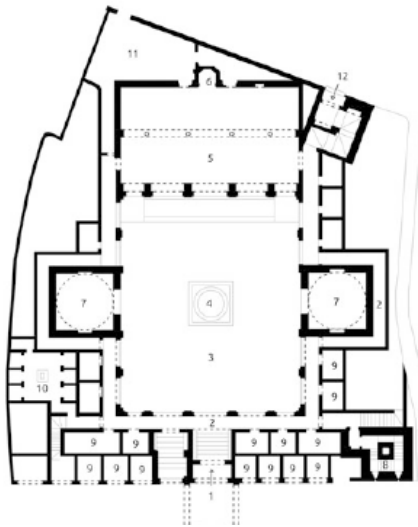
Table 4-2 *Spatial ordering of madrasas in Egypt*

Ayyubid		Mamluk
Name	Alsalihiyya Madrasa 1243	Sultan Hasan Madrasa 1363
Plans		
	http://islamicart.museumwnf.org	(Behrens-Abouseif, 2018)
Taxonomy	Centralized opened courtyard with two iwans	Cruciform with four iwans

4.2.3 Spatial ordering of madrasas in Morocco

The importance of the building of Madrasas despite the late beginning of such “fashion” (Hillenbrand.R, 1994) in Morocco, is that they transferred and influenced the Madrasa building in Andalusia and western part of the Islamic world, Spatial taxonomy of the Bu. Inaniyyah Madrasah in Marinid dynasty shows a developing *Iwan* concept that in this case was topped by a dome, the mosque is not interrupted by any inside columns, The entrance leads directly to a domed space before proceeding to the courtyard (that inspired the Andalusian schools construction), big lecture halls are distributed around the domed entrance, students rooms are distributed around the courtyard in two levels.

Table 4-3 Moroccan modality of Islamic architecture: Marinid Dynasty.

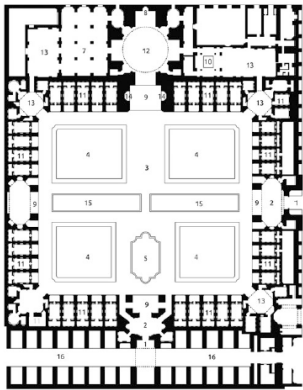
Dynasty	Marinid 1350- 1355
Name	Plan
Bu.Inaniyyah Madrasah	
	(Arjmand, Mirsafa & Talebi, 2018)
Taxonomy	Centralized open space with two domed rooms (<i>Iwans</i>)

4.2.4 Persian modality: Islamic madrasas of Chahar Bagh in Isfahan

The construction of Madrasa reached its peak in Persia especially during the fifteenth century, Madrasas taxonomy dependent on the four perpendicular *Iwans* shows an extraordinary centrality and axuality, the attention payed to the scale and the facades,

Stucco covering most parts of the madrasa which is made of bricks, in addition to its richness with tilework, a domed prayer chamber, raised portal and two circular minarets on both sides of the entrance façade. A caravansary usually accompanies the Madrasa in order to finance the running costs of the madrasa (endowment *waqf*) Each element of the Persian Islamic Madrasas has its own system of taxonomy and symbolization.

Table 4-4 *Persian Modality of Islamic architecture: Safavid.*

	Safavid
Name	Chahar Bagh Madrasa in Isfahan 1706
Plans	
	(Arjmand, Mirsafa & Talebi, 2018)
Taxonomy	Centralized open courtyard with cluster order and four iwans

4.2.5 Madrasas in Anatolia modality

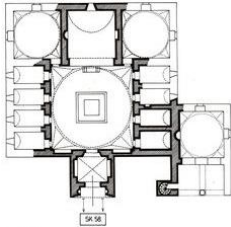
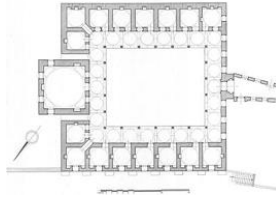
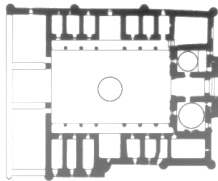
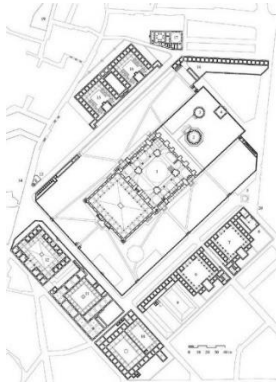
In Seljuk Anatolia the Persian influence appears significantly whether in its planning, tilework, brickwork, etc. the term Madrasa in that period referred to the institution that holds a lot of functions, a mosque, a medical school, a mental hospital, an observatory, a mausoleum (Hillenbrand.R, 1994; Arjmand, Mirsafa & Talebi, 2018)

Madrasas in Seljuk Anatolia has two types of spatial taxonomy:

- The centralized closed domed space taxonomy (affected by the madrasas of Konya which was affected by the Seljuk madrasas in Syria according to (koroglu, 1999)), Ince Minare Madrasa in Konya is an example which has a centralized domed courtyard, the dome is supported by pendentives to the cube underneath.
- The centralized opened courtyard with its symmetrical rectangular shape, like Alzanjiriyya madrasa in Diyarbakir (1198) and Al Masoudiyya (1193) that was

The first school to join the teaching of four Madhab (rites) (Encyclopedia of Islam – vol 5) in four *Iwans*.

Table 4-5 *Anatolian Modality of Islamic architecture: Seljuk, Ottoman*

	Seljuq	Ottoman
Name	Ince Minare Madrasa in Konya 1260-65	Uskudar Madrasa in Istanbul 1546
Plans		
	http://muslimheritage.com	Archnet.org
Name	Gok Madrasa in Sivas 1271	Sulemaniya complex Istanbul 1550
Taxonomy	Centralized closed (dome)	Linear order Centralized open (courtyard) with no iwans
Plans		
	Archnet.org	Archnet.org
Taxonomy	Centralized open (courtyard) with two <i>Iwans</i>	Complex, centralized by the mosque

Features of Seljuk Anatolian Madrasa could be summarized as the following:
Small sized, symmetrically organized, courtyard surrounded by alleys (portico). Most of the domed madrasas have a square plan, while open courtyard madrasas have a

Rectangular plan. The entrance is located at the same axis of the southern qibla *Iwan*, which it functions as the mosque, sided by two domed spaces.

Structures in Ottoman Anatolia was featured by its scale and symmetry, we can notice two types of Madrasas according to the influence:

- The Seljuk influence that continued until the fall of Constantinople with the following features: mostly consists of a single floor, the portico surrounding the courtyard, axially following the long side of the plan, *Iwan* transferred into a closed domed space.
- The Byzantine influence, after the fall of Constantinople, the appearance of huge educational complexes, mostly arranged around the central mosque, like Suleymaniya complex in Istanbul that was arranged as an integrated unit of a mosque a madrasa a *Maristan* (hospital), a *khan* (caravansary), a bath and a restaurant.

Fatih complex (1470) is another example, which was the first ottoman school like a university.

Following features for the spatial taxonomy of Ottoman Madrasa: spaces are arranged around the central dome as the starting point of the whole spatial taxonomy. Portico usage in front of domed prayer halls, the extensive usage of domes and minarets, increased number of rooms that are located on three sides, no iwans are noticed in the plans.

4.2.6 Madrasas in Syria spatial ordering

The first Madrasa in Syria goes back to the Seljuk dynasty in Bosra city is the Gumushtigin Madrasa (1136) (Hillenbrand.R, 1994) (It was preceded by “Dar Al Hadith” madrasas but they had the typology of a mosque). It is the first example of a domed courtyard in the Islamic world, as we mentioned previously it influenced the Anatolian Seljuk typology, the scale of this madrasa and most of the Syrian Seljuk madrasas is very small, they can barely fit a dozen of students, this madrasa has a square plan of 17*20m specialized in teaching the *Hanafi Madhab*, the two doors of the madrasa lead to a small space to the alley with three arched columns, to the small courtyard sided by two *Iwans*, finally to the prayer hall and the *Mihrab*.

Damascus city has witnessed the establishment of different madrasas indicated to the teaching of the four *Madhabs* (Shaffi, Hanafi, Maliki, Hanbali) and the two sectarian Schemes (Sunni, Shii Ismailism) that flourished accordingly with the formal sectarian trends in following dynasties (Fatimid, Zinged, Ayyubids, Mamluk, Ottoman).

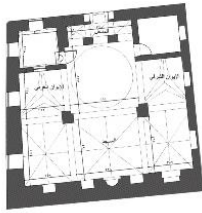
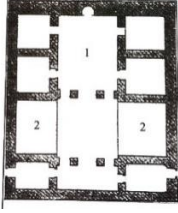
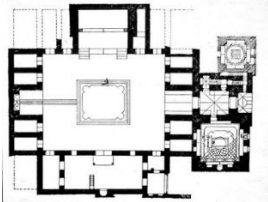
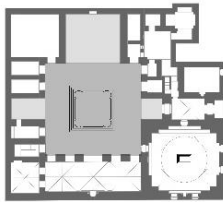
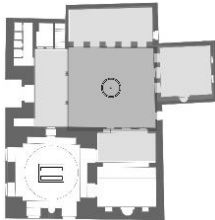
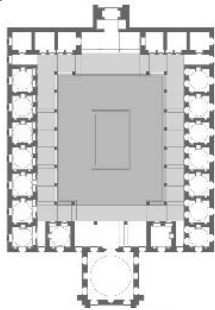
The Zinged madrasas, like the Nuriyya Madrasa, was established by Nur Aldin Alzingi (1172), with its famous muqarnas dome, distinguishing its mausoleum in it, has a centralized open courtyard, the entrance on its eastern side, two *Iwans* from east and west, a prayer hall on its southern side, with two stories of students' residential rooms on each side.

The madrasas were built in Ayyubid dynasty, have a rectangular shape, oriented exactly towards the *Mihrab* of *Qibla* on its southern wall within the rectangular prayer hall, attached to the open courtyard, the madrasa contains a mausoleum, two *Iwans*, the roof is a flat roof in Damascus, while it has a vault in some instances or a dome-like in Aleppo city.

The madrasas built in Mamluk dynasty are considered to be developed examples based on the Ayyubid spatial taxonomy, they have a centralized open courtyard with two, three or four *Iwans*, the mausoleum with its dome *Qubba*, a special attention was paid to facades and the system of *Ablaq* (alternating stones of black and yellow) that was widely spread, richness in usage of calligraphy, muqarnas decorations and inscriptions in its facades.

Madrasas of Ottoman Damascus are organized inside integrated complexes, with the mosque, the caravansary and other functions, they have a centralized open courtyard Surrounded by domed porticos, residential rooms were spread around the courtyard, absence of *Iwans*, a mosque on its southern side with the big dome and minarets.

Table 4-6. *Syrian Modality of Islamic architecture: Seljuk, Fatimid, Zengid, Ayyubid, Mamluk, Ottoman*

Dynasty	Fatimid	Seljuk
Plans		
Name	Al Rashaiyya madrasa (Dar al Hadith) (1089)	The Gumushtigin Madrasa 1136
Spatial ordering type	Centralized closed order (dome) with two iwans no mausoleum	Centralized open (courtyard) with two iwans no mausoleum
Dynasty	Zangid	Ayyubid
Plans		
Name	Alnuriyya Alkubra madrasa	Al Adiliyya Madrasa
Spatial ordering type	Centralized open (courtyard) with two iwans, two mausoleums	Centralized open (courtyard) with a mausoleum and two iwans
Dynasty	Mamluk	Ottoman
Plans		
Name	Al Zahiriyya Madrasa	Al sulaymaniyya Al barraniyya Madrasa
Spatial ordering type	Cruciform shape with mausoleum	Linear order Centralized open (courtyard) with no iwans, no mausoleum

4.3 Al Hissi: Case Study For Two Madrasas Of Bab AL Bareed Street In Old Damascus

Firstly, a brief historical background for the political changes that occurred in Damascus and neighboring geographical areas should be clarified, accordingly the formal religious, philosophical and cultural attributes could be defined.

4.3.1 Socio-political background

Following are the dynasties that ruled the area of the case studies and had their influences on the architype of both madrasas.

4.3.1.1 *Fatimid dynasty:*

In the 10th century, the Fatimids controlled North Africa, Syria, and south and west Arabia, they established their own caliphate, as did the Spanish Umayyads in Cordoba. The formal religion during Fatimid dynasty was Ismailism, that covered a large area of North Africa, from the Red Sea in the east to the Atlantic Ocean in the west. The dynasty ruled across the Mediterranean coast of Africa and made Cairo the capital of the caliphate, the sovereign of Fatimid dynasty was ended by Saladin Al Ayyubi who was a minister in the Fatimid Caliphate and then declared the establishment of Ayyubid Dynasty in Egypt and in Syria.

4.3.1.2 *Seljuq dynasty:*

The Seljuqs were a Turkish princely family who came to rule over wide territories in Central Asia and the Near East from the early eleventh to the late thirteenth centuries. The Seljuqs were even powerful enough to establish multiple dynasties: The Great Seljuqs of Iraq, Persia, Syria, and Kannan, and the Rum Seljuqs of Anatolia. The Seljuqs established both the “Seljuk Empire and Sultanate of Rum”, which at their heights stretched from Anatolia through Iran and were targets of the First Crusade. The Seljuq in Syria established the first Madrasa in Bosra that became a prototype for the domes and centralized open courtyard in later madrasas.

4.3.1.3 Zinged dynasty:

In this time period, the early 11th to the mid thirteenth, the Ayyubid and Zinged dynasties in Syria, and the Almoravid and Almohad dynasties in Spain and the Maghrib, were developing significant regional power bases. “Zinged dynasty were a Muslim dynasty of Oghuz Turk origin, which ruled parts of the Levant and Upper Mesopotamia on behalf of the Seljuk Empire”. Their patron Nur Al Din Al Zingi established the Nuriyya madrasa in Al Bareed street close to the case studies, he also ordered to start building Al Adiliyya madrasa, However, he died during the first phases of its construction. Therefore, both its construction and endowment were temporarily stopped until later phases during the Ayyubid dynasty.

4.3.1.4 The Ayyubids:

Founded by Saladin Al Ayyubi, when his father appointed Ayyubid governors in Damascus and Aleppo under the Seljuq rule, and later Saladin defeated the Fatimid in Egypt, it was centered in Egypt, the dynasty ruled much of the Middle East during the 12th and 13th centuries, Cairo, Aleppo and Damascus have witnessed great architectural movements. The Castle of Damascus, several mausoleums and madrasas where established, its sovereign AL Malik AL Adil ordered to restart the construction of Al Madrasa Al Adiliyya. The formal religion during the Ayyubid dynasty was Sunni Islam.

4.3.1.5 the Mamluks:

Mamluks established their empire across Egypt, Syria and Hejaz. It lasted from the downfall of the Ayyubid Dynasty until the Ottoman taking over Egypt in 1517. Although they appeared from the ninth century during the Abbasid caliphate and continued after the Ottoman takeover until the 19th century.

The Mamluks means the “Owned” and they are originally Kipchak Turks slave soldiers that contributed to the wars against crusades and Mongols in Syria and Egypt.

They were divided into two parts: the Bahri Mamluk from 1250 to 1381, the Burji Mamluk from 1382 to 1517, which were named by the Ayyubid sultan according to the places they worked at, Bahri means watery area, according to the river Island in Cairo where they were appointed, Burji means the towers area. Both phases contributed to the establishment of architectural monuments and madrasas in both Syria and Egypt.

Table 4-7 *Main trends of theological and philosophical teachings in Damascus.*

Period	Main trends of theological and philosophical teachings
FATIMID (909-1171)	Aristotelian and Neoplatonic Peripatetic school
SELJUK (1038-1194) ZINGED (1127- 1250)	The Nizamiyya school Ash 'arism school Sufisim Ishraqwi (Illuminationist) school
AYYUBID Cairo (1174–1250)	Shafi'i, Hanafi, Hanbali, and Maliki schools. Sufisim
Aleppo (1250–1260)	Kalam Twelver Shias, Druzes, and Alawites.
MAMLUK (1250–1517)	Turuq (sufi brotherhoods) Similar to Saljuqs and zangids

Table 4-8 *Significant philosophers and philosophy schools*

period	Significant philosophers and philosophy schools
FATIMID (909-1171)	Brothers of Purity Ikhwan Al Safa Dar Al Ilm madrasa Kalam, Falsafa, ALkindi, Ibn Sina Avicennism, Ibn-Rushd, Alfarabi
SELJUK (1038-1194) ZINGED (1127- 1250)	Nizam al Mulk Umar Khayyam, Al Ghazali, Muhyi al-Din Ibn AlArabi
AYYUBID Cairo (1174–1250) Aleppo (1250–1260)	Similar to Seljuqs and Zingeds
MAMLUK (1250–1517)	Similar to Seljuqs and zingeds, IBn Alnafis, Ibn Khaldun,

4.3.2 Case study of two madraasas: Al Zahiriyya and Al Adiliyya spatial sensibility, communication and mysticism in Mamluk and Ayyubid dynasties

Data collection method depends mostly on the copied archives and books found in both (RISD) Rhode Island School of Design, USA, Special Collections Library, where some copies of the work of Ernst Hertzfield and K.A.C. Creswell were found

The second source is (CHAILLOT) Centre De Hautes Etudes De Restauration Des Monuments Historiques Et Conversation De Sites Archeologiques Urbains Et Naturelles,

Paris et Damas. From the restoration reports of Prof. Mouafak Doughman of Al Zahiriyya Madrasa.

4.3.2.1 Location

Madrasa Al Adiliyya and Alzahiriyya are both located in the Old City of Damascus Syria, next to each other, the two Madrasas are located in (Al-Malik AL-Zahir alley) a street inside an area between the Umayyad mosque “to the southeast of Madrasa” and Citadel of Damascus (to the western side of the Madrasa), the two Madrasas are close to the other three madrasas (Al-Jamaqmaqiyya) today is the Arabic calligraphy art museum, Al-Aziziyya (which includes the Mausoleum of Salah Aldin Ayyubi) and AL Fadiliyya. Therefore, it became a part of a whole cultural and educational complex.

4.3.2.2 Al Madrasa Al Zahiriyya Mamluk Dynasty:

4.3.2.2.1 Function:

Madrasa Al Zahiriyya is located in *Dar Al-Aqiqi* (Al-Aqiqi house) which had been adjusted to its new function as AL Zahiriyya Madrasa, The Madrasa consisted of a complex of two Madrasas of Islamic law Shafii and Hanafi *Madhabs*, and a school for teaching the tradition of prophet “Dar Al Hadith” in addition to the Mausoleum of Sultan Al-Zahir Baybars and his son Sultan Al-Sa‘id Baraka Khan. Since the Ottoman governance till nowadays the Madrasa became a national library. (Leiser, Gary., 1984)

A significant part of the house of Al-Aqiqi was destroyed in the adjustment process, where the main entrance was replaced by the mausoleum and the *Qubba* (dome) in its southwestern corner, windows were added towards the street, the other parts were slightly adjusted, where each *Iwan* became a school for one trend of Islamic law. *Dar Al-hadith* in the south-eastern *Iwan*, the southern rectangular *Iwan* with its *Mihrab* became the Hanafi *Madhab* school, while the eastern square shaped *Iwan* with its own *Mihrab* was for the Shafii teachings, there was a fourth *Iwan* in the northern side that leads to students residential rooms, However, both Dar Al-Hadith and the northern *Iwan* are destroyed. The only proof for their existence is the book of “*Alnojum Alzahira*” (Leiser, Gary., 1984). The school is organized around a central courtyard 18*12m with its decagonal fountain as the origin point of the design.

4.3.2.2.2 *The entrance:*

The entrance of the Madrasa is on its western elevation that measures 32m in length, The entrance measures 4m, with 10 m in height, 2m in depth, and contains the Muqarnas arch with the half-domed ceiling above the portal niche, it has a wooden two flagged door and three lines of inscriptions, it is decorated with alternate colors of black and beige of limestone units. These inscriptive bands with the (Naskhi Arabic script type) calligraphy that indicates the endowment and establishment of the Madrasa, the last line contained the following:

"بسم الله الرحمن الرحيم، أمر بإنشاء هذه التربة و المدرستين المعمورتين، المولى السلطان السعيد أبو المعالي محمد بركة قان بن السلطان الشهير الملك الظاهر المجاهد ركن الدين أبي الفتوح بيبرس الصالح. أنشأها لدفن والده الشهير، لحق به عن قريب، فاحتوى الضريح على ملكين ظاهر و سعيد. و أمر باتمام عمارتها السلطان المنصور سيف الدنيا و الدين قلاوون الصالحى قسيم أمير المؤمنين خلد الله سلطانه" (Leiser, Gary., 1984)

"In the name of God the Compassionate the Merciful, the Master the Sultan Al-Malik Al-Said Abu AlMaali Muhammad b. Baraka Qan, son of the Sultan the Martyr Al-Malik AlZahir Al-Mujahid Rukn Al-Din Abu L-Futuh Baibars, ordered the building of the blessed tomb and the two flourishing madrasas. He built it as a burial place for his father the martyr and he soon joined him (in the tomb). The mausoleum embraces two great kings, Zahir and Said. The Sultan Al Malik Al-Mansur Saif Al-Dunya wa L-Din Qalaun Al Salihi, Partner of the commander of the faithful (the caliph), may God make his rule eternal, ordered the completion of their construction" (Leiser, Gary., 1984)

4.3.2.2.3 *The Dome:*

The pointed smooth dome of the Madrasa measures 5.80 m in height drawn from two centered arches $R=6.02\text{m}$ (each center measures 2m from the center of the plan of the dome) and the circular plan measures 9m in diameter, the dome is topped by two little spheres and a crescent 2.2m in height to reach a total height of 30m above the ground, which ranks it the second highest dome in Damascus after the Umayyad Mosque's eagle dome, colored in red from the outside.

