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The effect of the Building shapes of the Assyrian architecture on the Islamic architecture in Iraq (Abbasside era)

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Abstract:

This research paper investigates the profound impact of Assyrian architectural shapes on the development of Islamic architecture in Iraq, with a specific focus on the Abbasside era. An merger of cultural, religious, and artistic elements occurred during the region's shift from Assyrian civilisation to Islamic control, leading to an architectural change that combined features of both traditions. This study examines primary sources, historical accounts, archaeological findings, and visual representations using an interdisciplinary approach that integrates architectural history, archaeology, and art history. This study reveals the integration and adaption of Assyrian building shapes into the Abbasside architectural vocabulary by looking at architectural typologies including palaces, mosques, and office structures. This study aims to develop a thorough understanding of the ways that architectural shapes from the Assyrian tradition were adopted, altered, and recreated within the Islamic environment through comparative analysis. This study offers insights into the cultural resiliency that marked the growth of Islamic architecture in Iraq throughout the Abbasid period and advances our understanding of how ancient civilizations interacted with the creative creation of architectural shapes. This study deepens our understanding of the complex historical narratives that have affected the physical environment of the area by recognizing the long-lasting influence of Assyrian building designs. The research begins with previous studies in Assyrian and Islamic architecture, especially Abbasid architecture and the most important Assyrian buildings (palaces and temples) in order to clarify the most important indicators of the formal characteristics in Assyrian architecture. On the casse study , the research is divided into two branches: The first section is the questionnaire form distributed to 15 university professors that Dedicated to the topic, the questionnaire consists of four questions according to the indicators. The second section is the graphic analysis of the Assyrian and Islamic examples in order to know the most important formal influences of Assyrian architecture on Islamic architecture (Abbasid architecture). One of the most important conclusions in the research is the use of the square shape in Islamic (Abbasid) architecture. The central courtyard used in Assyrian architecture is one of the most important symbols shared between the two architectures. The central courtyard is widely used in Islamic (Abbasid) architecture.

Keywords: Assyrian architecture, Shape in architecture and Assyrian architecture, Islamic architecture (Abbasside era)

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الملخص:

تبحث هذه الورقة البحثية في التأثير العميق للأشكال المعمارية الآشورية على تطور العمارة الإسلامية في العراق، مع التركيز بشكل خاص على العصر العباسي. حدث اندماج العناصر الثقافية والدينية والفنية خلال تحول المنطقة من الحضارة الآشورية إلى السيطرة الإسلامية، مما أدى إلى تغيير معماري جمع بين سمات كلا التقليدين. تتناول هذه الدراسة المصادر الأولية والحسابات التاريخية والنتائج الأثرية والتمثيلات المرئية باستخدام نهج متعدد التخصصات يدمج التاريخ المعماري وعلم الآثار وتاريخ الفن. تكشف هذه الدراسة عن تكامل أشكال البناء الآشورية وتكيفها مع المفردات المعمارية العباسية من خلال النظر في الأنماط المعمارية بما في ذلك القصور والمساجد والمباني المكتبية. تهدف هذه الدراسة إلى تطوير فهم شامل للطرق التي تم بها اعتماد الأشكال المعمارية من التقليد الآشوري وتغييرها وإعادة إنشائها داخل البيئة الإسلامية من خلال التحليل المقارن. تقدم هذه الدراسة نظرة ثاقبة للمرونة الثقافية التي ميزت نمو العمارة الإسلامية في العراق طوال العصر العباسي وتعزز فهمنا لكيفية تفاعل الحضارات القديمة مع الإبداع الإبداعي للأشكال المعمارية. تعمق هذه الدراسة فهمنا للروايات التاريخية المعقدة التي أثرت على البيئة المادية للمنطقة من خلال التعرف على التأثير الطويل الأمد لتصاميم البناء الآشورية. يبدأ البحث بالدراسات السابقة في العمارة الآشورية والإسلامية وخاصة العمارة العباسية وأهم المباني الآشورية (القصور والمعابد) وذلك لتوضيح أهم مؤشرات الخصائص الشكلية في العمارة الآشورية. وفي الجانب العملي ينقسم البحث إلى فرعين: القسم الأول استمارة الاستبيان الموزعة على 15 أستاذاً جامعياً خصصت للموضوع، وتتكون الاستبيان من أربعة أسئلة حسب المؤشرات. أما القسم الثاني فهو التحليل البياني للمثالين الآشوري والإسلامي من أجل معرفة أهم التأثيرات الشكلية للعمارة الآشورية على العمارة الإسلامية (العمارة العباسية). ومن أهم الاستنتاجات التي توصل إليها البحث هو استخدام الشكل المربع في العمارة الإسلامية (العباسية). يعد الفناء المركزي المستخدم في العمارة الآشورية أحد أهم الرموز المشتركة بين المعمارين. يُستخدم الفناء المركزي على نطاق واسع في العمارة الإسلامية (العباسية).