The dome relies on a square plan, measures 13.25m in length, 10.40m in height, the dome relies on two octagonal drums (upper, lower), then four simple squinches to the four walls, The lower drum measures 3.40m in height and has pair of pointed-arch windows with a height of 1.90m on its alternating sides, while the upper measures 2.25m in height one has a pair of windows on every side.

Each one of the dome's four outer walls has a circular window $D=1.2\text{m}$ Surrounded by a shallow carved interlocked pattern and 8 concentric "four-lobed cartouches" (Daiber, 2019) on the upper side of each wall. While the lower section of the three walls have 6 rectangular windows with a height of 3m and arise 3.7m above the ground, the fourth has the door entrance to the dome.

The domed space has the mausoleum, their tombs are made of dark green marble with golden decorations topped by a white triangular prism. The entrance of the domed space is on its northern wall contains three stairs to the courtyard, it has a *Mihrab* on its Qibla wall (the southern wall), six windows inserted in the walls (*Iwan shaped*) on its three walls.

4.3.2.2.4 Decoration and Ornamentation:

The inner walls are decorated with 3m high inlaid marble panels and marble mosaic dado followed by a thin band of complicatedly imprint stucco scroll, intersected in some places by another band of elaborate marble mosaic, and "topped by a glass mosaic frieze that goes around the four walls, and in the tympanums and soffits of the windows" (Rabbat, The Mosaics Of The Qubba Al-Zahiriyya In Damascus, 1997-1998), to reach a 4.6m as a total Hight of decoration. The frieze "karma" contains architectural presentations on three sides of the four walls, while the fourth wall, the corners, the tympanums and the soffits contain floral and "vegetal motifs, vases, trees, cornucopia and leafy scrolls" (Rabbat, The Mosaics Of The Qubba Al-Zahiriyya In Damascus, 1997-1998) like the ones in the Umayyad mosque.

Decoration in Al Qubba Al zahiriyya is symmetrically arranged around the midpoints of their walls, the *Qibla* wall (the southern wall) faces the entrance of the dome and contains the *Mihrab* with its two columns, the composition in the frieze above the mihrab consist of an arcade of four columns and a set of five "free standing columns crowned with natural leaves" (Rabbat, The Mosaics Of The Qubba Al-Zahiriyya In Damascus, 1997-1998). Above these columns a set of two symmetrical buildings drawn As a perspective, and a tower in between with a spire, the buildings have what it seems like a spherical dome above a high drum and have columns surmounted by porticoes and a triangle on their façade, the space between the tower and buildings is filled with "white and dark blue tesserae, The scene is flanked by naturalistic representation and surrounded by a guilloche frame" (Rabbat, 1997-1998) (fig.5)

The frieze in the western wall has also a set of buildings. however, they are different in typology from the one on the southern wall, the arcade in this side consists of three short columns with small crowns covered by curved vegetal motifs as they were trellises holding plants and under them there are two curtains waving in the wind, similar to “the Palace of Theodoric in St-Apollinaire-Nuevo at Ravenna” (Rabbat, The Mosaics Of The Qubba Al-Zahiriyya In Damascus, 1997-1998) or the Umayyad mosque.

On the sides two bowls as vases with a composition of flowers similar to the ones in the Dome of the rock, other long gabled architectural structures lay above the arcades of the windows. The northern wall (the entrance) has a huge tree executed similarly to the (gradual shading) technique in the Umayyad mosque, on the sides lay two architectural compositions of long gabled buildings with three domed towers laying on a hill of vegetal motifs, however, they are both directed towards east to emphasize that they are not a reflection for each other, Rabbat argues the strange element that rests on the middle central tower could be either a roof or a wind catcher that has spread widely in the city skyline in the Mamluk era.

4.3.2.2.5 *Materials and Colors:*

Materials used in the domed space construction:

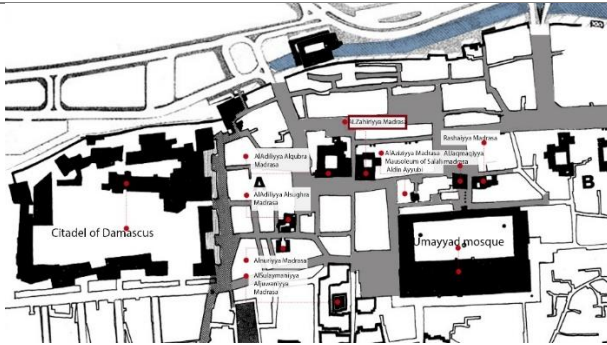
- Limestone blocks in the construction of outer walls.
- Glass mosaic in the friezes.
- Marble mosaic and marble in the ornamentation of inner walls.
- Stucco scroll in the ornamentation of inner walls.
- Alabaster in the mausoleum
- Red Earth plaster in the coating for the dome from exterior
- Lime above the earth plaster in coating interior of the dome
- Colored patterned glass in windows
- Wooden doors and windows

Colors used in the dome of the Madrasa

- Red: the exterior color of the dome
- Beige: limestone blocks and elevations, interior decoration
- White: above the exterior windows, in the interior walls, shrine’s triangular prism

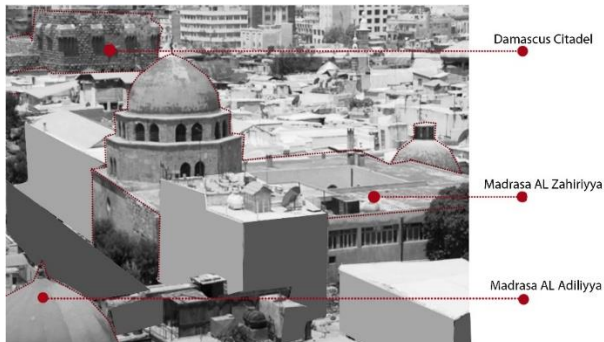
- Golden: in the shrine, the frieze
- Black: in the patterns on the interior walls, on the entrance.
- Dark green: the color of the marble used extensively in decoration
- Dark blue: in the frieze.
- Light brown: in the frieze.

Table 4-9 *Description of Madrasa AlZahiriyya: Urban Context.*



Location of Madrasa AlZahiriyya

Original photo courtesy of Museum with no Frontiers.



Urban context of Madrasa
ALZahiriyya, showing the
dome of Madrasa AlAdiliyya
and Citadel of Damascus.

Table 4-10 Description of Madrasa Al Zahiriyya: Function, Landmarks and area

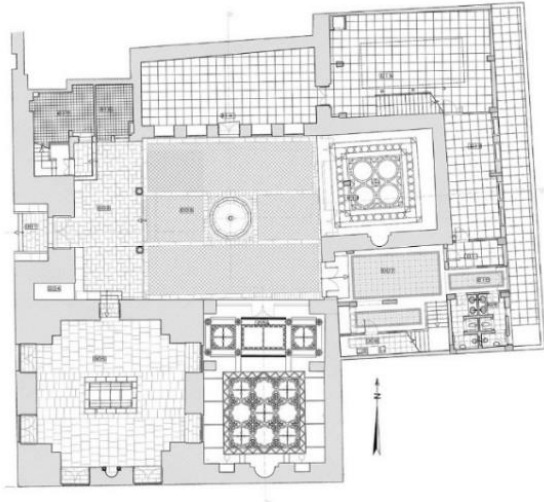
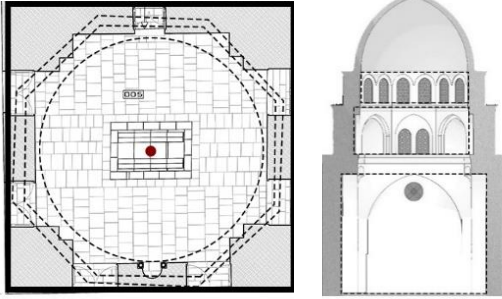
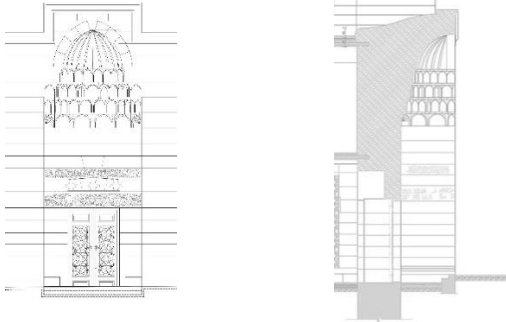
	Figure 3 function Entrance courtyard Two law schools, Dar Alhadith, Mausoleum, Residential rooms original plan is courtesy of prof.Muafak doghman Damascus Consultant company
Landmarks: the dome	
	Figure 4 the domed space “Qubba”
Landmark: the gate	
	Figure 5 elevation and section in the entrance of Madrasa Alzahiriyya

Table 4-11 *Description of Madrasa Al Zahiriyya: Ornamentation*

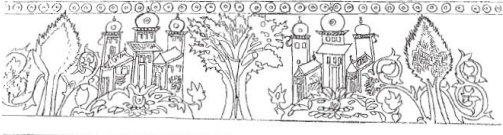
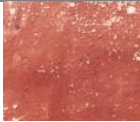
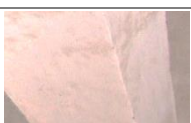
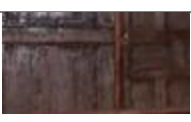
Land mark: Ornamentation			
The Southern Mosaic Panel in the Qubba al-Zahiriyya		Figure on the left, on the right the frieze in the western wall (Rabbat, 1997)	Figure 5 patterns of decoration on the inner walls of the Qubba
			
		Figure the frieze on the northern wall (Rabbat, 1997)	
Ornamentation inside the Qubba		Ornamentation outside the Qubba	
Frieze Vegetal motifs and architectural Presentations		Inscriptions And Ablaq On the entrance	
Above doors and windows Vegetal motifs and Ablaq		New restoration addition	
Geometrical Patterns\ The Mihrab		Ceiling Vegetal and geometrical Pattern Restauration Addition	
Drum's pair of windows		Four-lobed cartouches	

Table 4-12 *Materials and colors in Madrasa Al Zahiriyya*

Materials		Colors	
Limestone blocks		Red	
Glass mosaic		Beige	
Marble mosaic		White	
Stucco scroll		Black	
Alabaster		Dark green	
Red Earth plaster		Dark blue	
Lime		Light Brown	
Glass		Golden	
Wooden			

4.3.2.3 Deciphering the sensible “Hissi” in the Qubba: stimulus assessment: space, surface, color, matter, shape

Following are the analysis of two madrasas according to the formulated senses caused by their styles and ordering

4.3.2.3.1 *The Hissi in Spatial ordering: Orientation in Space, and the sense of direction:*

Movement through the primary coordinate system formed by six directions south, east, west, north, upward, downward are common reference frame for every traditional science, However in Islamic architecture additional seventh direction is added which is (inward) between (*Zahir*) the manifested, and (*Batin*) the hidden. In this part of the thesis the (*Zahir*) effect will be examined from the perspective of orientation in space,

The cruciform void - four directions: the Madrasa plan with its cruciform shaped , directed towards north, east, south, west, in which every direction is occupied by a school of Islamic law trend, in this school there are only *Shafii* and *Hanafi* while the common arrangement for the Madrasas in Mamluk period, usually contains the four trends *Shafii*, *Hanafi*, *Maliki*, *Hanbali*. (النعمي، 1990)

The south (*the Qibaly wall*) towards Mecca: The architect assists on the sense of direction toward south (*Mecca* direction) on every *Iwan*, by the *mihrab* in each one of them forming what is called the (*Qibaly wall*) for prayer.

The Upward: the pointed arches, the hierarchy and transition between the square, the octagonal drum, the smaller in the top, the pointed dome at the end. The muqarnas semi dome has a clear example of such affirmation on the upward movement. the elevated mausoleum entrance and the elevated four *Iwans*.

The Downward: the tombs on the ground on the center of the *Qubba*. The fountain in the center of the courtyard.

The Inward: the symmetry of the geometrical patterns, vegetal patterns, and architectural representations. The movement forms the inner space to outer space by *Iwan*- shaped windows and doors in the four directions.

The Hissi in defining the sense of Place:

Precepting the physical boundaries of the space, is the first step of two steps of understanding the sense of place, that consists of the container “jism, body” and the contained “ruh, spirit” (Ardalan & Bakhtiar, 1973) Depending on the fact that this Madrasa was built on the bases of previously Al Aqiqi house, sets the physical boundaries according to this basis, the courtyard with its fountain and the four *Iwans*’ places were already known.

- Landmarks and Attraction points: The dome of the mausoleum with its Significant height as the second highest after the Umayyad mosque's eagle dome, forms one of the landmarks and visual attractions in the city skyline and along the area's streets in this educational cultural complex, the gate as well with its geometrical complexity, the Ablaq "Alternating colors of black and beige". The red colored dome.
- Boundaries: the cubical form of the mausoleum, the high walls represent edges that strengthen the sense of enclosure, while the iwan shaped windows and doors provoke this enclosure by defining smaller boundaries and semi-opened spaces. On the level of the Madrasa as a whole the courtyard as relatively open space, the four Iwans as semi-opened, the mausoleum, the residential rooms and Dar al Hadith as closed spaces, defines the physical boundaries accordingly the sense of place
- The sense of enclosure: the ratio between height of the walls façade and the space width equals 1:1 in Madrasa Al Zahiriyya, which causes strong spatial definition and full enclosure, while it equals 2 inside the mausoleum, which leads to claustrophobic reaction that bears a deep intelligible reaction (will be discussed in chapter 5)

The positive space continuity system

The positive space is the space that leads the generation of form instead of shapes, relying on climatic conditions or on kinship patterns of a certain tradition. positive continuous spaces depend on the fact that users "move through unobstructed space rather than through solid mass" (Ardalan & Bakhtiar, 1973) make the positive space rejects any impediment to the flow of users, neither to the flow of air "thermal perception", nor to the transition from "social" to "personal". (Ardalan & Bakhtiar, 1973)

The continuity process starts from the first steps of enveloping the space by its walls, that with time may become "usable or living" to transfer into secondary spaces, the system in this case consists of primary paths that connect the outside with the inside, to the nodal space, (the courtyard with its fountain), the secondary nodal spaces through secondary paths (*Iwans*, and paths) to the dependent spaces that depend on other spaces in light or view, etc. (the *Qubba*).

Therefore, it will lead eventually to a linkage from one space to another following the pattern of “connection, transition and culmination” (Ardalan & Bakhtiar, 1973) an internal continuous outcome inspirable from the cityscape as a whole.

The continuity of thermal adaptation of the positive space as well provides a healthier outcome, caused by the amount of shading provided by *Iwans* and the high walls, the courtyard with its fountain that plays an important role in cooling the hot, dry climate in summer days in Damascus, and the flow of air from one opened space to other spaces.

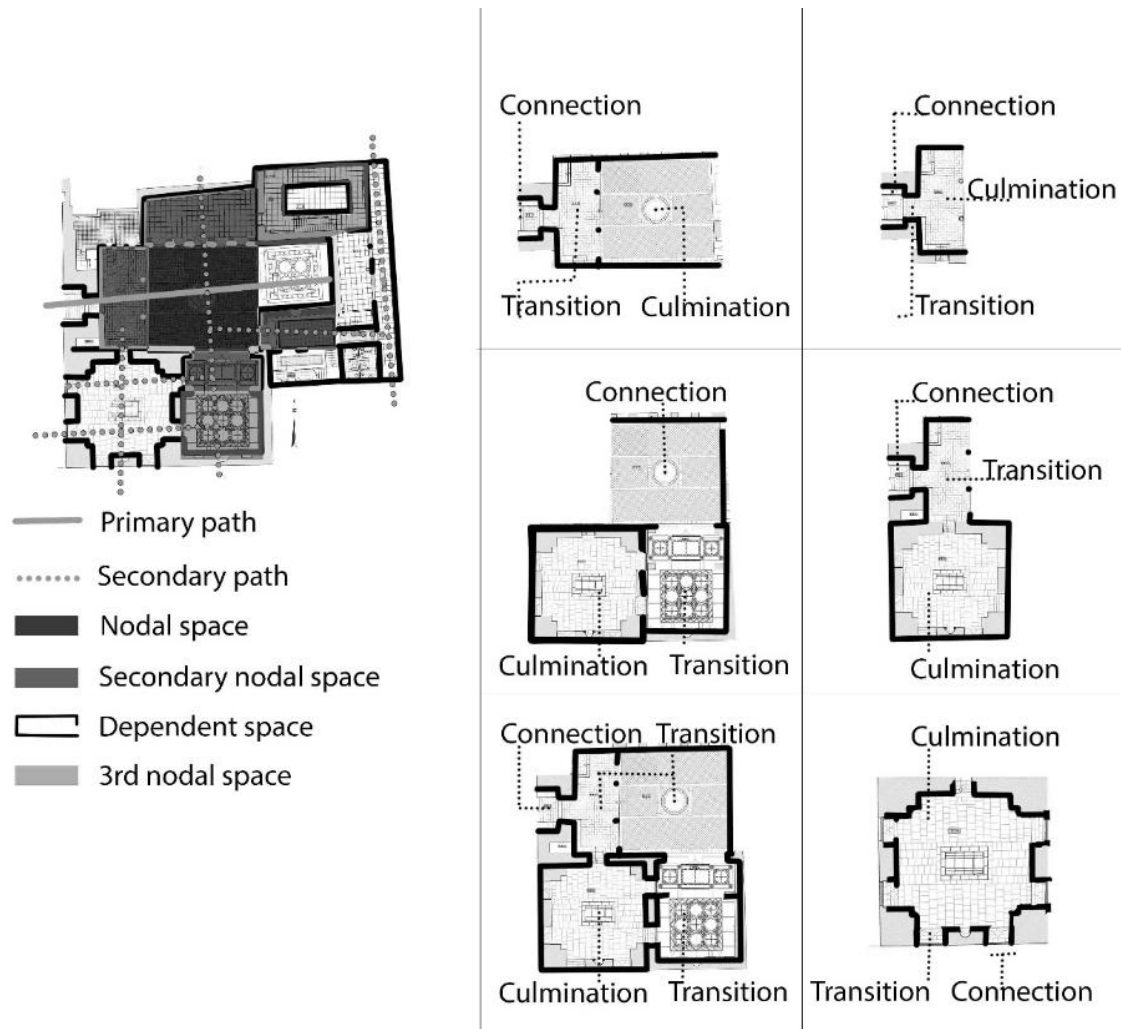


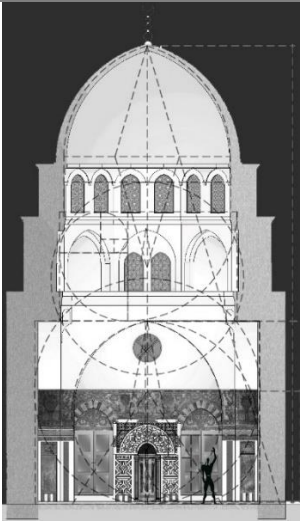
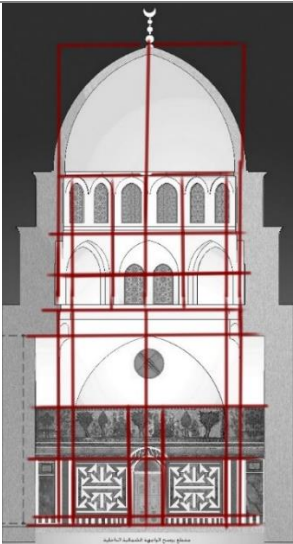
Figure 4.1 Positive space continuity system of Madrasa AlZahiriyya

4.3.2.3.2 AL Hissi and shapes: mathematics and proportions

Section of Al madrasa is designed based on the golden ratio, symmetry, centrality and rhythm. Rhythm is a tool in spatial synthesis which is related to the concept of motion, Therefore, to the principles of time and space, in which the perception of the inner space

Goes through harmonious encounter with its shell to form the mental image. In a similar way to Ibn Arabi discussion in his book the *breath of the compassionate* (see chapter 5)

Table 4-13 *Rhythm in time in Madrasa Al Zahiriyya*

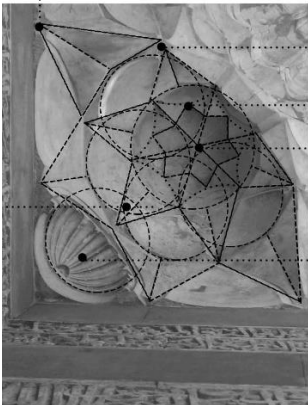
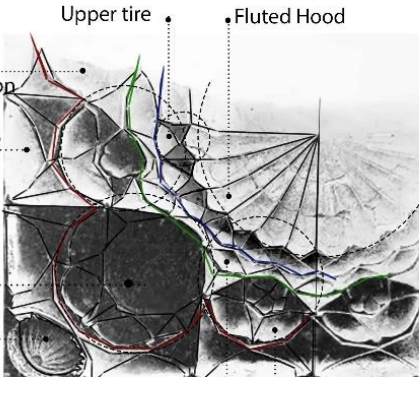
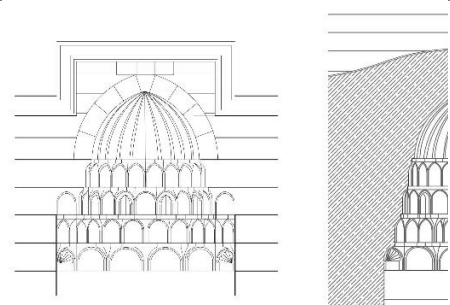
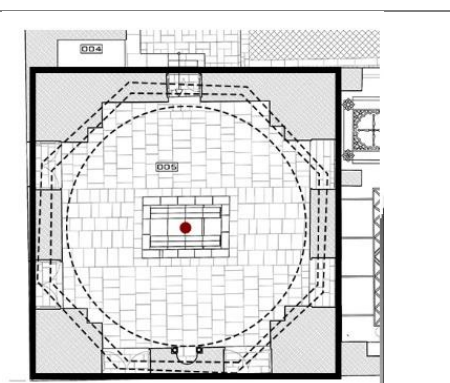
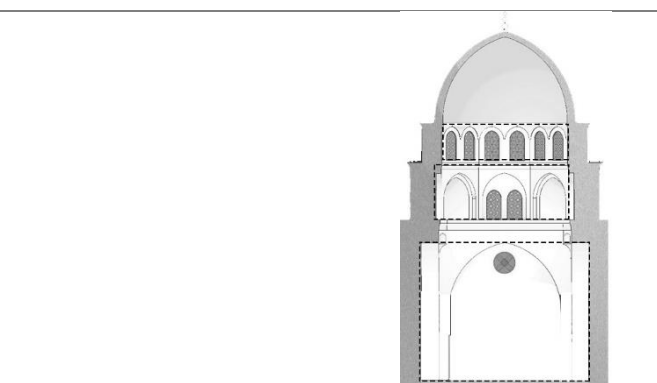
Proportions	Properties of section:
	The golden mean in both the cubical and the octagonal shapes.
	Modular usage in both plans and sections
	Stability
Rhythm in Madrasa al Zahiriyya.	Properties of the section
	Rhythm is apparent in the repetition of windows
	Rhythm in the transition in height from the cube to the first octagon, second octagon and the dome
	Rhythm in the Transition in the arches' width and size gradually with the height
	Rhythm in the module used in repetition of decorating system, in both height and width, the rhythm in alternating vegetal, geometrical and stucco scrolls.
	Rhythm in alternating colors of dark blue, green, light brown, golden, white and black

Another instance, is the synthesis of the dome with the octagons and the cube, also they appear as a separate Platonic shapes from the outside, they form an integrated whole from the inside, the system of supporting the spherical dome with small spherical pendentives at the upper level of the octagon, then to semi spherical pendentives to the second drum, to the arches of the cubical form, using golden ratios and rhythm, Show an

Integrated manifestation to the concept of spherical celestial gardens described by Ibn Arabi (see chapter 5).while from the outside it manifests the idea of the divine throne and the divine footstool, it becomes obvious that the composition of the dome from the inside is based on the same geometrical technique to the composition of the muqarnas semi-dome of the gate.

Squaring the circle:

Table 4-14 *Geometry of squaring the circle*

Squaring the muqarnas semi-dome	
 third star second star The first star Centre of the circle Circule unit to corner squinch	 Upper tire Fluted Hood Incised muqarnas unit for transition with elevation Lowest tire Domed Fluted squinch
 Elevation of Muqarnas semi-domed gate section	 Fluted Hood Incised muqarnas unit for transition with elevation Primary tire secondary tire middle tire Corner squinch
	

The book *the sense of unity: the Sufi tradition* (Ardalan & Bakhtiar, 1973) discusses the intelligible idea of squaring the circle (that will be discussed in the next chapter), the sensible system by which the three Platonic shapes interact with each other, the circle transforming to a square through triangles bear profound intelligible meaning. However, analysis of the two systems conducted in the designing process of the gate and the dome shows the intellectual abilities, deep understanding and control of the principles of squaring the circle.

The system of the gate could be set back to its basic unit of the muqarnas, which is formed from setting a set of points that forms a line accordingly a 3d six-pointed star by multiplying and scaling the 3d six-pointed star inscribed inside a sphere and surrounded by interlocked six other spheres, the unit formed by the subtraction and addition of these 3d forms consists of facet and roof. The proportions exist in the first upper tire in relation to the fluted hood is the same used in transforming the dome of the mausoleum through small pendentives to the first upper octagon, and the proportion from the upper tire to the second tire is the same as the semispherical second pendentives in the mausoleum.

4.3.2.3.3 *Al Hissi and the surface in madrasa Al Zahiriyya*

“Shapes are enclosed by their surfaces” (Ardalan & Bakhtiar, 1973) they can achieve a dual function according to their richness of materials, or according to their arrangement, or according to the combination of both, materials and configuration.

The surfaces of *qubba* in Madrasa Alzahiriyya has a combination of flexibility of nature with the geometric transfiguration of surfaces, which leads to harmony and richness of techniques, in which the structure of materials does not produce a visual prominence, instead, the structural configuration of surfaces endorses form.

Table 4-15 *Surfaces and Al hissi*

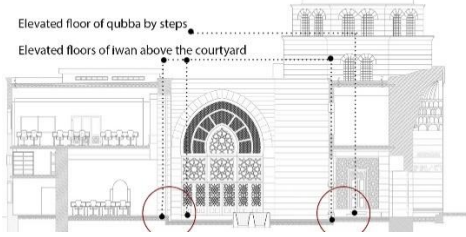
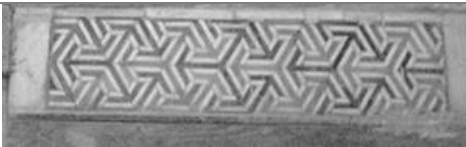
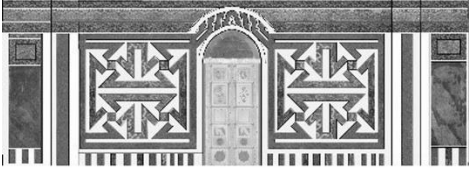
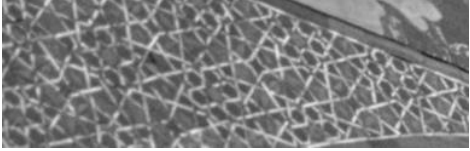
Surface	Alhissi in relation to surface
Floors	
	Geometric transfiguration: a pattern achieved to soften the geometric bold shapes
	The sense of place: horizontal dimensions perception through: The elevated floor of the Qubba and the four iwans, the surface of the courtyard
	Thermal perception: Richness of materials Marble = perception of cold
Walls	
	The sense of enclosure: Walls as the transcending third dimension of space: Single material simple proportion
	The sense of place and memory: Richness of materials: The walls are transformed through multicolored patterns of mosaic
	The sense of direction: incised surfaces like the niche "mihrab" with multiple materials and patterns, and the gate
The concept of line	
	Sense of direction and Sense of place: Generation of lines create patterns
Geometric patterns	
	Based on number 1 and its generation in the world

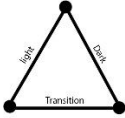
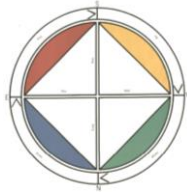
Table 4-16 (Continued) Surfaces and Al hissi

	Stability and rhythm: Symmetry as a method, Radial symmetry
	Positive space continuity: Complimentary space filling patterns
Arabesque patterns	
	Positive space continuity: Rhythm in time: succession, Arabesque does not fill the total surface but act as forms in space set in relief against passive backgrounds
	Radial medallions expanding in multiple points, binary and ternary circular forms
	Spiral stems symmetrically developing from a nodal axis
Latics forms	
Calligraphy	
	Acoustic, Visual, and Textile perception: The sensible form of the Arabic language: its very sound and utterances Balance and flow: Horizontal and vertical strokes woven into a fabric of profound richness The sense of unity: the combination of vertical and horizontal

4.3.2.3.4 Al Hissi and color-matter:

Color in its formation form the non-color, the pure light peers deep intelligible meaning in Islamic architecture, the systems of coloring used in structures either strengthen or Detroit contrast between shapes and it is directly responsible for the first reaction towards the space, it draws attention toward certain focal points.

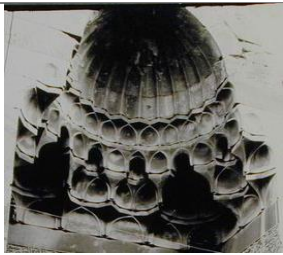
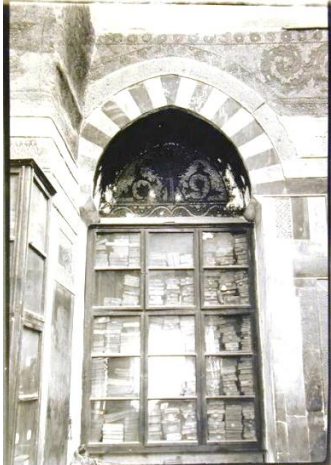
Table 4-17 *Color matter and Al Hissi in Madrasa Al Zahiriyya*

Coloring system	Matter	Alhissi in relation to the system
The system of three colors: Black, white and sandalwood 	Light, dark and the in-between 	Sense of opposition: harmony, Contrast and mediation
The system of three colors: yellow, blue and green, the absence of four color system: red 	Earth, water, air. Metal, plants and mineral 	Stability: the absence of red, which equals fire, Visual and Thermal perception: harmony of opposites Dry, wet, cold and hot: yellow, blue, green and red
The system of seven colors 	Combination of both 	Visual perception: Harmony of adjacent: black, yellow, green, blue, red, sandalwood and white
Multi- level color system 	—	Activeness, advancement
Single-level color system 	—	Ambiguousness

In Madrasa AlZahiriyya the two systems of coloring are used, the system of three colors: beige, black and white in the exterior, creating a sense of opposition, harmony

And contrast, strengthening the effect of light and shade, drawing attention towards calligraphy that has implicate message, the seven system of coloring used in the interior (except of red) causes richness of the scene, therefore arousal and sense of adventure and Discovery to percept and construct a memory and read the intelligible message behind, the absense of red from the interior scene create a sense of comfort, welfare and peace, while using it on the outside of the dome imply a sense of discomfort, threatening outsiders (this message will be discussed in chapter 5). The sole color system in the outside of cubical form creates a sense of stability and ambiguousness.

Table 4-18 *Al Hissi, Shadow and light in madrasa Al zahiriyya*

Shadow\Light inside the Qubba		Shadow and light outside the Qubba	
The Effect of Geometry + the windows		The Effect of Muqarnas Semi-dome	
The effect of Iwan shaped windows and Book Storage		Shadows caused by doors	

4.3.2.3.5 *Alhissi according to traditional forms:*

The following are the senses created according to the integration of elements of each element of the madrasa.

Table 4-19 *Traditional forms and Al Hissi in Madrasa Al Zahiriyya*

Traditional form	Al Hissi
Courtyard	Sense of place
Room	Multiplicity
Iwan (porch)	Transition in the sense of enclosure, sense of direction
Gateway	Transition in the sense of enclosure, Legibility, sense of direction
Dome (sphere)	Focus point, unity, sense of place
Column	Rhythm, sense of enclosure, sense of place

4.3.2.4 Al Madrasa Al Adiliyya Ayyubid Dynasty:

Al Madrasa Al Adiliyya shows a hybrid composition of different styles from different geographical regions and different dynasties, following are the descriptive qualities and documented senses.

4.3.2.4.1 Description: History of construction

Madrasa Al Adiliyya was established in 1215, by Malik Al Muazzam (Allen, 2003) the son of Al Malik AL Adil Sayf Al Din bin Ayub) although the building process started in 1172 by Nur Al din Al zengi, however, his death was a reason to stop the endowment for its construction, its name Al Adiliyya refers to its builder Al Malik AL Adil who took the responsibility of its completion and its endowment on his own therefore he was buried in it later.

Function:

The school was originally built for teaching *Al Safii madhab*, it consists of a central courtyard (18*17)m, with its four rounded corners square fountain (8.5*8.5m), and one big *Iwan* in its northern side, a smaller *Iwan* in its west, the entrance with its portal leading to cross vaulted lobby leading to the mausoleum *qubba* in its southeastern corner, and the composition of rooms on its northeastern corner in two stories, the prayer hall is located on its southern side, consists of three cross vaults and has its *mihrab* in it. On west another staircase to the second story with rooms and halls, The monolithic façade has no ornaments and made of unpolished limestone with 60 cm height, the mausoleum façade

Has two windows on two sides and a *mihrab* inside it, similar to the one in the prayer hall, It is covered by a dome supported by muqarnas pendentives above the cube, the *Iwan*, on the contrary, has plenty of forms that manipulate light and shade in addition to ornaments.

The portal:

The portal has a combination of styles from around Syria, consists of the framing which is similar to the one of Maqam Ibrahim at Salah al Din, wooden gate with its square shaped and linear tiles composition topped by a single layer of *Ablaq* system (alternating white and black stones of basalt and white limestone), then a composition of three dodecagons, then two layers of limestone with an interlocked two semi-circles, above calligraphy with the name of the founder and the madrasa inscribed inside a frame, to the two domes and two arches, an ornamentation frieze follows the lines of the portals made of stone, the pointed arch and the groin vaulting follow styles in Aleppo, the importance of this portal comes from the techniques usually used in wooden structures, however, it is applied in this example on stones.

Materials and colors

- Whitish un-polished Limestone in the exterior
- Yellowish un-polished limestone in the interior
- Red and golden stones in the fountain
- Marble on the tomb
- Wooden frames around windows of the courtyard, the gate
- Metals on the bars of the windows
- White and black *Ablaq* of limestones in the portal

4.3.2.4.2 Deciphering the senses in Al Adiliyya Madrasa: The Hissi and Space time simultaneity: Orientation and the sense of direction

Space synthesis in Ayuubid madrasas in general and this madrasa, in particular, is based on a centralized open courtyard and two *iwans*, its basic line of the organization is the *Qibla* wall that refers to *Mecca*, the two *mihhrabs* of the prayer hall and the mausoleum provide a sense of direction towards it, the two *iwans* around the central courtyard

(Northern and western) proceeded by a pointed arch with the height of two stories, provide a sense of orientation and direction towards the two cardinal directions, the pointed arches Provide a sense of direction towards the sky (upward), the most apparent upward movement is apparent in the transition of the dome inside the mausoleum, in which the double pointed arches transform through six layers of pendentives towards the dome to end with a point. The portal as well provides a sense of direction (upwards and inwards).

The sense of enclosure in AL Adiliyya Madrasa

According to (Spreiregen's,1965) the sense of enclosure is achieved by defining the ratio between height of the building and "frontal field of view width" in which the ratios that equals 1:1 achieves full enclosure, 1:2 causes threshold enclosure, 1:3 minimum enclosure and 1:4 causes loss of enclosure (Kahraman & Cubukcu, 2017)

The resulted interactions with spaces with these ratios vary according to (Hedman and Jaszewski's,1984) it causes strong spatial definition when the ratio equals 1, sufficient spatial containment when the ratio equals 0.5, and a weak sense of space when the ratio equals 0.25, eventually claustrophobic when the ratio equals 1.5

The ratio of the courtyard walls height to the courtyard width equals 1:2 in AL Adiliyya Madrasa, which results in threshold enclosure and a sufficient spatial containment, However, it equals 3:2 inside the mausoleum which causes a claustrophobic reaction (it is discussed further in chapter 5)

Positive space continuity system:

Transition from open space (courtyard) to closed space (mausoleum) did not go through the semi-opened space (*iwan*) like the Mamluk example in Madrasa Al zahiriyya, which caused a temporal disjunction in visual adaptability. However, the transition between public to private spaces is achieved, by moving from the entrance directly to a hall which leads to staircases and rooms distributed on two floors.

4.3.2.4.3 *AL Hissi and shapes in Madrasa Al Adiliyya: Mathematics and proportions in Madrasa Al Adiliyya:*

Approximate Golden ratios are found in the section of the mausoleum, the geometries used in the design process are derived from the square and its multiplications. The section here is also based on rhythm, centrality and symmetry.

The geometry of pointed windows is different from the ones used in Al Zhiriyya madrasa, they have a rectangular shape topped by a flat lintel, then a segmented arch to Reduce the weight, another pattern of windows in the middle phase consists of a carved small vault in the wall that contains the pointed window, the third pattern exists in the octagon, The pattern of the two small domes in the portal.

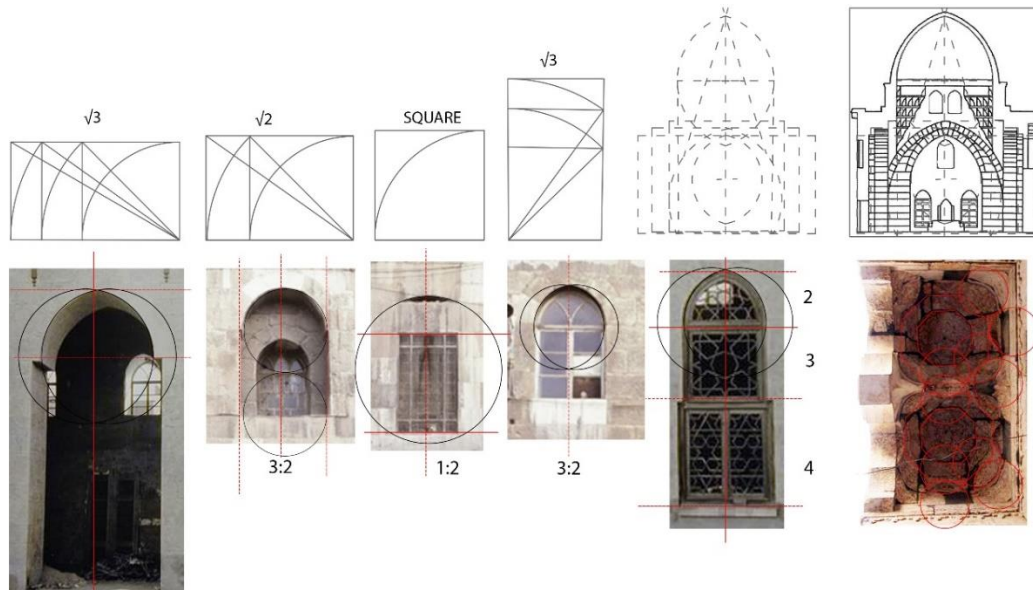
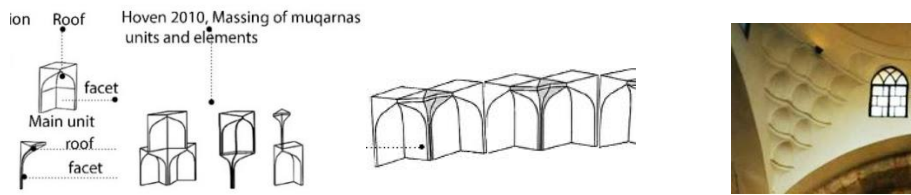


Figure 4.2 Ratios and Proportions in the Mausoleum in Madrasa Al Adiliyya

Squaring the circle:

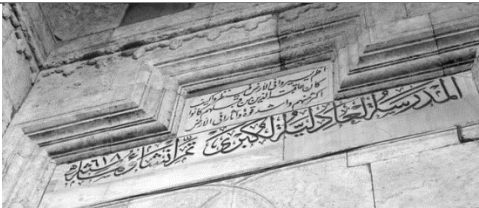
The techniques followed in transition, make the dome, the octagon and the box as a whole inseparable unit, the circle of the dome depends on another circle, to the first layer of muqarnas consisting of two muqarnas and scroll in between on each side of the four sides, to the second level consisting of five simple muqarnas units, descending gradually by one unit subtraction to reach the final muqarnas, therefore the three platonic shapes merge together, the circle, the octagon and the square, causing the sense of enclosure, orientation upward, visual landmark, arousal, and gradual enclosing.

Figure 4.3 Erective units of the muqarnas (Hoeven, 2010; Kashef, 2017), the photo on the right courtesy of (Imad Armashi Archived Collection)



4.3.2.4.4 Al Hissi and the Surface in madrasa Al Adiliyya

Table 4-20 Surfaces and Al hissi

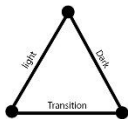
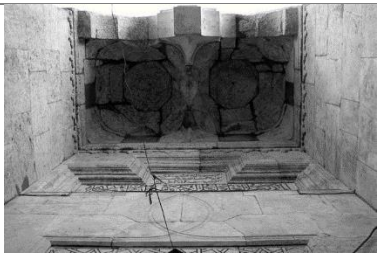
Surface	Alhissi in relation to surface
Walls  Imad Armashi archived collection	The sense of enclosure: Walls as the transcending third dimension of space: Single material simple proportion
Geometric patterns  Imad Armashi archived collection	Based on number 12 and its generation in the world
Calligraphy  Imad Armashi archived collection	Acoustic, Visual, and Textile perception: The sensible form of the Arabic language: its very sound and utterances Balance and flow: Horizontal and vertical strokes woven into a fabric of profound richness The sense of unity: the combination of vertical and horizontal

Shapes in madrasa Al Adiliyya depends on simple materials and basic colors in their purist situation, therefore, they have explicit messages, perfection is accomplished by the divergence in forms, shadows and light.