الكلمات المفتاحية: العمارة الآشورية، الشكل في العمارة والعمارة الآشورية، العمارة الإسلامية (العصر العباسي).

پوختە:

ئەم توێژینەوەیە لێکۆڵینەوە لە کاریگەرییە قوولەکانی فۆرمەکانی تەلارسازی ئاشووری دەکات لەسەر پەرەپێدانی تەلارسازی ئیسلامی لە عێراقدا، بە گرنگیدانێکی تایبەت بە سەردەمی عەباسی.یەکگرتنی توخمە کولتووری و ئایینی و هونەریەکان لە کاتی گۆڕانی ناوچەکە لە شارستانیەتی ئاشوورییەوە بۆ کۆنترۆڵی ئیسلامی ڕوویدا، ئەمەش بووە هۆی گۆڕانکارییەکی تەلارسازی کە تایبەتمەندییەکانی هەردوو نەریتەکەی تێکەڵ کرد. ئەم توێژینەوەیە سەرچاوە سەرەتاییەکان، گێڕانەوەی مێژوویی، دۆزینەوە شوێنەوارییەکان و نوێنەرایەتییە بینراوەکان بە بەکارهێنانی ڕێبازێکی نێوان زانستەکان دەکۆڵێتەوە کە مێژووی تەلارسازی، شوێنەوارناسی و مێژووی هونەر تێکەڵ دەکات. ئەم توێژینەوەیە یەکگرتن و گونجاندنی شێوەکانی بینای ئاشوورییەکان لە وشەسازیی تەلارسازی عەباسیدا ئاشکرا دەکات بە سەیرکردنی جۆرەکانی تەلارسازی لەوانە کۆشک و مزگەوت و پێکهاتەی ئۆفیسەکان. ئەم توێژینەوەیە ئامانجی پەرەپێدانی تێگەیشتنێکی وردە لەو ڕێگایانەی کە فۆرمەکانی تەلارسازی لە نەریتی ئاشوورییەوە وەرگیراون و گۆڕانکارییان بەسەردا هاتووە و لە ڕێگەی شیکاری بەراوردکارییەوە لەناو ژینگەی ئیسلامیدا دروستکراونەتەوە. ئەم لێکۆڵینەوەیە تیۆرانینێک پێشکەش دەکات سەبارەت بەو خۆڕاگرییە کولتوورییەی کە گەشەسەندنی تەلارسازی ئیسلامی لە عێراقدا بە درێژایی سەردەمی عەباسیەکان دیاری دەکات و تێگەیشتنمان بەرەوپێش دەبات لە چۆنیەتی کارلێکی شارستانییەتە کۆنەکان لەگەڵ دروستکردنی داهێنەرانە فۆرمەکانی تەلارسازی. ئەم لێکۆڵینەوەیە تێگەیشتنمان لە گێڕانەوە مێژووییە ئاڵۆزەکان قوواڵتر دەکاتەوە کە کاریگەرییان لەسەر ژینگەی فیزیکی ناوچەکە هەبووە بە ناسینی کاریگەری درێژخایەنی دیزاینەکانی بیناسازی ئاشوورییەکان. لێکۆڵینەوەکە بە لێکۆڵینەوەکانی پێشووتر لە تەلارسازی ئاشووری و ئیسلامی، بەتایبەت تەلارسازی عەباسی و گرنگترین باڵەخانە ئاشوورییەکان (کۆشک و پەرستگا) دەستپێدەکات بەمەبەستی ڕوونکردنەوەی گرنگترین نیشاندەرەکانی تایبەتمەندییە فەرمییەکانی تەلارسازی ئاشووری. لە لایەنی پراکتیکییەوە توێژینەوەکە دابەشکراوە بەسەر دوو لقدا: بەشی یەکەم فۆرمی پرسیارنامەیە کە بەسەر ١٥ مامۆستای زانکۆدا دابەشکراوە کە تایبەتە بە بابەتەکە، پرسیارنامەکە لە چوار پرسیار پێکدێت بەپێی پێوەرەکان. بەشی دووەم شیکاری گرافیکی نموونەی ئاشووری و ئیسلامییە بە مەبەستی زانینی گرنگترین کاریگەرییە فەرمییەکانی تەلارسازی ئاشووری لەسەر تەلارسازی ئیسلامی (تەلارسازی عەباسی). یەکێک لە دەرەنجامە هەرە گرنگەکان لە توێژینەوەکەدا بەکارهێنانی شێوەی چوارگۆشەیە لە تەلارسازی ئیسلامی (عەباسی)دا. حەوشەی ناوەندی کە لە