Shapes located on the portal depends on duality or triplicity, the triplicity of dodecagon which is a twelve-pointed star, above the *Ablaq*, the pattern of perpendicular horizontal and vertical lines in the ornamentation of the door, the pattern of double interlocked circles above the dodecagon, calligraphy in the upper part of the portal, all of these provide a sense of direction inward and upward, they manifest richness of techniques and harmony.

4.3.2.4.5 *Al Hissi and color-matter in Madrasa Al Adiliyya:*

Table 4-21 *Color matter and Al Hissi in Madrasa Al Zahiriyya*

Coloring system	Matter	Alhissi in relation to the system
The system of three colors: Black, white and sandalwood 	Light, dark and the in-between 	Sense of opposition: harmony, Contrast and mediation
The system of one color in the exterior 	Earth	Stability, solidity, ambiguousness
Shadow\Light inside the Qubba		Shadow and light outside the Qubba
The Effect of Geometry + the windows 	The Effect of Muqarnas Semi-dome	

In Madrasa Aladiliyya the pure basic colors are used, the system of one color in the exterior elevations, the system of two contrasting colors in the *Ablaq* of the portal, the system of three system color in the interior of the mausoleum (beige, white and black)

The one system color provides ambiguousness, strictness and stability, two system colors provides contrast, three system colors causes a sense of direction of the three movements.

Limestone is unpolished to strengthen the sense of strictness and solidity, it is whitish in general and yellowish in the interior of the mausoleum, the techniques of teething the stones strengthen such sensual experience.

4.3.2.5 Al Hissi in numbers in the two Madrasas

Following are the numbers found in the forms of the two madrasas, the sensory experience is examined accordingly:

Table 4-22 *Al hissi and numbers in both madrasas based on the writings in the book of The sense of unity* (Ardalan & Bakhtiar, 1973)

Geometry	Mathematical attribute	AlHissi in Madrasa	N	Geometry	Mathematical attribute	AlHissi in Madrasa
0	—	The sense of place: space	7		First perfect number	The sense of direction: The number of openings in the walls of the plan of qubba The tiles of Mihrab
1	The point The principle and origin of all numbers	Focus point Pointed arches and dome The centre of the fountain as the plan origin	8		First cubic number and the number of musical notes	Rhythm and the sense of place: Octagonal plan of drums in the Qubba Main pattern of all geometrical decoration systems in floor and walls
2		One half of all numbers are counted by it	9		First odd square and last single digit number	The sense of direction and place: Patterns above the Mihrab Alternating colors above the doors and windows

Table 4-23 (Continued) *Al hissi and numbers in both madrasas based on the writings in the book of The sense of unity* (Ardalan & Bakhtiar, 1973)

	Harmony	The sense of	1	 	First	Transition	
	First odd	direction:	2		excessive	The fountain	
	number	The patterns on			number	shape	
	One third of	iwans				The transition	
	all numbers	The geometrical				between the	
	are counted	patterns in the				mihrab to arch	
	by it	domed space				of the dome	
		The architectural				then to three	
		presentations in				arches of the	
		the decoration of				first octagonal,	
		Qubba				six arches of the	
						second	
						octagonal to the	
						dome.	
						Module of the	
						muqarnas gate.	
4	 	Stability	The sense of	3		Numbers of	The sense of
		First square	enclosure:	6		degrees in	place: The plan
		number	The plan of the	0		circle	of the dome
			qubba				The round
		Four iwans				windows	
		Courtyard				Repetitive	
						pattern in	
						decoration	
6	 	First	The cubical form				
		complete	of Qubba				
		number	Stars and origin of				
		The number	muqarnas semi-				
		of surfaces of	domed in the gate				
		the Qube					

A brief examination for the existence of the Hissi-Aqli approach in some of the rare postmodernism Islamic structures is due, in order to set the future design recommendations emphasizing on this approach.

4.3.2.6 Al hissi in postmodernism islamic architecture of Rasem Badran

One of the rare contemporary architects who claimed for the Essentialist method relying on Islamic architectural heritage in dealing with “Islamic architecture” in postmodernism is Rasem Badran, He used “cultural symbols” abstracted from the “traditional urban fabric and typology of vernacular houses” in his projects, just like “narrow alleys, courtyard, arches, domes and ornaments” (Haddad & Rifkind, 2014, pp. 350-352), criticizing “the predominant alienation characterizing our cities and rendering the Arab a foreigner in his own land,” (Sert, 1952).

In his several lectures, Rasem Badran asserted on the importance of seeking for the intelligible meaning during analytical process for the city fabric, before proceeding to the sensible design phase, the example chosen here is the Great Amman Municipality. GMA has the function and typology of governmental structure, it forms a direct manifestation of the duality of Hissi-Aqli, and contains some spaces as the galleries and museum rooms that have socio-cultural functions, in addition to the public hall space with the gardens, that adjoin the public with the government to form the place for debates and discussions.

4.3.2.6.1 Description: Greater Amman Municipality: history of construction

Greater Amman Municipality was constructed in 1997 in the downtown between Amman’s eastern and western sides to form an urban opened space in the middle of the crowded city, to accommodate the city hall, the mosque and the national museum, in addition to the gardens and opened spaces for public use and celebrations. It was a mutual work between Rasem Badran and Jafar Tukan.

Function:

The 8.800m² plan consists of four segments and a central circular courtyard, the first segment contains the staircase and the entrance to the above floors, the other three segments contains the lobbies and the museum halls and galleries, the first floor contains the auditorium, in addition to meeting rooms and eating area, the second floor contains the mayor’s office and the city council’s chamber and the staff rooms.

Materials and colors:

- Whitish un-polished Limestone, extracted from Ajloun area in the exterior

- Big sized polished limestone in the exteriors
- Polished yellowish limestone in the interior
- Wooden frames around windows and the gate
- Metal and glass on the bars of the windows



Figure 4.4 *The courtyard with the sun-clock, (Dahdaleh & Roula., 2000)*



Figure 4.5 *Exterior view for GMA, (Dahdaleh & Roula., 2000)*

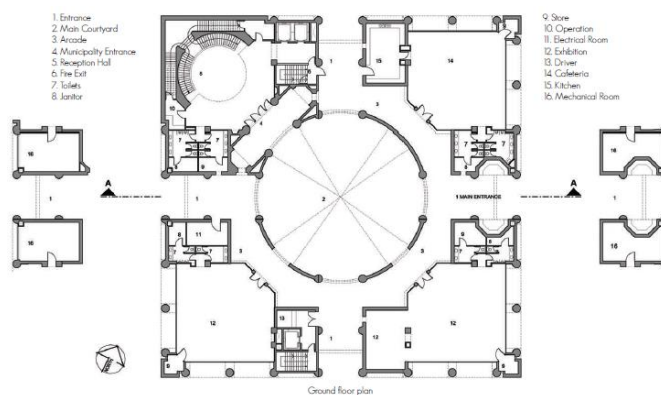


Figure 4.6 *Ground plan, (Dahdaleh & Roula., 2000)*

4.3.2.6.2 Deciphering the senses in GMA: the hissi and space, time simultaneity: orientation and the sense of direction

Space synthesis in GMA is based on a centralized round open courtyard and four closed sections arranged in four levels, the sense of direction is apparent in the design of GMA, first of all, the direction towards the four cosmic directions is intended in the position of the four sides of the square plan, the cosmic directions according to Sun movement is one of the most significant characteristics of the circular courtyard that contains a sun-clock, the direction towards the city is manifested in the balcony with its microcosmic columns opened to the city, the sense of upward movement is provided by the hierarchy of the squares that forms the gates in the courtyard.

The most significant approach to the space, time simultaneously in GMA is the dialogue with time apparent weather in the morphology of the columns and arcades, or in the adapted elements from several periods and dynasties that ruled Amman city, starting with the Roman auditorium to the Umayyad techniques of building gates.

The sense of enclosure in GMA:

The ratio of the courtyard walls height to the courtyard width approximates 1 in GMA, which results in the sense of full enclosure and strong spatial containment, the balcony, the sun-clock and the gates form the landmarks that strengthen the sense of place.

4.3.2.6.3 AL Hissi and shapes in GMA: mathematics and proportions:

Approximate Golden ratios are found in the section of the courtyard, the geometries used in the design process are derived from the square and its multiplications. The section here is also based on rhythm, harmony and centrality.

The geometry of segmental arches is derived from the Umayyad arches system in Amman.

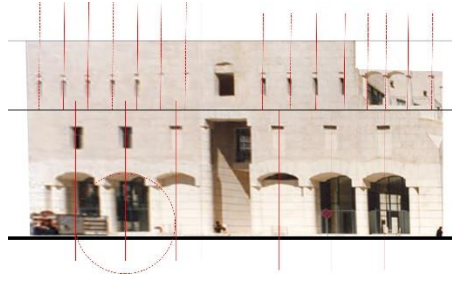


Figure 4.7 *Rhythm in GMA*

4.3.2.6.4 *Al hissi and the surface in GMA*

Shapes in GMA depends on simple local materials, polished limestone and basic colors. Therefore, they have explicit messages to form an iconic structure, the whole idea of the surfaces depends on the hybridity of different historical backgrounds, surfaces contains the system of defensive windows used in Ayyubid castles on the upper section, then to the windows that contains patterns of famous artifact system created by *Beduins*, after that to the macrocosmic Umayyad arches. The balcony has the microcosmic Umayyad arches.

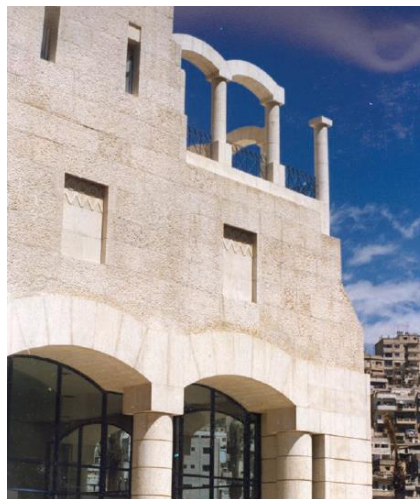


Figure 4.8 *Surfaces in GMA (Dahdaleh & Roula., 2000)*

4.3.2.6.5 *Al hissi and color-matter in GMA:*

In GMA the pure basic colors are used, the system of one color in the exterior elevations, the one system color provides ambiguousness, strictness and stability. Limestone is polished one being lighter than the other to strengthen the sense of strictness and solidity, it is whitish in general and yellowish in the interior and exterior of the

Structure. the different scale of teething the stones strengthen the sense of harmony and transition, therefore stability and flexibility.



Figure 4.9 *Light and shadows inside GMA and the one coloring system, (Dahdaleh & Roula., 2000)*

In this chapter the sensory experience caused by the sensible elements and their images in the two madrasas were documented, the Hissi aspects of postmodernism Islamic structures was examined, therefore, semiotic analysis to explore the intelligible meaning is very important.

5. AL HISSI AL AQLI IN TWO MADRASAS AL ZAHIRIYYA AL ADILIYYA AND MYSTICAL IDEAS.

Mysticism in Islam based on Quran and Al Hadiths' interpretations, according to the two branches, the Sufi tradition like Ibn Arabi, Al Hallaj and Rumi methodology, Gnosticism like Ikhwan Al Safa thoughts, were two branches of the cultural and religious system of believes in Damascus city, that will be examined in the domain of intelligible architecture of the madrasas.

5.1 Madrasa AL Zahiriyya During Mamluk Era: Summary of al hissi al aqli of the Madrasa Al Zahiriyya: semiotic analysis

The semiotic analysis for the Madrasa Al Zahiriyya reveals a possible integrated theological framework by which the movement from the sensible world to the intelligible world manifests, most of the reading meets with the detailed description for the methodology of "Irtiq'a" gradual transcending, and the levels of ascension through the intelligible world described by Ibn Arabi.

5.1.1 Semiotics analysis for spatial ordering:

The interpretations of Quranic scripts and AL Hadith provided by Ibn Arabi depicts an integrated system of transcending, the movement between the opposites of human/ Divine, esoteric /exoteric through imagination.

The cruciform shaped plan forms a syntgm consists of multiple paradigms, the syntagms of four iwans connotes the four rivers of the esoteric knowledge, in which each paradigm *iwan* as a school for one *Mdhab*, connotes the river correspondence to one science, the science of life "Ilm Al Hayat" manifested as a river of pure stable water "Ma Ghayro Asin", science of spirit "Elm Al Ahwal" manifested as the river of wine "Khamr", science of the divine inspiration "Elm Al Wahi" through the river of honey "Asal" and the science of secrets "Elm Al Asrar" as the river of milk "Laban". (Akkach S. , 2005, p. 160)

The concentric open spatial ordering with its centrality forms a syntagm of the paradigms of the courtyard connoting the esoteric "Spirit, Nafs", and the paradigms of the bounded rooms connoting the "body,Jism" exoteric. (Ardalan, Bakhtiar, 1998) and the transition between the opened space "courtyard", the semi opened space "*Iwan*" and

The closed spaces “rooms and Mausoleum” is a syntagma that denote the metaphor of Movement between the absolute being and the non being through the mediator “Barzakh” (Akkach S. , 2005, p. 70) through the activation of imagination. The movement of the four cardinal directions and the upward, downward denotes the human presence, while the addition of the seventh inward movement connotes the divine presence.

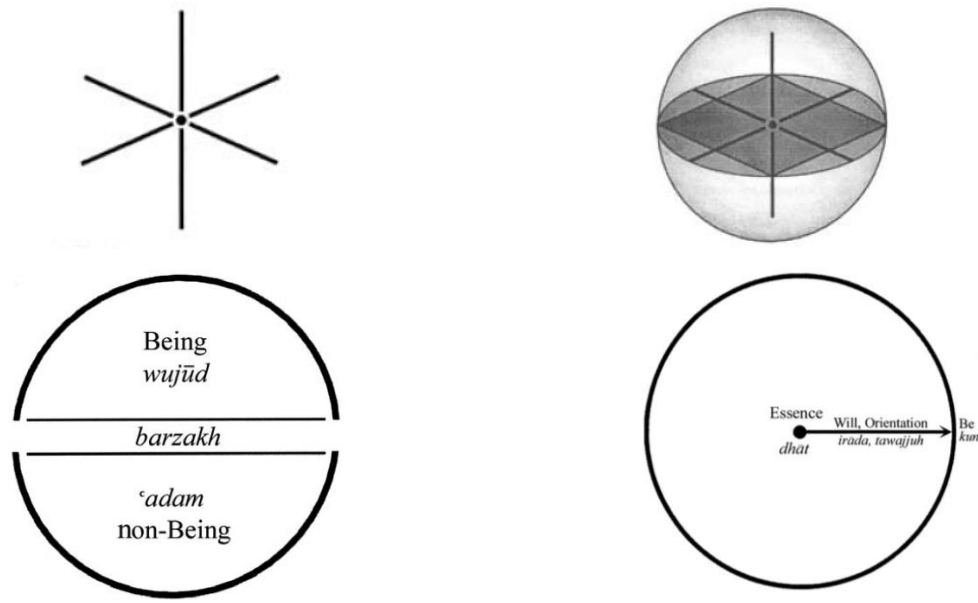


Figure 5.1 The divine presence on the upper right, human presences on the upper left, triplicity of being, non being and barzakh on the lower left and orientation in the act of creation in the lower right according to Ibn Arabi (Akkach, 2005)

Table 5-1 Summary for semiotics analysis of Al Hissi- Al Aqli in spatial ordering for madrasa al Zahiriyya

Al Hissi		Al Aqli	
Signifier	Mode of sign	Signified	Conventional / universal
Spatial ordering			
1- The centralized open spatial ordering “courtyard”	Symbolic Second order	The esoteric soul “Nafs” that is the origin of the exoteric body “jism”	Conventional
2- Cruciform shaped plan with the courtyard and the four Iwans , movement towards the four directions	Indexical Second order	The four Madhabs in Islam, Shafii, Hanafi, Hanbali, Maliki, the four rivers of knowledge	Conventional

Table 5-2 (Continued) Summary for semiotics analysis of Al Hissi- Al Aqli in spatial ordering for madrasa al Zahiriyya

Al Hissi		Al Aqli	
Signifier	Mode of sign	Signified	Conventional / universal
3- Transition from open space (courtyard) to semi-opened space (iwan) to closed spaces (classes)	Symbolic Second order	Imagination activation from the absolute being to the nonbeing through the mediator “Barzakh”	Conventional
4- The upward-downward-cardinal four directions	Symbolic Second order	Human presence	conventional
5- The inward-upward-downward-cardinal four directions	Symbolic Second order	Divine presence	Conventional
6- Connection, transition and culmination	Indexical Second order	Exoteric to esoteric through the body	Conventional
7- Boundaries, The sense of place and enclosure	Symbolic Second order	A combination of the container “body” and the contained “spirit”	Conventional

Table 5-3 Semiotics analysis for the relationship between the signifier and the signified in spatial ordering of Madrasa Al zahiriyya

Num	Denotation / Connotation	Paradigm / syntagms	Metaphor / metonymy	Articulation	Notes
Spatial ordering					
1	Connotation	Syntagms	Metaphor	One articulation	All the characteristics of Al Hissi of spatial ordering refers to the transition and movement between the opposites of human/ Divine, esoteric /exoteric through imagination
2	Connotation	Syntagms	Metonymy	Double articulation	
3	Connotation	Syntagms	Metaphor	One articulation	
4	Connotation	Syntagms	Metaphor	One articulation	
5	Connotation	Syntagms	Metaphor	One articulation	
6	Connotation	Syntagms	Metonymy	One articulation	
7	Connotation	Syntagms	Metonymy	Double articulation	

5.1.2 Semiotics analysis for aL hissi al aqli of the shapes of Madrasa Al Zahiriyya

The semiotics analysis of the elevation elements indicate referring to the sky in which the throne of the divine exists, the vertical axis, affirmed by the ratio of the mausoleum height greater than its width, its pointed dome and windows, form a syntagms, its paradigms connotes ascension to the divine, the celestial gardens connotated by the division of the façade into three sections, being the portal the middle one connotating them, while the rectangular section with its repetitive horizontal lines connotes the temporal existence “Dunya” and the mausoleum connotes the permanent existence “Divine’s throne”. (Ramzy, 2013; Akkach S. , 2005) the harmony in the sensible and intelligible world is connotated by the rhythm and the golden ratio in the whole complex. (Ardalan & Bakhtiar, 1973)

5.1.2.1 Semiotics analysis for the shapes of the Qubba (the mausoleum):

Semiotics reading for the *Qubba* reveals a possible manifestation for the throne “*Arsh*” of the divine described by Ibn Arabi in his book “*Futuhāt makkīyya*” (Akkach, 2005), the paradigm of cubical form connotes the earthly, with the paradigm of the dome form a syntagma connotes the earthly and the heaven that are both contained in the footstool “*Alkursi*”. The footstool according to Ibn Arabi is the holder for the divine feet, each feet has its own characteristic, one for compassion “*Rahma*” and one for wrath “*Rahma wa Ghadab*” (Akkach, 2005) connotated by the two *Iwanic* windows in the elevation, it has a quadrangular shape, The three transitional levels of the *Qubba* holds a double articulated message, its second level of articulation connotes the metaphor of transcending to the divine from earthly to heaven, while the first level with its syntagm connotes the footstool with its two octagons in which the pillars of the divine throne exists, to form an integrated third ordered system of the throne and the divine, this interpretation of the message that the *Qubba* holds is strongly affirmed by the existence of the double four-lobbed window that denotes the manifestation of the divine presence in its three stages, that inhabits the throne, the divine that was described by the attributes of soul, matter, intellect and nature. And described in relation to the characteristics of life, knowledge, power and will. In accordance with the nature of each characteristic to the dryness, cold, heat and moistness. (fig.5.3) The paradigm of the point at the end of the dome as a universal symbol to the divine and being “*Alhak*” forms a syntagma with the

Dome around, that connotes the metaphor of the possibilities of being in the relationship between the point and its circumference. (Akkach, 2005)

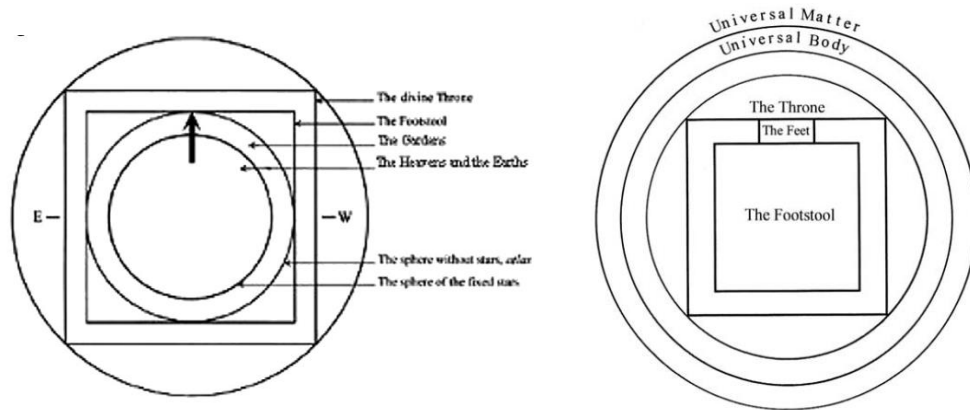


Figure 5.2 The footstool on the left (Ramzy, 2013), the footstool and the throne on right (Akkach, 2005)

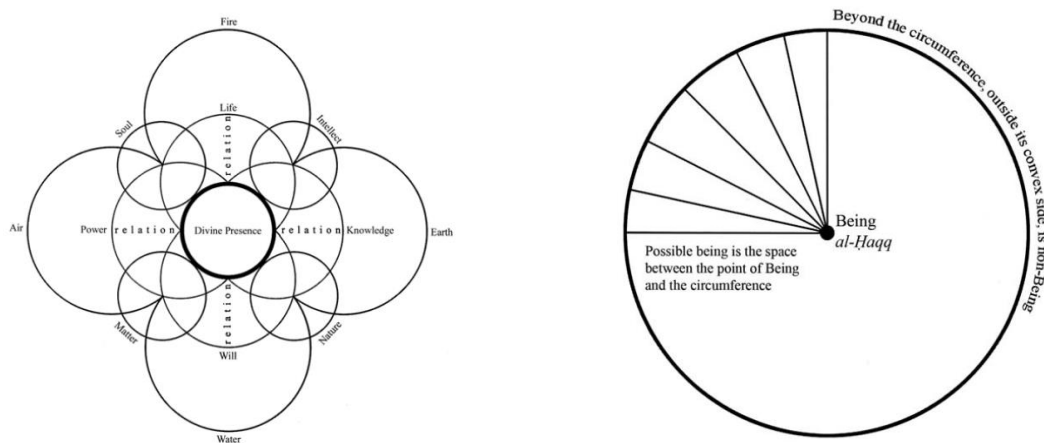


Figure 5.3 The third stage of manifestation of the divine presence on the left, the relationship between the point and the circumference in the circle of being on the right (Akkach, 2005)

5.1.2.2 Semiotics analysis for the shapes of the Portal:

The formation of the portal constructed through three main parts, form the gate, the plate of calligraphy and the muqarnas semi dome, with their ten sub-layers: the gate, the arch with the single layer of calligraphy directly above the gate, three layers of alternating calligraphy and white-black *Ablaq*, the composition of muqarnas of four transitional levels to the fluted head, forms a syntagm with double articulated messages connotes ascension through the celestial gardens in its second level of connotation, the portal forms a third order of signification in which all of its parts form separate syntagm with single articulated message to establish an integrated religio-cultural image of the celestial gardens that will not undergone to destruction and recreation. (Ramzy, 2013; Akkach,

2005) The centrality and axuality of the portal, connotes the “Tuba tree” the Universal man, that according to Ibn Arabi, rises from the garden of Eden and its branches goes across the other gardens, its roots in our world, its fruits in the paradise, and God created it in a similar way to creation of Adam to stand between other trees like Adam belongs to humankind. (Akkach, 2005)

The syntagma of the three main parts of the portal distinguish a double articulated message that connotes the three types of gardens in the elite that Ibn Arabi has specified “*Jannat Al-Ikhtisas*”, Gardens of Inheritance “*Jannat Al-Mirath*”, and Gardens of Deeds “*Jannat Al-A'mal*”, which are also hierarchically ordered in three levels” (Ramzy, 2013) The syntagma of the ten sub-parts of the portal connotes the first level of the message of the eight celestial gardens, that are bounded by the two spheres “*Atlas*” its upper limit with no stars, “*Falak*” its lower limit with the fixed stars, this claim is strongly proved by the twelve sub-divisions of the fluted hood, the last part of the portal, that thought to be a syntagma in which each paradigm denotes the twelve “*Buruj*” stars of the “*Atlas*” sphere. (Akkach, 2005) In addition, The paradigm of the gate with its geometrical star-based pattern denotes the “*Falak*” the sphere in its lower part with the fixed stars. The arch with the calligraphy denotes the abode of permeance, the three layers of alternating calligraphy and black-white *Ablaque* denotes the “abode of peace”, the “gardens of immortality” and the “garden of refuge” (in this part exactly, the interrelated political message manifests strongly, which will be discussed in chapter six).

The semi-dome of Muqarnas forms a syntagma of double articulated messages, the second as discussed previously connotes the garden of deeds “*Jannat Al Amal*” and the first forms a syntagma contains four paradigms connoting the four celestial gardens of “*Delight, Paradise, Eden and Al Wasila*” and the fifth connoting the “*Atlas*”.

The eighths garden “*Alwasila*” cuts the other seven gardens, this is denoted by the Dripping stalactites of the muqarnas. (Ramzy, 2013)

Two compositions in the middle tire of muqarnas “garden of paradise” consisting small semi dome constructed of three levels of concentric six-pointed star inscribed inside a circle that interrelates with a circle on each side of the star, make a syntagma connoting the fruits of “*Tuba Tree*” that grows in the “paradise” according to Ibn Arabi, within paradigms denotes several messages, the six-pointed star resembles the man presence that God created Tuba tree and put a spirit in it in a similar way to creation of Adam

(Akkach,2005), the four circles denotes the quadrature of man being, the three levels of star in addition to the quadrature connotes the fruit of divine tree.

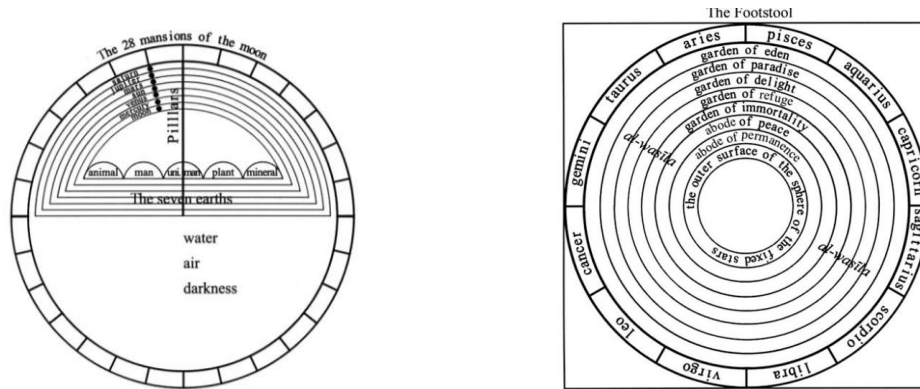


Figure 5.4 The seven earths and heavens on the left, the celestial gardens on the right (Akkach S. , 2005)

Table 5-4 Summary for semiotics analysis of Al Hissi- Al Aqli in the study of shapes for Madrasa Al Zahiriyya

Al Hissi		Al Aqli	
Signifier	Mode of sign	Signified	Conventional / universal
Shape			
1- Vertical axis affirmed by the pointed dome and the portal	Indexical First order	Ascension	Universal
2- Pointed arches and dome	Iconic First order	Reference to the sky, resembles the shape of arrow	Universal
3- The division of the façade into three sections the mausoleum, the portal and the rectangle	Symbolic Second order Third order	The transition of imagination between absolute being and nonbeing through the mediator or the portal “Barzakh”	Conventional Sufi tradition
4- The repetition of the horizontal lines in the elevation	Indexical First order	Stiffness and Solidity, the direction of life “Hayat”	Conventional
5- Rhythm in section	Indexical First order Iconic First order	Harmony of the universe “Kaoun”	Conventional
6- Golden ratios in section	Iconic First order	Perfection of the artifact of the divine	Universal

Table 5-5 (Continued) *Summary for semiotics analysis of Al Hissi- Al Aqli in the study of shapes for Madrasa Al Zahiriyya*

Numbers in the Qubba's elevation "mausoleum"			
Signifier	Mode of sign	Signified	Conventional / universal
7- The cubical form of the Qubba	Indexical	Stability, earthy, Al Kursi	Universal
	First & Second order	"Footstool"	Conventional
		With the circle of the dome above assembles the earth and the heaven	Sufi tradition
8- One "the point" in Qubba's dome	Symbolic Second order	The being "Alhak", the end and start of living	Universal
9- Two "two iwanic windows on each side"	Symbolic Second order	The divine's two feet, one is "Rahma" compassion the other is compassion mixed with wrath "Ghadab mashub bil rahma"	Conventional
10- Four "the dome with its three transitional steps"	Indexical First order	The footstool and the two levels of pillars of the divine throne	Conventional Sufi tradition
11- Eight, Octagon in the Qubba	Symbolic Second order	The shape of divine's throne "Al A'rsh"	Conventional
12- The two four-lobbed circle window	Iconic Second order	The third stage of manifestation of the divine presence: intellect, nature, soul, matter + power, knowledge, life, will.	Conventional
13- The pointed dome	Symbolic Second order	Ubiquity of the divine	Universal
Geometry of the portal			
14- Centrality and axuality	Symbolic Second order	"Tuba" tree, the universal man	Conventional
15- Twelve vertical sections in the fluted hood and three horizontals	Iconic First order	The twelve sections "buruj" of the "Atlas" sphere from the celestial garden, the divine presence	Conventional

Table 5-6 (Continued) Summary for semiotics analysis of Al Hissi- Al Aqli in the study of shapes for Madrasa Al Zahiriyya

Signifier	Mode of sign	Signified	Conventional / universal
16- Ten transitional sections in the semi dome of the portal	Symbolic Second order	The eight celestial gardens with its two bounding spheres	Conventional
17- Six-pointed star in the two semi domes in the middle tire	Indexical First order	Adam creation, Six cosmic directions in the body word "Alam Al ajsam"	Universal
18- Composition of concentric three levels of six-pointed stars in the middle tire	Indexical Second order	The fruit of Tuba Tree in Paradise, triplicity of being	Conventional
19- Four circles of the 6 circles composition in the middle tire	Indexical First order	The quadrature of being of man, The six directions that represents the human presence	Conventional
20- Nine folds of the corner squinch	Symbolic Second order	The seeds of "Tuba Tree"	Conventional
21- Dripping stalactites	Iconic First order	The Al wasila garden cutting through other gardens	Conventional

Table 5-7 Semiotics analysis for the relationship between the signifier and the signified in study of shapes of Madrasa Al zahiriyya

Num	Denotation / Connotation	Paradigm / syntagms	Metaphor / metonymy	Articulation	Notes
Shape					
1	Connotation	Paradigm	Metonymy	Single articulation	All the signs in the shape of the elevation refer to the nature of the intellect and God's creation
2	Denotation	Syntagms	Metonymy	No articulation	
3	Connotation	Syntagms	Metonymy	Double articulation	
4	Connotation	Paradigm	Metonymy	Double articulation	
5	Denotation	Syntagms	Metonymy	No articulation	
6	Denotation	Syntagms	Metaphor	One articulation	

Table 5-8 (Continued) *Semiotics analysis for the relationship between the signifier and the signified in study of shapes of Madrasa Al zahiriyya*

Numbers in the Qubba’s elevation “mausoleum”					
7	Connotations	Paradigm	Metaphor	Double articulation	All elements of the Qubba describes the nature of the divine
8	Denotation	Paradigm	Metaphor	Double articulation	
9	Denotation	Syntagms	Metaphor	One articulation	
10	Denotation	Syntagms	Metaphor	Double articulation	
11	Connotation	Paradigm	Metaphor	Double articulation	
12	Denotation	Syntagms	Metaphor	One articulation	
13	Connotation	Paradigm	Metaphor	One articulation	
Geometry of the portal					
15	Denotation	Paradigm	Metonymy	No articulation	Elements refer to orientation and celestial gardens
16	Connotation	Syntagms	Metaphor	One articulation	
17	Connotation	Paradigm	Metaphor	One articulation	
18	Connotation	Paradigm	Metaphor	One articulation	
19	Connotation	Paradigm	Metaphor	One articulation	
20	Connotation	Paradigm	Metaphor	One articulation	
21	Denotation	Syntagms	Metonymy	One articulation	

5.1.3 Semiotics analysis for al hissi al aqli of the surfaces of Madrasa Al Zahiriyya

The semiotic reading of surfaces connote double articulated message in its second level connotations of strength, stability, welfare and peace during Mamluk era are

Presented strongly, while in its first level the syntagms connote a third ordered message of heavens, earths, the “Tuba” tree and the terminal day.

5.1.3.1 Semiotics analysis for the surface of the frieze

The symmetry, centrality and axuality systems in the frieze with its vegetal motifs representations forms a double articulated message that in its upper level of signification connotes stability, welfare and equality, while its lower level denotes the tree of *Tuba* “the universal tree” (Barabanoy.A, 2002) which is denoted in The huge tree in the frieze of the northern wall, the architectural presentations on the other hand are also possible to carry double articulated message in which the first is iconic takes its code from Mamluk palaces (Rabbat, The Mosaics Of The Qubba Al-Zahiriyya In Damascus, 1997-1998), the other is iconic as well but has its metaphysical code from the dwellings and houses of heaven “*Manazel*” in Ibn Arabi’s interpretations, the central tower with its dome that was repeated with every complex denotes the air catchers that were occupying the Mamluk city, or connotes the air element of the natural divine matter, white and blue lines in the background denotes *Barada* river, in its second articulation it connotes the four rivers of knowledge (described in spatial ordering).

The four arches in the frieze of the southern wall forwarding five columns topped by vegetal motifs in the architectural representations connote stability, the four divine matter and the fivefold structure of the qibla, the qibla of intention towards “*Mecca*”, the qibla of the soul “*niche*” the qibla of understanding “*Al Beit Almamur*” the *qibla* for the intellect “*footstool*” according to Ibn Arabi in his “*Risalat Al Ahadiyya*” (Akkach S. , 2005, p. 199)

The curtains are first order icons that denote similar curtains in Umayyad mosque, with the whole elements they form a syntagma connoting strength and wealth in one articulation, heavenly manifestation on the other As described in the Quran, paradise is a pavilion with rows of flowers, trees, and shrubs (Ardalan & Bakhtiar, 1973)

5.1.3.2 Semiotics analysis for the surface of the niche

The *mihrab* itself with its semi-circular plan forms a syntagma that connotes the gate to paradise, the paradigm of the transition between seven columns of white, black

And middle blue one connotes the difficulty of entering the heaven (Dikkie,1995; Ramzy, 2013)

However, the two columns on each side representing the (previously stated) merciful feet of God allows the human to enter it, the calligraphy on each side of The *mihrab* connotes God's visual bodily sacred revelation and supports thus claim, the semi-Dome above the *mihrab* inscribed inside a square connotes the triumphal arch, which represents the “winning passageway of heroes and winners” (Chevalier and Gheerbrant, 1988; Ramzy, 2013).

This claim is strengthened by the vase of flowers and motifs on the semi-dome above it, in addition to the floral arabesque in the arch above the niche connoting harmony and denotes paradisaal manifestation (Ardalan & Bakhtiar, 1973).

5.1.3.3 Semiotics analysis for the surfaces of the walls

The horizontal and vertical lines in the walls form paradigms that each connotes a movement, vertical connoting upward as ascension, horizontal connoting life “Hayat” “Dunya”.

The composition of geometrical patterns arrows-like around the *iwanic* shaped windows and doors forms a syntagma with a single articulation to the three movements of Adam and human creation process from the sacrum downward, upward, outward.

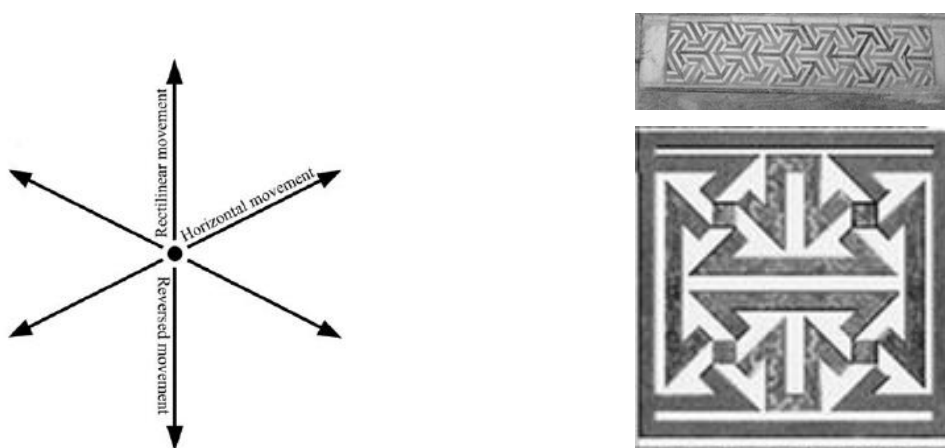


Figure 5.5 On the left the three movements of the human and spatial unfold (Akkach, 2005), on the right the used patterns, the arrowlike patterns.

Table 5-9 *Semiotics analysis for the surfaces of madrasa Al Zahiriyya*

Al Hissi		Al Aqli	
Signifier	Mode of sign	Signified	Conventional / Universal
Surfaces inside the Qubba “Mausoleum”			
1- Symmetry in the arrangement of the frieze in Qubba walls	Indexical First order	Equality, “Tuba tree” The universal man	Universal, Conventional
2- Vegetal representations in the frieze	Indexical Second order	Richness, Abundance, Wealth and Peace, Branches of “Tuba” tree	Universal, Conventional
3- Architectural representations in the frieze	Iconic First order	The Mamluk palaces and towers, Abode of permanence	Conventional
4- The four arches in the frieze of the southern wall forwarding five columns topped by vegetal motifs	Indexical First order	The four rules of stability and the five folds of orientation towards the footstool, leads to the peace and wealth	Conventional
5- The curtains between columns in the frieze of the eastern walls	Iconic First order	The curtains in Umayyad mosque and byzantine era, similarly strong and powerful, the curtains of paradise	Conventional
6- The huge tree in the frieze of the northern wall	Iconic First order	The tree of universal man “Tuba”	Conventional
7- The lines of white and blue	Iconic First order	Water Barada river, the four rivers of knowledge	Conventional
8- The towers of the architectural representations of the frieze	Iconic First order	Wind catchers “Badhahanj”, The element of air in the universal matter	Conventional Universal
Surfaces in the niche “mihrab”			
9- The niche in the southern wall	Indexical Second order	The gateway to paradise	Conventional
10- The two columns of the niche	Symbolic Second order	The two feet of God, compassion “Rahma” and compassion with wrath “Ghadab mixed with Rahma”	Conventional

Table 5-10 (Continued) *Semiotics analysis for the surfaces of madrasa Al Zahiriyya*

11- The repetition of three alternating colors of the <i>mihrab</i> , white black and blue	Indexical Second order	Water air darkness, Hardness of interring the paradise	Conventional
12- The vegetal motifs in the semi dome of <i>mihrab</i>	Iconic First order	Tuba Tree branches of celestial gardens	Universal
13- The vegetal arabesque in the southern wall above the niche	Indexical Second order Iconic First order	Blossoming and harmony in time in the divine creation, The fruits of Tuba tree in celestial gardens	Universal
14- The star shaped arabesque above the vegetal arabesque above the <i>mihrab</i>	Iconic First order	The sphere of the fixed stars	Conventional
15- Calligraphy in the Qubba and the portal	Symbolic First order	The sacred visual body of God revelation	Universal
16- Vertical Lines in the decoration of walls	Indexical First order	Transcendence	Universal
17- Horizontal lines	Symbolic Second order Indexical First order	Minerals, Direction of life “hayat”	Conventional
18- Interlaced composition of repetitive double arrow like in three directions	Symbolic Second order	The three movements upward, downward, outward that rules creation of man	Conventional

Table 5-11 *Semiotics analysis for the relationship between the signifier and the signified in study of surfaces of Madrasa Al Zahiriyya*

Num	Denotation / Connotation	Paradigm / Syntagms	Metaphor / Metonymy	Articulation	Notes
Surfaces inside the Qubba “Mausoleum”					
1	Connotation	Paradigm	Metonymy	Single Articulation	All the signs in the Qibla wall refers to the richness,
2	Connotation	Syntagms	Metaphor	Single Articulation	
3	Denotation	Syntagms	Metonymy	No Articulation	welfare and
4	Connotation	Syntagms	Metaphor	Double Articulation	power of the mamluk era

Table 5-12 (Continued) *Semiotics analysis for the relationship between the signifier and the signified in study of surfaces of Madrasa Al Zahiriyya*

5	Denotation Connotation	Paradigms	Metonymy Metaphor	One & Third Articulation	
6	Denotation	Paradigms	Metaphor	No articulation	
7	Denotation	Paradigms	Metonymy	No articulation	
8	Denotation	Paradigms	Metonymy	No articulation	
Surfaces in the niche “mihrab”					
9	Denotation	Syntagms	Metaphor	One articulation	All elements of the niche describes the nature of the divine orientation and celestial gardens
10	connotation	Syntagms	Metaphor	One articulation	
11	Connotation	Paradigm	Metaphor	One articulation	
12	Denotation	Syntagms	Metaphor	One articulation	
13	Denotation Connotation	Syntagms	Metaphor	Double articulation	
14	Denotation	Paradigm	Metonymy	One articulation	
15	Denotation	Syntagms	Metaphor	One articulation	
16	Denotation	Syntagms	Metonymy	No articulation	
17	Connotation Denotation	Paradigms Syntagms	Metaphor metonymy	Double articulation	
18	Connotation	Paradigm	Metaphor	One articulation	

5.1.4 Semiotics analysis for al hissi al aqli of matters and colors of Madrasa Al Zahiriyya:

The used colors and materials in the Madrasa support the suggestions of transcending, ascension and metaphysical appearances of the throne, the footstool, the celestial gardens, the earths and heavens articulated in the forms of the Madrasa, the light penetrating the octagons with its gradually increased amount with height denotes the lights of the divine throne “Anwar Al Arsh” and connotes the angles made of light that surround and support the throne forming the pillars of the throne, on the second level of articulation they connote the transcending movement towards the *Ruh* “*nefs*” “esoteric”

From the exoteric through the mediator body “*Jism*”, the shadows connote the shadows of the divine and the differentiation in the divine creation form the same substance.

The materials used manifest the sphere of the divine matter of cold, heat, moistness and dryness, earth, fire, water, plants, that God created the world of.

Marble, limestone, glass mosaic and stucco denote the earth with its cold and dryness, in the second level of articulation, the metal connotes stillness and the wood connotes ascension.

The system of three colors used in the frieze, interior and the exterior forms a syntagma that connotes the triangle of the divine (Ardalan & Bakhtiar, 1973) while the seven color system used in the interior as a whole connotes the four materials of the divine matter in addition to the three colors of the divine triplicity, each color forms a paradigm which denote or connote or both a certain message, blue denotes Barada river, water, wet and coldness, Red in the exterior of the Qubba the most significant (will be discussed in chapter six) connotes fire, power and control, on the first level of articulation it denotes fire, heat and dryness, its absence from the interior connotes peace and welfare, beige, brown, and yellow denote earth, dryness and cold, green connotes ascension “the movement of the plants upwards” in its second level of articulation, wet and cold on its first level of articulation, black connotes ascending “darkness” and multiplicity in its second level of articulation, esoteric and mystery in its first level of articulation.

White on the contrary connotes descending “light” on its second level of articulation, unity, exoteric and clarity in its first level.

Gold denotes the golden stones in the celestial gardens, the *ablaq* “the alternating colors of black and beig” denotes the stones of heaven one of silver and one of gold.



Figure 5.6 Three system colors and seven system colors in the Madrasa (Ardalan, Bakhtiar, 1998)

Table 5-13 *Semiotics analysis for matter and colors of Madrasa Al Zahiriyya*

Al Hissi		Al Aqli	
Signifier	Mode of sign	Signified	Conventional/ Universal /
Matter: light and shadow			
1- Light penetrating through the Iwanic shaped windows in the mausoleum and the <i>Qubba</i>	Indexical First order	“Anwar Al Arsh” lights of the throne	Conventional
2- The transition of light from the exterior to the interior through Iwanic shaped windows (opened, semi-opened, closed)	Symbolic Second order	The inward movement from “ <i>Zahir</i> ” to “ <i>Batin</i> ” Exoteric to esoteric through the body	Conventional
3- The increased amount of light gradually with transcending to the dome of the <i>Qubba</i> from eight windows in the first octagon to 16	Symbolic Second order	Descending - transcendence into the divine spirit “ <i>ruh</i> ” - transcendence toward the sky “the totality of existence” through a mediator “ <i>Barzakh</i> ”	Universal Conventional
4- The shadows caused by geometrical forms	Symbolic Second order	The reflection of the divine	Universal
5- The different shadows caused by different geometries	Symbolic Second order	The differentiation between creatures’ forms that are shadows for the one creator	Conventional
Matter: Materials			
6- Water: fountain	Indexical Second order	One fourth of the divine matters used in the organization of the sphere of constellation	Conventional Universal
7- Marble, Limestone, Mosaic Alabaster, Stucco,	Indexical Second order	Earth, cold and dryness combined to form fourth of the sphere of the divine matter, the place where descension and ascension meet	Conventional Universal

Table 5-14 (Continued) *Semiotics analysis for matter and colors of Madrasa Al Zahiriyya*

8- Wood	Indexical Second order	Plants: upwards movement	Conventional
9- Metal	Symbolic Second order	Stillness	Conventional
Colors			
10- Blue	Iconic First order	Barada river	Conventional
11- Yellow/ Beige / Brown	Symbolic Second order	Dryness, Horizontal movement	Conventional
12- White	Symbolic Second order	Descending, unity, purity, exoteric	Conventional
13- Black	Symbolic Second order	Ascending, Multiplicity Mystery, Esoteric	Conventional
14- Green	Iconic First order Symbolic Second order	Plants, Upward movement	Conventional
15- Golden	Iconic First order	The golden stones in celestial gardens	
16- Three system colors	Indexical Second order	Triangle of the divine	Universal
17- Seven color system	Symbolic Second order	Multiplicity, Zodiac of the “Atlas” the divine matter	Universal
18- Ablaq alternating colors of black and beige	Indexical Second order	Gardens in heaven, Alternating silver and golden stones	Conventional
19- Red Qubba from the outside	Symbolic Second order	Fire, Power, Control, War	Universal
20- The absence of red from the inside	Symbolic Second order	Peace, Richness and comfort	Universal

Table 5-15 *Semiotics analysis for the relationship between the signifier and the signified in study of Matter and colors of Madrasa Al zahiriyya*

Num	Denotation / Connotation	Paradigm / syntagms	Metaphor / metonymy	Articulation	Notes
Matter: light and shadow					
1	Denotation	Paradigm	Metonymy	Single articulation	All the elements refer to the divine light of the throne All materials describe the divine matter
2	Connotation	Paradigm	Metaphor	Single articulation	
3	Connotation	Paradigm	Metaphor	double articulation	
4	Connotation	Paradigm	Metaphor	Single articulation	
5	Connotation	Paradigm	Metaphor	Single articulation	
Matter: Materials					
6	Connotation	Paradigm	Metonymy	Single articulation	
7	Connotation	Paradigm Syntagms	Metonymy	Double articulation	
8	Connotation	Paradigms	Metonymy	Single articulation	
9	Connotation	Paradigms	Metaphor	Single articulation	
Colors					
10	Denotation	Paradigm	Metonymy	No articulation	All colors describe the gardens and the heaven
11	Connotation	Paradigm	Metaphor	Double articulation	
12	Connotation	Paradigm	Metaphor	Double articulation	
13	Connotation	Paradigm	Metaphor	Double articulation	
14	Connotation	Paradigm	Metaphor	Double articulation	
15	Denotation	Paradigm	Metonymy	No articulation	
16	Connotation	Paradigm	Metaphor	Single articulation	

Table 5-16 (Continued) *Semiotics analysis for the relationship between the signifier and the signified in study of Matter and colors of Madrasa Al zahiriyya*

17	Connotation	Paradigm	Metaphor	Single articulation
18	Connotation	Paradigm	Metonymy	Single articulation
19	Connotation	Paradigm	Metonymy	Single articulation
20	Connotation	Paradigm	Metonymy	Single articulation

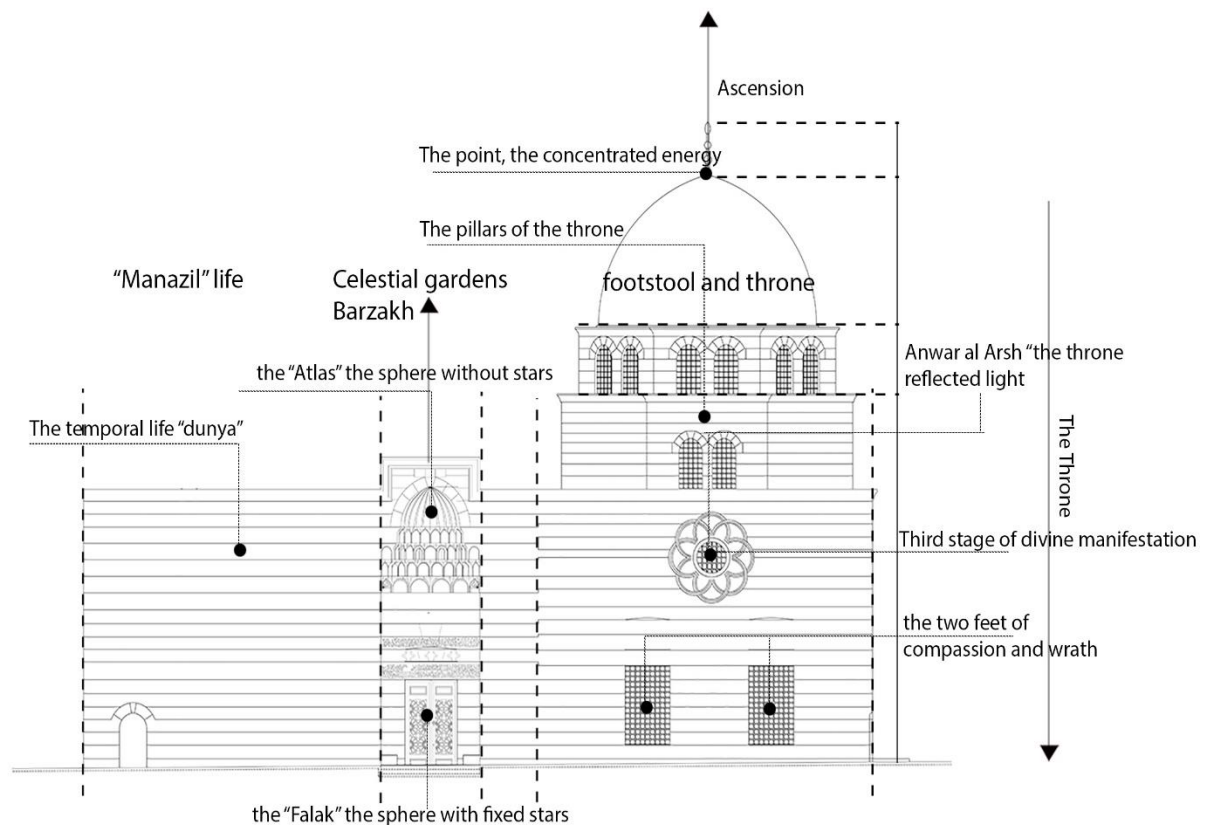


Figure 5.7 *Summary of semiotic analysis of elevation*

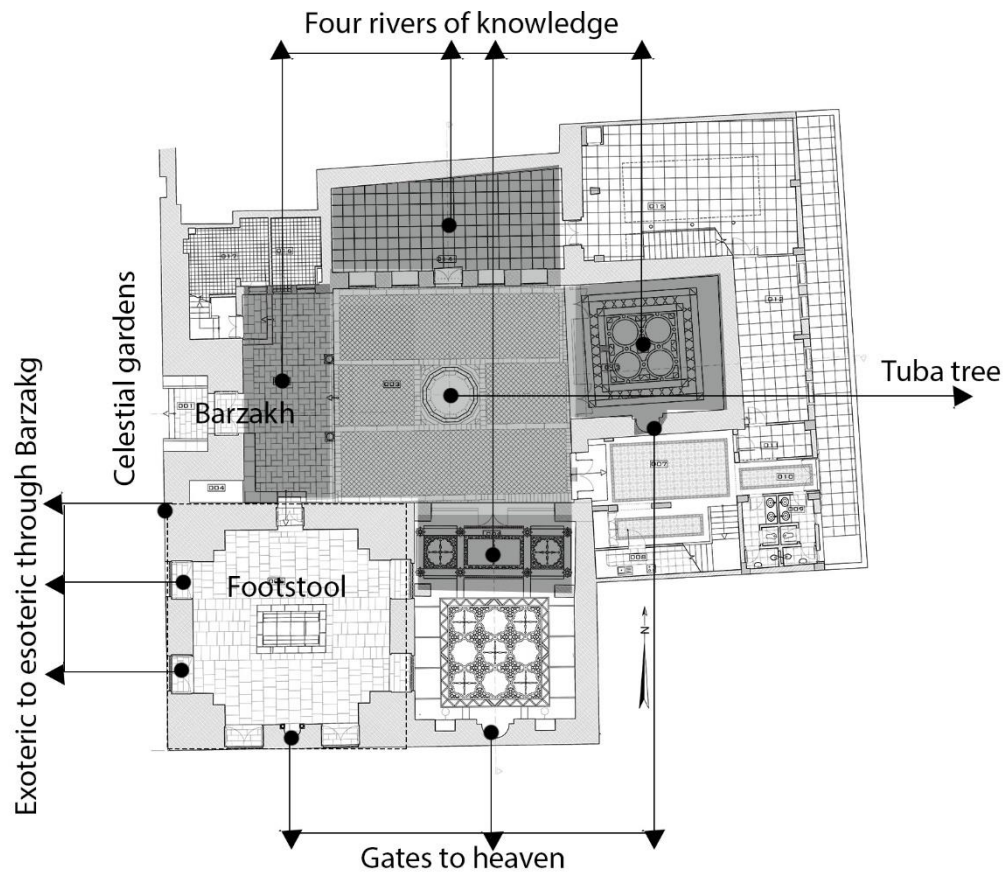


Figure 5.8 Summary for semiotic analysis of plans of madrasa Al Zahiriyya

5.2 Madrasa Al Adiliyya During The Ayyubid Dynasty: A Summary Of Al Hissi Al Aqli Meaning Of The Madrasa Al Adiliyya: Semiotics Analysis

The semiotic reading for the Madrasa Al Adiliyya reveals a possible integrated theological framework by which the movement from the sensible world to the intelligible world manifests, most of the reading meets with the detailed description for the methodology of gradual transcending through (Knowledge), and the levels of ascension through the intelligible world described by Gnostics like Ikhwan Al Safa. At some parts it meets with the descriptions of both Gnostics and Sufis like Ibn Arabi.

5.2.1 Semiotics analysis for spatial ordering of Madrasa Al Adiliyya

Semiotics analysis of spatial ordering of madrasa Al Adiliyya that consists of centralized open courtyard surrounded by two *iwans*, and sets of rooms, form a syntagma by which its paradigms connote the two worlds of spirits and bodies, the syntagma on the

Second order of signification connote the universe as a whole, the courtyard being exposed to the essential lightening connote the world of spirits that Ikhwan Al Safa had described as “luminous and subtle” while the surrounding rooms are “dark and dense”.

Then know, O just king, that these forms, shapes, structures, and attributes, which you see in the world of bodies and material substances, are symbols, similitudes, and colors of those forms that are in the world of spirits, save that the latter are luminous and subtle, while the former are dark and dense. (Akkach S. , 2005)

This suggestion is strengthened by two attributes, the first is the used structural system in the rooms of groin vaults, that form paradigms connoting the “bones and skins” of the bodies when Ikhwan said:

The relationship of the former to the latter is as the relationship between the paintings on the surfaces of boards and walls to the actual forms and shapes of the animals with flesh, blood, bones, and skin. Those forms in the spiritual world are the movers while these are the moved. (Akkach S. , 2005)

The second is denoted as “brick-like body” and “well-like body” through The usage of ratio 1:2 between the height of the walls to the width of the space in the courtyard and the ratio of 3:2 in the mausoleum, forming paradigms that connote the world of intelligible spirits and the world of decayable sensible bodies.

the disjunction between the *Iwans* and the surrounding rooms, in which the *iwan* does not play the role of transitional semi-opened space that connects the opened with the closed, instead the shape and height of their arches that reaches the roof of the second story denote a sense of direction and connote the imposed movement from the courtyard “spirit” to the rooms “bodies”, in the second level of articulation they connote the intellect that is opened to the “substance of the soul” (Akkach S. , 2005).

Table 5-17 *Semiotics analysis for spatial ordering of Madrasa Al Adiliyya*

Al Hissi		Al Aqli	
Signifier	Mode of sign	Signified	Conventional / Universal
Spatial ordering			
1- The centralized open spatial ordering “courtyard” and the surrounding rooms without transitional mediator spaces in between	Symbolic Second order	Two worlds of spirits and of bodies, the first is luminous and subtle, while the other is dark and dense	Conventional
2- The vault and the groin vault	Iconic First order	The bones that define the forms in the body’s world	Universal
3- Orientation towards the four directions from the courtyard defined by the height of the arches and the niche, without transitional space	Indexical Second order	(Haraka) movement as a form imposed on the body by the universal soul	Conventional
4- The ideal squares	Symbolic Second order	Configuration in the noblest most perfect state, the unperishable part of the human body that continues the sacrum	Conventional
5- Two iwans	Symbolic Second order	The intellect and practice by which both are opened to “the substance of the soul”	Conventional
6- Ratio 1:2 in the courtyard and the ratio 3:2 in the mausoleum	Iconic First order Symbolic Second order	“(Jisim Labiniyy) Brick-like space”, “(jisim biriyy) Well-like body” The first “Alam Al Arwah” world of spirits, the second “Alam Al Amwat” world of dead bodies	Conventional Universal

Table 5-18 *Semiotics analysis for the relationship between the signifier and the signified in study of spatial ordering of Madrasa Al Adiliyya*

Num	Denotation / Connotation	Paradigm / syntagms	Metaphor / metonymy	Articulation	Notes
Spatial ordering					
1	Connotation	Syntagms	Metaphor	One articulation	All the characteristics of Al Hissi of spatial ordering refers to the bodies being forms for the substance soul in the world of spirits
2	Denotation	Paradigms	Metonymy	No articulation	
3	Connotation	Syntagms	Metaphor	One articulation	
4	Connotation	Syntagms	Metaphor	Double articulation	
5	Connotation	Paradigms	Metaphor	One articulation	
6	Denotation Connotation	Paradigms	Metonymy Metaphor	Double articulation	

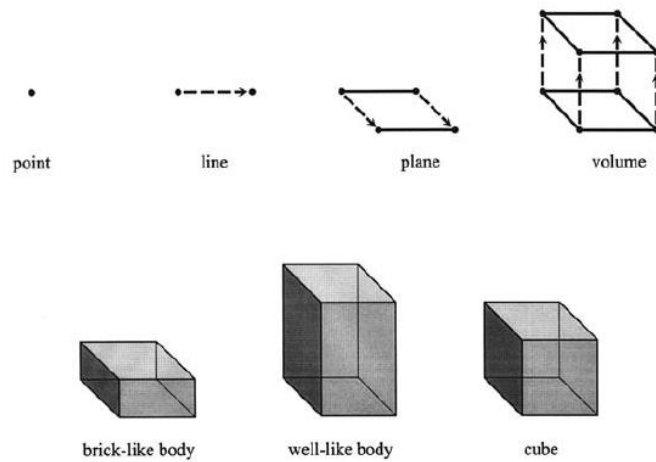


Figure 5.9 Geometry of the point, point movement according to Ikhwan Al Safa (Akkach, 2005)

5.2.2 Semiotics analysis for aL hissi al aqli of the shapes of Madrasa Al Adiliyya

The semiotics reading of the elevation elements indicates referring to the sky in which God's order of the universe manifests, and the method to ascend through the layers of spherical cosmos "earth, the sphere of atmosphere, the sphere of lune, the sphere of celestial gardens, the sphere of the divine" described by Ikhwan al Safa is Knowledge, that has a hierarchy until it approximates the "universal soul" as its source. Knowledge achieves the perfection in the artifacts (which is an attribute of the divine order) through its two branches, the first branch is the intellectual knowledge (Akkach, 2005, p. 76) the

Second is the practical knowledge, that according to Ibn Arabi (Akkach, 2005) needs the marriage of both.

Façade divided into three parts, the rectangle with the small door connoting the world of bodies, the small door connoting the birth, the second part is the mausoleum, which forms a syntagma, in which every part forms a paradigm, altogether connote the metaphysical order of the worlds of spirits (Akkach, 2005, p. 209) to reach the divine throne.

The third middle part is the portal as the gate to the universal soul, connotated by the syntagma of symmetry, the duality of the three-circular arches and the shape of the arches referring to the sky.

The concept of perfection of the artifact making is related to the Islamic theology based on the al Hadith that indicates that “God loves the artisan who seeks perfection in his art” (Akkach, 2005, pp. 77-78) Perfection could be achieved according to Ikhwan by the quality of the artifact of man compared to the qualities of the artifact of the divine, which is achievable through qualities, of unquantifiable substances, like configuration, time, light and purity. Quantities, like the form defined by length, breadth and depth (Akkach S. , 2005, p. 85) in which both form the original identity of the artifact “huwiyya” (Akkach S. , 2005, p. 66)

The duality of the elements in the elevation, for instance the duality of the arches of the portal, refers to the two contrasting sensible forms, that are necessary to identify the intelligible element: “An intelligible line cannot be seen on its own, but only as it lies between two surfaces, like the borderline between sunlight and shade.” (Akkach, 2005, p. 187)

Table 5-19 *Semiotic analysis for shapes of madrasa Al Adiliyya*

Al Hissi		Al Aqli	
Signifier	Mode of sign	Signified	Conventional / Universal
Shape			
1- Pointed arches and dome	Indexical Second order	Reference to the sky, Resembles the shape of arrow	Universal
2- The division of the façade into three sections the mausoleum, the portal and the rectangle	Symbolic Second order Third order	The transition from the world of bodies to the world of spirits through knowledge (the door to the soul universe)	Conventional
3- Rhythm in section	Iconic First order	Harmony of the universe	Universal
4- Golden ratios in section	Symbolic Second order	Perfection of the artifact of the divine, configuration in the noblest most perfect state	Universal
Numbers in the Qubba's elevation "mausoleum"			
5- The cubical form of the Qubba	Indexical First & Second order	Stability, Earth	Universal Conventional
6- One "the point" in Qubba's dome	Symbolic Second order	The substance to the universal soul	Universal, Conventional
7- Two windows in the lower part of the mausoleum, to one deep pointed arched opening in the elevation containing smaller window in it	Symbolic Second order	Quantity and quality in defining the original identity "Huwiyya" of perceptible matter of objects	Conventional
8- Two windows in the octagon	Symbolic Second order	The universal matter and the universal intellect in the celestial God order,	Conventional
9- Pointed dome at the end	Symbolic Second order	The universal soul	Conventional

Table 5-20 (Continued) *Semiotic analysis for shapes of madrasa Al Adiliyya*

Geometry of the portal				
10- Symmetry and axiality	Indexical Second order	Equality, Ascension, Tuba tree	Conventional	
11- Three-circular arches	Symbolic Second order	Triplicity of human, nature and psychic the universal soul, fruits of tuba tree	Universal Conventional	
12- Combination of two symmetrical arches	Symbolic Second order	Duality of Matter and form, inward and outward, duality of negations in obtaining knowledge negation and negation of negation	Conventional	
13- The pointed arch of the portal	Indexical & Symbolic Second order	The universal soul referring to the sky	Conventional	

Table 5-21 *Semiotic analysis for the relationship between the signifier and the signified in the study of shapes of Madrasa Al Adiliyya*

Num	Denotation / Connotation	Paradigm / syntagms	Metaphor / metonymy	Articulation	Notes
Shape					
1	Connotation	Syntagms	Metonymy	One articulation	All elements refer to the artifact of the divine and transition between the two worlds
2	Connotation	Syntagms	Metonymy	One articulation	
3	Connotation	Paradigm	Metonymy	One articulation	
4	Denotation	Syntagms	Metonymy	No articulation	
Numbers in the Qubba’s elevation “mausoleum”					
5	Connotations	Paradigm	Metaphor	Double articulation	All elements of the Qubba describes the nature of the divine
6	Connotation	Paradigm	Metaphor	One articulation	
7	Connotation	Syntagms	Metaphor	Double articulation	
8	Connotation	Paradigm	Metaphor	One articulation	

Table 5-22 (Continued) *Semiotic analysis for the relationship between the signifier and the signified in study of shapes of Madrasa Al Adiliyya*

9	Connotation	Paradigm	Metaphor	One articulation	
Geometry of the portal					
10	Connotation	Paradigm	Metaphor	Double	Elements
	Denotation	Syntagms	Metonymy	articulation	refer to
11	Connotation	Syntagms	Metaphor	Double	orientation
				articulation	and
12	Connotation	Syntagms	Metaphor	Double	knowledge as
				articulation	an ascension
13	Connotation	Paradigm	Metonymy	Double	method
				articulation	through the spheres of the universe

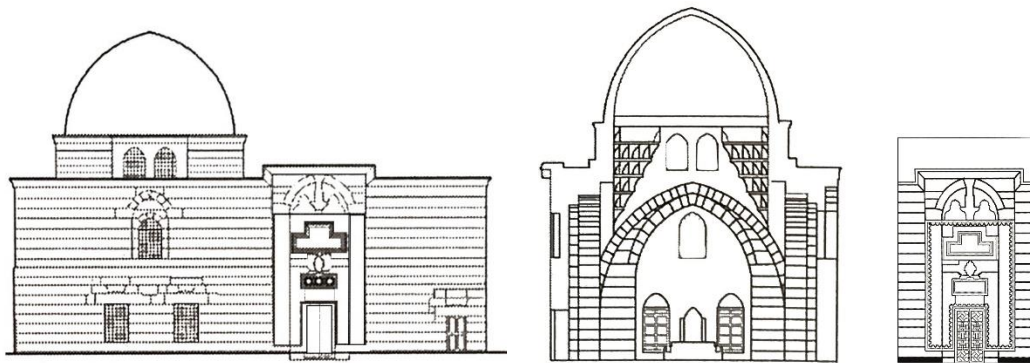


Figure 5.10 *Elevations and section of madrasa Al Adiliyya (Arab Archeologists Union)*

5.2.3 Semiotics analysis for al hissi al aqli of the surfaces of Madrasa Al Adiliyya

Semiotics reading for the interior surfaces of Madrasa Al Adiliyya asserts on the concept of ascension through the layers of earth and heavens to God through esoteric knowledge, Ikhwan writes: “the earth in the middle of the atmosphere, the atmosphere in the middle of the lunar sphere, the lunar sphere in the middle of the (celestial) spheres” (Akkach S. , 2005, p. 209), the subdivision of the universe to earth connoted by the floor and the two tomb, the atmosphere of earth connotated by the paradigm of white pure walls, with the three windows possibly denoting sun, moon and star with their essential

Light, or connoting the quality and quantity that are combined together to form the identity, the two arches connoting the pillars of the divine throne, which are wisdom the lower and imagination the upper, penetrating the celestial spheres connoted by the Muqarnas layers, to reach the universal soul connoted by the pure scroll underneath the dome connoting the divine.

“science is one of the gates that leads to knowing the substance of the soul, which is the root of all sciences, the element of wisdom, and the origin of all intellectual and practical arts.”
(Akkach, 2005, p. 85)

Table 5-23 *Semiotics analysis for surfaces of madrasa Al Adiliyya*

Al Hissi		Al Aqli	
Signifier	Mode of sign	Signified	Conventional / universal
Surfaces inside the Qubba “Mausoleum”			
1- Symmetry	Indexical First order, symbolic, second order	Equality, the universal man tree “Tuba tree”	Universal, conventional
2- The tombs	Indexical second order	The earth	
3- The walls with the windows	Symbolic second order	the sublunary sphere	
4- the first pointed arch	Symbolic second order	wisdom as the first pillar of the universal matter	
5- the second pointed arch	Symbolic second order	intellect as the second pillar of the universal matter penetrating the celestial gardens	
6- The six levels of pendentives	Indexical First order, symbolic second order	Ascension through knowledge of God’s order and human imagination through the six levels of celestial spheres	Conventional
7- the seventh scroll	Symbolic second order	The universal soul, the seventh garden	Conventional
8- The dome	Symbolic second order	the divine	Conventional

Table 5-24 (Continued) *Semiotics analysis for surfaces of madrasa Al Adiliyya*

Surfaces of the portal			
9- The gate	Symbolic second order	The earth with its domains	Conventional
10- The ablaque	Indexical second order	The sequence of night and day in the atmosphere layer	Universal
11- The dodecagon	Symbolic second order	The combination of the four kinds of making nature, human presence, psychic and divine, the four kinds of artifacts of matter, the four kinds of artifacts of forms in the sublunary sphere	Conventional
12- The interlocked two circles	Symbolic second order	The combination of universal matter and universal form in the formation of universal soul in the celestial sphere	Conventional
13- Calligraphy	Symbolic second order	The physical form of God order	Conventional

The semiotic reading for the surfaces of the gate reveals the composition of the universe according to Ikhwan Al safa and Ibn Arabi, the gate with its perpendicular patterns, connoting the earth, the layer above of Ablaq denoting the sequence of night and day, the pattern of dodecagon reveals a composition of three universal system of four elements on each other, the human presence with his four dimensions, the natural presence with the elements of air, fire, earth and water, the universal soul presence of the universal matter of and the universal form, practical and intellectual, in the lunar sphere, in which stars denote accidental light.

“the Ikhwan distinguish four kinds of making and four types of artefacts: human (bashariyya), natural (tabi_iyya), psychic (nafsaniyya, referring to the Universal Soul), and divine (ilahiyya). This differentiation relates to the four different types of matter: matter of artificial work, matter of natural work, Universal Matter, and Prime Matter” “active nature responsible for this process is one of the forces of the celestial Universal Soul . . . Universal Matter is the Absolute Body, from which is drawn the entire world, that is, the celestial spheres, the stars, the elements, and all beings” (Akkach, 2005)

The interlocked two circles in the first celestial sphere connote the union of the universal matter and form, calligraphy connotes the physical visual expression of God

Order. All Form a syntagma that connotes a third order system of signification that reflects the religio-cultural background of that age.

Table 5-25 *Semiotic analysis for the relationship between the signifier and the signified in study of surfaces of Madrasa Al Adiliyya*

Num	Denotation / Connotation	Paradigm / syntagms	Metaphor / metonymy	Articulation	Notes
Shape					
1	Connotation	Syntagms	Metonymy	Double articulation	All elements refer to the ascension in the world of spirits through knowledge attributes
2	Connotation	Paradigm	Metonymy	No articulation	
3	Connotation	Syntagms	Metonymy	One articulation	
4	Connotation	Paradigm	Metaphor	One articulation	
5	Connotations	Paradigm	Metaphor	One articulation	
6	Connotation	Paradigm	Metaphor	One articulation	
7	Connotation	Paradigm	Metaphor	One articulation	
8	Connotation	Paradigm	Metaphor	One articulation	
Geometry of the portal					
9	Connotation	Paradigm	Metaphor	One articulation	Elements refer to the order of the universe according to mystical ideas
10	Connotation	Paradigm	Metaphor	One articulation	
11	Connotation	Syntagms	Metaphor	One articulation	
12	Connotation	Paradigm	Metonymy	One articulation	
13	Connotation	Paradigm	Metonymy	One articulation	

5.2.4 Semiotics analysis for al hissi al aqli of the Matter and colors of Madrasa Al Adiliyya

Table 5-26 *Semiotic analysis for matter and colors of madrasa Al Adiliyya*

Al Hissi		Al Aqli	
Signifier	Mode of sign	Signified	Conventional/ universal /
Matter: Material, light and shadow			
1- Light from upper windows	Symbolic Second order	The luminous subtle spirits	Universal
2-The shadows caused by geometrical forms	Symbolic Second order	The forms of the same universal matter	Conventional
Matter: Materials			
3- Marble, Limestone	Indexical Second order	Earth, cold and dryness combined to form fourth of the sphere of the divine matter, the place where descension and ascension meet	Conventional Universal
4- Wood	Indexical Second order	Plants: upward movement	Conventional
5- Metal	Symbolic Second order	Stillness	Conventional
Colors			
6- Yellow/ Beige / Brown	Symbolic Second order	Dryness, earth, horizontal movement	Conventional
7- White	Iconic First order	Light in the sublunary sphere	Conventional
8- Black	Iconic First order	Night	Conventional
9- Three system colors	Indexical Second order	Ascension, descension and horizontal movement	Universal
10- Ablaq alternating colors of black and white	Iconic First order	Sequence of night and day	Conventional

All the lights materials and colors used in the madrasa to strengthen the suggested readings, the light penetrating from the octagon connotes the luminous subtle spirits,

While different shadows caused by different forms connote the differentiation of form and unity of the matter, which is the universal matter, using marble, unpolished limestone denotes the earth, connote the pure universal matter, the colors used strengthen the signification of ascension, descension and horizontal movement.

Table 5-27 *Semiotic analysis for the relationship between the signifier and the signified in study of matter and colors of Madrasa Al Adiliyya*

Num	Denotation / Connotation	Paradigm / syntagms	Metaphor / metonymy	Articulation	Notes
Matter: light and shadow					
1	Connotation	Paradigm	Metonymy	Single articulation	All the elements
2	Connotation	Paradigm	Metaphor	Single articulation	refer to the divine light
3	Connotation	Paradigm	Metaphor	double articulation	of the throne
4	Connotation	Paradigm	Metaphor	Single articulation	All materials
5	Connotation	Paradigm	Metaphor	Single articulation	describe the divine matter
Matter: colors					
6	Connotation	Paradigm	Metonymy	Double articulation	
7	Denotation	Paradigm	Metonymy	no articulation	
8	Denotation	Paradigms	Metonymy	no articulation	
9	Connotation	Syntagms	Metaphor	Single articulation	
10	Denotation	Paradigm	Metonymy	No articulation	

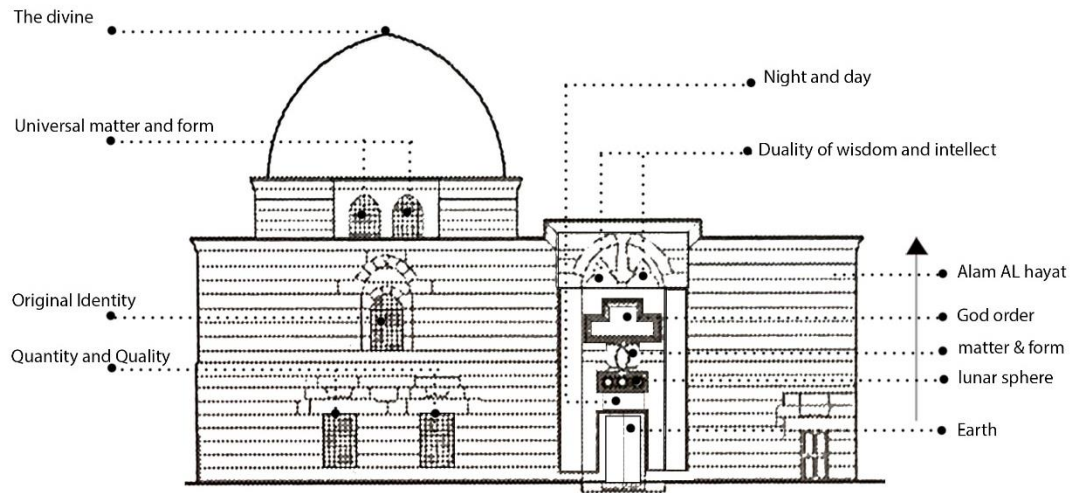


Figure 5.11 *Semiotics reading for the elevation*

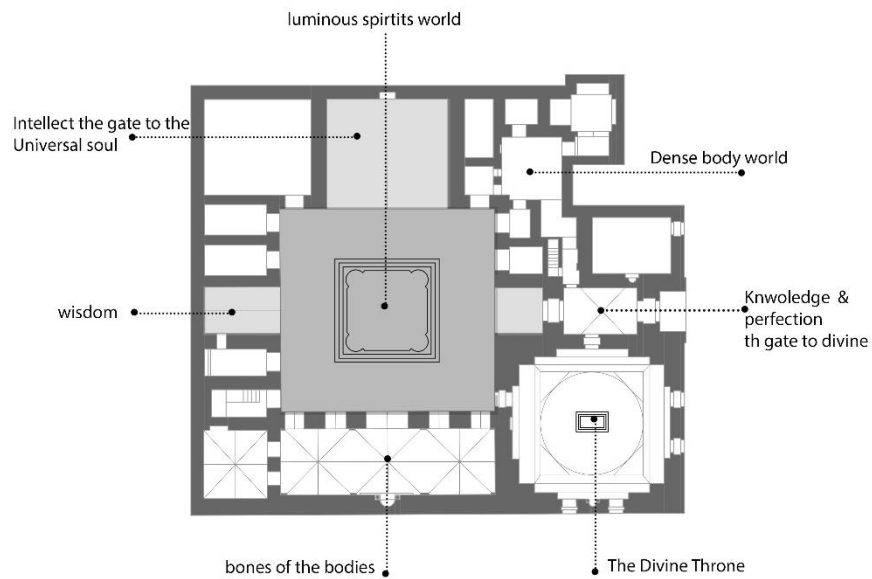


Figure 5.12 *Semiotics reading for the plan of madrasa Al Adiliyya*

Semiotics analysis for the two premodern Islamic structures has been conducted, therefore, a semiotics analysis for the postmodern Islamic structure is necessary.

5.3 Great Amman Municipality As a Postmodern Islamic Structure: A Summary Of Al Hissi Al Aqli Meaning Of GAM: Semiotics Analysis

All the elements in the Great Amman municipality design form syntagma of third order of signification that connote the metaphor of dialogue with time, on its second order of signification each syntagma connotes a double articulated message, the first syntagms contains the sets of arches and columns that varies into two scales, the macrocosmic scale in lower levels that connote the metaphor of the city, and the microcosmic scale that connotes the metaphor of human, the position of the arches that connotes the human at the corner that faces the city strengthen the contextual skin concept, the movement between the two denotes ascension and descension movements, the square on the other hand, denotes the contextual skin that is directed towards the four cosmic directions, the Amman city hall with its round shape combined with the axis of entrances, connote the unifying space of east and west, the meeting point of different time frames, this belief is strengthened by the cosmic sun clock that denotes time passage and connotes the cosmic order. The adapted shapes from different historical periods, like the Roman auditorium, the Amman's Umayyad period arch shape, and the windows shaped by the famous stone artifact of Beduins (the local handcraft) form a syntagma that connote the hybridity of socio-cultural and historical fabric of the city. The syntagma formed by the paradigms of locally used limestone material, unpolished and single colored, in addition to the paradigms of scale, paradigms of styles of niches in the upper level, connote strength, stability of the city to form a monumental and iconic structure.

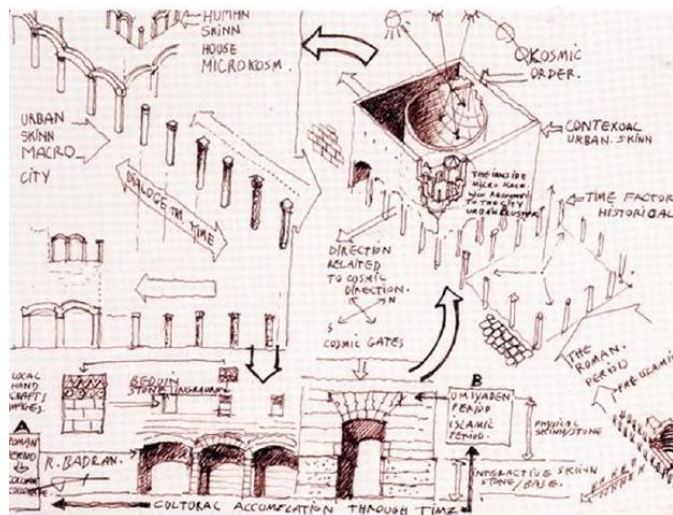


Figure 5.13 Code used for semiotics analysis: *Rasem Badran's analytical diagram of morphology of GAM* (Steele & Badran, 2005)

Table 5-28 *Al Hissi- Al Aqli in GMA*

Al Hissi		Al Aqli	
Signifier	Mode of sign	Signified	Conventional/ universal /
Spatial ordering			
1- The central round courtyard surrounded by four sections of closed spaces	Symbolic Second order	The continuous dialogue with time with the four traditions and periods in Amman city's history	Conventional
2- Direction towards the four directions	Iconic First order	The cosmic order	Universal
3- The entrance axis between east and west	Iconic First order	Connection and unity between the two sides of the city	Universal
4- The morphology of the Auditorium	Iconic First order	The Roman theatre in Amman's city	Conventional
Shapes			
5- Rhythm, centrality	Indexical Second order	Harmony and stability	Universal
6- The shape of the niches in the upper level	Iconic First order, Indexical Second order	Ayyubid castles in Amman city, Stability and strength	Conventional
7- The shape of the segmental arches	Iconic First order, Symbolic Second order	The Umayyad arch in Uman city, strength and welfare	Conventional
8- The Macro scale of the arches in lower levels	Symbolic Second order	The city	Universal
9- The Micro scale of arches in the balcony	Symbolic Second order	The human	Universal
Surfaces			
10- The pattern on the windows on the second level	Iconic First order	Artifact of Beduins of Amman	Conventional
11- Sun clock in the interior	Indexical Second order, Iconic First order	Time passage Cosmic order	Universal

Table 5-29 *Al Hissi Al Aqli and matter color aspects in GAM*

Al Hissi		Al Aqli	
Signifier	Mode of sign	Signified	Conventional/ universal /
Matter & colors			
12- Unpolished Limestone in the exterior	Symbolic Second order	Stability and strength	Universal
13- Single coloring system	Symbolic Second order	Ambiguousness and stability	Conventional



Figure 5.14 *Amman City Hall, the cosmic plaza, a sundial mounted on the wall becomes an integral part of the spatial experience, intentionally making a cosmic connection then is extended into the placement of architectural elements (Steele & Badran, 2005)*

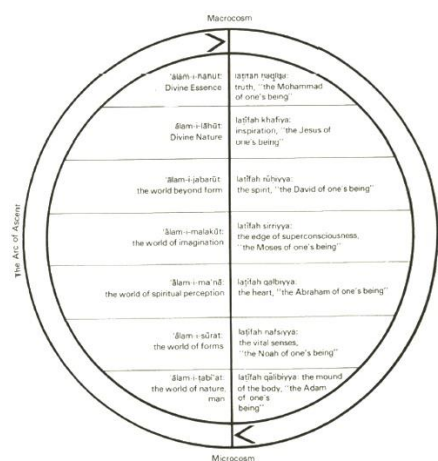


Figure 5.15 *Ascension-Descension movements between the two symbols of the Macrocosm and Microcosm according to (Ardalan & Bakhtiar, 1973)*

Table 5-30 *Semiotic analysis for the relationship between the signifier and the signified in study of GAM*

Num	Denotation / Connotation	Paradigm / syntagms	Metaphor / metonymy	Articulation	Notes
Matter: light and shadow					
1	Connotation	Syntagm	Metaphor	Single articulation	All the elements of the design refer to the dialogue through time happening between the public and the government on one hand, and between different historical and traditional backgrounds in Amman city on the other
2	Denotation	Paradigm	Metaphor	Single articulation	
3	Denotation	Paradigm	Metaphor	Single articulation	
4	Denotation	Paradigm	Metonymy	Single articulation	
Shapes					
5	Connotation	Paradigm	Metonymy	Single articulation	
6	Denotation	Paradigm	Metonymy	no articulation	
7	Denotation	Paradigms	Metonymy	no articulation	
8	Connotation	Syntagms	Metaphor	Single articulation	
9	Connotation	Syntagms	Metaphor	Single articulation	
10	Denotation	Paradigms	Metonymy	no articulation	
11	Connotation	Paradigm	Metaphor	Single articulation	
12	Connotation	Paradigm	Metaphor	Single articulation	
13	Connotation	Paradigm	Metonymy	Single articulation	

6. CONCLUSION AND RECOMMENDATIONS.

6.1. Conclusion

Al Hissi Al aqli is one of the significant relationships that been discussed through different historical ages, the neglect even more the absence of this concept from the design considerations in contemporary architecture, reflects the dominance of sensible and materiality of the current world. Therefore, a return to the premodern ages to highlight the manifestation of this relationship in Islamic architecture was the purpose of this study.

The paradigms of Socrates, Plato and Aristotle about the nature of the sensible intelligible was translated by Islamic scholars and developed by them, its domain and methods were discussed by perennials philosophy, Descartes, Kant, the main shared concepts of this duality, is that sensible includes the sensible object as features and characteristic, and the sensible image which is a result for the sensory experience and perception, while the intelligible is the mental, intellectual, metaphysical, sacred or cultural meaning, contains also intelligible image and intelligible object “form” They also agreed on considering the system of signification in its symbolic approach being the most convenient method.

Some important differences between each philosophical trend appeared, some of them suggested the abstraction method from the sensible “Aristotle” other referred to the sensible as an obstacle in the way of the intelligible “Plato” and suggested mental independence.

Some of the Islamic scholars refused considering symbols as the same categories as signs and suggested only the sensible nature of the sign and restricted its limits to denotation, they relied on symbolism as the only method in exploring the Hissi-Aqli relation.

Considering the following theories that proposes the wide range domain of the sign system and the importance of semiotic analysis as a tool in the synthesis of the sensible architectural elements to reveal its communicative intelligible meaning from a cultural perspective, makes it the most convenient tool, De Saussure, Pierce, Eco and Barthes paradigms about the nature of the sign and its domain are discussed in this thesis, with additional importance given to the quadrangles nature of the sign in its ontological approach, that reveals the importance of the sensible and the intelligible approaches of the signifier and the signified.

6.2. Al Hissi Al Aqli In Two Madrasas: The Sensory Experience And Legibility:

Al Hissi as the signifier with its sensible object and image “the sensible and intelligible signifier” is discussed thoroughly in this thesis in the domain of spatial sensibility, and spatial ordering of the Two Madrasas in the Bab Al Bareed Street, geometrical analysis and related sensory experiences were examined for both Madrasas, Historical, Political and philological backgrounds in addition to typological differences for spatial taxonomy in the establishment of the madrasa in Islamic world in its first appearances were briefly provided, the differences of the spatial ordering between the two madrasas (Al Zahiriyya) and (Al Adiliyya) relates to the ratios, the styles of windows, the structural system, the ornamentation styles, spatial ordering for both madrasas depends on the centralized open courtyard surrounded by rooms and Iwans, however, spatial ordering for Al Zahiriyya Madrasa has a cruciform shape with four rooms, one is occupied by the entrance the other occupied by a hall, the two others still functioning as Iwans, that have additional function that does not exist in the Al Adiliyya Madrasa, which is the transition between the courtyard and rooms. the spatial ratio of the walls of the courtyard to its width equals 1:2 in Adiliyya , 1:1 in Zahiriyya courtyard, while it equals 3:2 in Adiliyya mausoleum, it equals 2 in Al zahiriyya mausoleum, which indicates an intelligible difference, the duality system used in Al Adiliyya madrasa whether in its structural system, the portal or the arches is more apparent, the used techniques in stone construction are adapted from different areas in Syria, Al Zahiriyya on the other hand shows more sophisticated methods and divergence in ornamentations and muqarnas geometry (based on six-point stars), some Techniques were adapted from the Umayyad mosque and the Byzantine influence, but in a total different context and intelligible references, and became as an influence for further examples of madrasas in Cairo.

Although the differences in Al hissi signifiers in spatial ordering between the two madrasas are relatively minor to differences between spatial ordering for madrasas from other dynasties, yet these minor changes bear significant different intelligible messages, most of them are metaphysical referring the religio-cultural conception of concurrent dynasties, however, a considerable percentage of these messages are related to political attributes, these differences are discussed thoroughly in this thesis, choosing the site of Al Zahiriyya madrasa at the first place, on Dar AlAqiqi (previously Ayyubid house), next to the madrasa Al Adiliyya, (the Ayyubid monument which contained the tomb of one of their leaders), the height of the dome of Al Zahiriyya that was built under the Mamluk

Reign, being the highest dome after the Umayyad mosque's dome, colored in red, covering a composition of a cube and two domes, not to mention the Glass mosaic Frieze with its techniques adapted from the Umayyad mosque and its iconography that reveals an iconic denotation to the Mamluk palaces, all of the previous bear a message of political competition, and reflects a statue of welfare and peace from the interior, while it holds a threatening message from the exterior with its stability and strictness connotated by both forms and one coloring system for the exterior walls, in contrary to the six color system used in the interior walls except for red, being excluded entirely.

Al madrasa Al zahiriyya reveals a profound metaphysical intelligible message presented in the composition of its portal as a representation of the celestial gardens, the dome connoting the divine throne and the footstool, the metaphor of the seven movements towards the esoteric and the divine connotated through its elevation and spatial ordering. All of these assumptions based on the codes of the interpretations of Ibn Arabi based on Quran and Hadith, presented as the Sufi tradition as a branch of Sunni revival, the formal religious rite of Mamluk dynasty.

Al Adiliyya madrasa on the other hand with the long time period of its construction, that lasted for three dynasties, mostly during the Ayyubid dynasty when most of the design decisions were made, shows a diversity in the techniques and forms used in its construction, not to mention the influence of northern Syria and Aleppo on its façade, all of these signifiers bear an intelligible message of political nature, which is the wide region that the patron governed and the ability of the patron to bring artisans from all around the places they ruled.

The semiotic reading of Madrasa Al Adiliyya confirm on the metaphysical dimension of its architecture, the duality of elements noticed at every corner, in the portal, in the usage of the window inside the arch, the double arches on every side of the cube that support the dome of the mausoleum, all of these syntagms form a third order of signification which connote the metaphor of transcendence to the divine through the two branches of knowledge, the intellect and the imagination, by negation and negation of negation, that Gnostics like Ikhwan Al safa in their theological reasoning for mystical ideas, the portal being the door to the universal soul strengthen this position, other possible interpretations the inward and the outward movement suggested by Ibn Arabi which reflects the hybridity of the cultural context through these period.

The semiotics analysis for both Madrasas shows a deep relationship between the sensory experience and the intelligible image.

The composition of senses generated in both Madrasas caused by spatial ordering: the sense of enclosure, the sense of orientation, transition and space continuity system, assesses the transition between the two worlds of opposites: the esoteric & the exoteric through the body in Madrasa Al Zahiriyya connoted by the high value of sense of enclosure and the transitional function of *Iwans*, the world of spirits & the world of bodies in Madrasa Al Adiliyya. Through the relatively lower value of sense of enclosure, in addition to the total disjunction between closed and opened spaces.

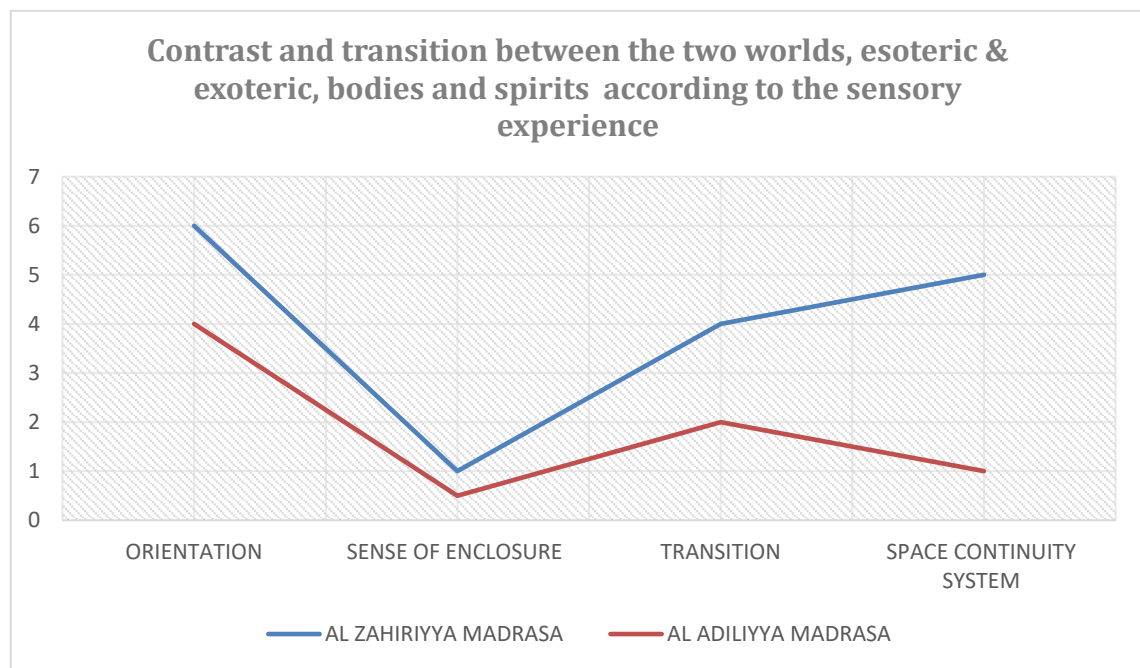


Figure 6.2.1 Contrast and transition between the two worlds according to sensory experience

Semiotics analysis of sensory experience (the composition of senses of welfare, arousal form the inside, stability, strength and threatens from the outside, etc.) caused by ornamentations, colors, material and ratios of elevation for both madrasas, reveals a legible political competition, Mamluks in madrasa Al Zahiriyya sought the greatness of Umayyad dynasty in Damascus, especially in strength and welfare, that there are no equal peers to their sovereigns, connoted by the syntagms of the sense of arousal and welfare caused by the techniques of the ornamentation and the architectural presentations in a similar way to the Great Umayyad Mosque.

Ayyubids in Madrasa Al Adiliyya sought defensive, threatening and strong appearance, connoted by the sense of stability and strictness achieved by the single-color system, the unpolished stone techniques, the ratios of the windows being relatively small and ratios of elevation in general

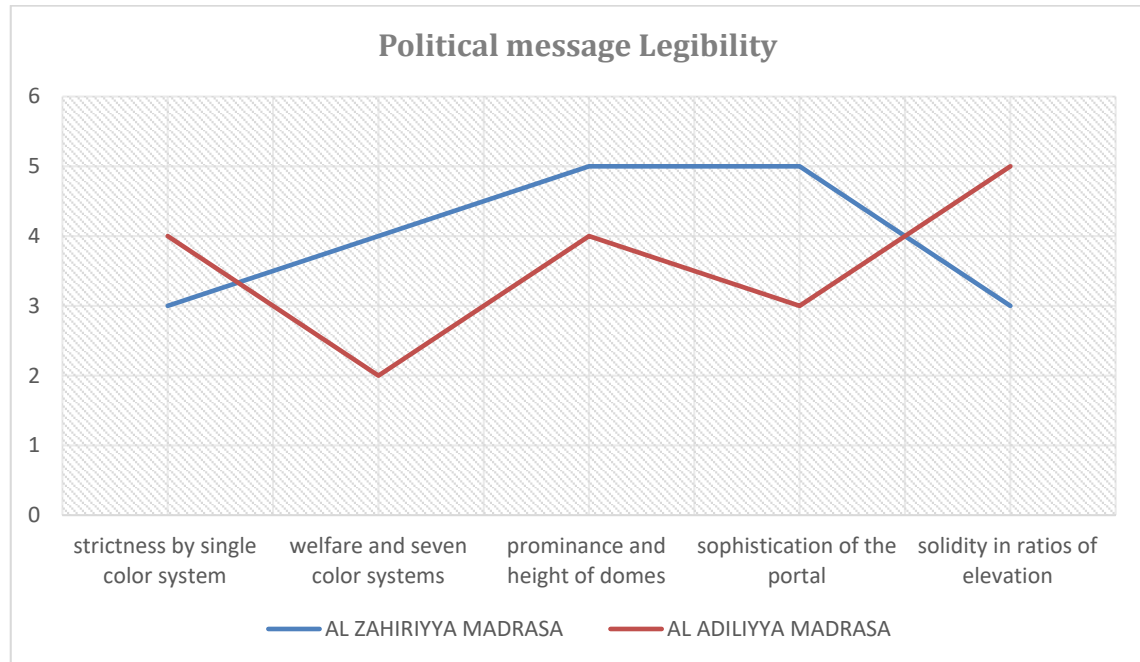


Figure 6.2.2 *Political message legibility*

Therefore, as a result the intelligible meaning in its cultural, political and metaphysical approaches manifests in the sensible forms and the spatial ordering of the architecture of these two Islamic Madrasas and form the visual representation of the integrated cultural believe systems of their periods of time.

6.3. Discussion: Al Hissi Al Aqli In Post- modern Islamic Architecture of Rasem Badran

Rasem Badran's project Greater Amman Municipality, in Amman, Jordan shows a manifestation for the relationship of Hissi-Aqli, when meaning plays the most significant role in the design process, however, the nature of Aqli in postmodern Badran's design proposal for GAM adjoins rationalism and symbolism, it focuses on the cultural, social and historical aspects more than metaphysical one, in his building both the (Macrocosmic and Microcosmic) intelligible ideas in the scale of used arches, in addition to the (cosmic

Order) in the hall of the building. He asserts on the mutual relationship between the intelligible meaning and the place, by emphasizing on the linguistic nature of architecture, and the dialogue that occurs between the human perception and memory on one hand, the history and memory of the place on the other, He used the term “Collective mind” in reference to the characteristics of (what), the first question of the four questions (what, who, when, where and how), he also refer to the dynamic nature of the process that occurs through time between the human and the place they inhabit and build, by firstly familiarizing himself with the material, spiritual and formal qualities of the place, when he answered the rhetorical question of Who, with its spiritual aspect whether its microcosmic and macrocosmic framework:

Who, is the spiritual and psychological content which is embraced by the culture of a place; which is nourished by this culture by means of all the patterns that ensures its survival and continuity throughout the generations, This spiritual and psychological content also ensures survival against competing cultures because there is both specificity and universality within the structure of the cultural mosaic. (Steele & Badran, 2005)

He also declares the significance of differentiation between the micro and the macro scale in the human interaction with the built environment when he defined the “How” as following:

Variable within the framework of time (when) materialized through the interaction between who, where and when. This is self-generating and renewing. It is legible in the inherited accumulation of human achievement at the macro and micro scale, seen in the following categories of the human fabric, at the macro scale, we have: 1) Street patterns, which are the social tissue of the urban fabric, 2) Urban morphologies, which are like a cosmic skin, 3) Urban elements, 4) Transformations which occur in spaces with sequential order, and in the humanizing experience of open spaces, 5) Gates, which provide a sense of privacy and maintain social boundaries (Steele & Badran, 2005)

Rasem Badran in his book “The Architecture of Rasem Badran: Narratives on People and Place” defines the nature of meaning in architecture as being “Organic” which differs from the “Repetitive” nature of geometry, therefore he identify the differences between the two levels of “Hissi and Aqli” in architecture, he confirms the effect of religious, traditional, cultural, environmental and linguistical aspects on space design that form the (architectural heritage), which in turn maintain the relationship between the Human and its space, and prevent the generation of monolithically repetitive disconnected spaces. He defines the dualities in relation to the human and the place, the passive-the

Active, composer-player, sender-receiver, past-future, and the physical behavior- the mental state which contributes to the formation of the “poetics of the place” (Steele & Badran, 2005, pp. 19-22), according to his opinion the person is:

A vital actor, whose role alternates between active and passive composer and player, giver And receiver, with the ability to create events that join the past with the future, to discover new meanings which can be expressed here and now. I analyze the social, cultural and environmental systems, which play a role in shaping the individual’s mental state, physical behavior and performance; those things that contribute to the formation of the poetics of place. Building is a continuous process, a material framework that contributes to human self-esteem, a way of creating a living, intimate zone within a larger urban structure or a dynamic, active part of public space. (Steele & Badran, 2005)

Another evidence on the Hissi-Aqli approach existence in Rasem Badran methodologies is his assertion on the “Phenomena” that is a result of two approaches that interact with a “time span” the first approach is the materialistic (Hissi) and spiritual (Aqli) in one hand, and “time in its historical, cultural and social diversity on the other” both approaches are suggested to manifest the poetic narrative of place, that leads to the discovery of the “surrounding phenomenon”. He also refers to the “Essence” that is required to achieve in the design process, which is the result of a continuous mental process and a mediation between “natural phenomenon and their scientific reality”. The method of knowledge according to Badran is the (intuition), that allows to sense the non-homogeneous and the unpredictable. Which is according to him “ the process of activating the self through coexistence with a place and its secrets” (Steele & Badran, 2005, p. 23). He also mentions the role of abstraction in both ways analytical and synthetical.

Badran also distinguishes between the (physical (Hissi)), and the (metaphysical (Aqli)) the first being nearby, the second being far removed, which requires the “human intelligiance” and the innovation in the interpretation method. The question “What” is illustrated in the space making process by the “dialogue” between the “tangible” (Hissi) and the “intelligible” (Aqli), between “reality and fantasy”. (Steele & Badran, 2005, p. 27)

Therefore, as a conclusion, the issue of sensible-intelligible (Al Hissi-Al Aqli) is the issue of contemporary Islamized architecture in most of design proposals and structures, this issue that was considered during the premodern Islamic architecture, and was titled as the main issue by some contemporary neo-traditionalist architects like Rasem Badran when he indicated that:

It annoys me, looking back at what has occurred in the past 50 years, to discover that we are living in meaningless cities built as temporary seasonal fairs replaced by other new structures, to fulfil the demands of consumers, at the expense of human coexistence and moral values. We can assume that the creation of a memorable and valuable space is a Product of cultural, environmental and social interactions, in the micro scale (with its sensitivity), which is in symbiosis with the macro scale (in its cosmic knowledge), this is what Islamic civilization is seeking by considering the whole without denying the particular. (Steele & Badran, 2005, p. 29)

However, it is very important to indicate that the sensible morphology, depicts different meanings that sometimes is merely sensible meaning like (climatic conditions) or economic meaning especially in Yemen for example, and sometimes it has an intelligible meaning (like in Damascus and Cairo).

This hypothetical assumption leads to the understanding of human made environment through categorizing its morphology under different domains, where some structures can be dominated through specific 'climatic' constraints such as those found in the region. Others can be interpreted from the viewpoint of cultural impact, such as those seen in medieval Cairo. There is Also the Urban socio-economic fabric, which can be sensed in some old cities such as Sana'a in Yemen (Steele & Badran, 2005)

The intelligible domain itself may include several messages, metaphysical, Political like the case of the two Madrasas, or sociological as the example of Rasem Badran's example. This conclusion opens the door for a wide range of questions, that will be suggested to be under the focus of future studies.

6.4. Future studies:

The domain of this thesis is the questions related to the nature of the relationship between the Hissi and the Aqli, to seek its existence in Islamic architecture in specific, through examining the two Madrasas of Damascus, as a result , a set of questions could be derived from this thesis that were not included in the body of the thesis, they form a good potentiality for future studies:

- Is the metaphysical intelligible meaning secondary or primary? Is the aim of conveying such messages independent or dependent? Did patrons conveyed metaphysical messages in their buildings to convince people of the legitimacy of their authority? Being descending from God? Or were the metaphysical

Intelligible messages independent, was it inspired from the function of the building which is educational institution to teach Islamic law and theology?

- Studying the sensible-intelligible relationship could extend to various backgrounds of historical and contemporary architecture, to examine the intelligible dimension of nowadays sensory experiments.

6.5. Recommendations:

- The sensible- intelligible relationship (meaning of sensible elements) should be considered thoroughly during the process of evaluation, restoration or even proposing any design inspired from the wide domain of (Islamic architecture)
- Architects should focus more on the intelligible qualities of their designs and draw attention away from the mere sensible elements or experiences.
- The multivalent nature of the symbol should have a strong textual proof to restrict the limits of its field and to assure not to fall on romanticizing sensual experiences and implant intelligible meaning into them.
- The scope of intelligible meaning should include all kinds of aspects, not only the ontological dimension, but also its integrated cultural and political system.

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