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تەلارسازی ئاشووریدا بەکارهاتووە، یەکێکە لەو هێما گرنگانەی کە لە نێوان هەردوو تەلارسازیدا هاوبەشە. حەوشەی ناوەندی لە تەلارسازی ئیسلامی (عەباسی)دا بە شێوەیەکی بەرفراوان بەکاردەهێنرێت.

کلیلە وشە: تەلارسازی ئاشووری، شێوە لە تەلارسازی و تەلارسازی ئاشووری، تەلارسازی ئیسلامی(سەردەمی عەباسی)

1. INTRODUCTION

In the history of architecture, the shift from Assyrian to Islamic architecture in Iraq, especially during the Abbasid period, is a striking example of how architectural styles can change over time while being influenced by past traditions and cultural developments. The Assyrians were known for their impressive and unique buildings, which laid the groundwork for architectural progress in the region. When the Islamic Abbasid dynasty came to power, they incorporated and reimagined elements from this existing architectural heritage. This research aims to shed light on the significant impact of Assyrian building designs on the later development of Islamic architecture in Iraq. By carefully examining how these structural shapes evolved and transformed, this study aims to uncover the complex relationship between these two architectural civilizations and the social, cultural, and technological factors that guided their evolution. Exploring the connection between historical legacy and innovative adaptation helps us better understand how architectural traditions can influence and inspire the construction of buildings across different eras. **(Al-Kayiem, 2010, p. 78)**

Iraq's ancient history is a summary of political history, focusing on its geography and development factors. The Assyrian era, ending around 1500 BC, was divided into three main eras. The Assyrians, known as Assyria, were the main element in the region. The Subaris, a branch of the island peoples, migrated to Iraq and settled in its northern part. **(2009 ,باقر, p. 589).**

The king of Assyria had more demanding ritual responsibilities than his predecessors and his role as a liaison between society and the gods was very important. The Ziggurat that stood behind these shrines may have served all six of them. When it was uncovered a century ago, it revealed a character wholly distinct from the temple towers of southern Mesopotamia. There were only three phases and just a portion of the fourth was saved. They were all eighteen feet tall, had recessed decorations, and were each painted a different color—the lowest one was white, followed by black, red, and white. Given that the three lowest stages' color progression matches that of Herodotus' description of the tower of Babylon, where the fourth stage was blue, it is possible that this was bleached blue **(Frankfort, 1996, p. 148).**

The palaces stand out mostly for their efforts to compel the chambers into more expansive and symmetrical arrangements than the majority of those previously known. The construction workers had some success building the king's quarters in Khorsabad. Through the large cross apertures, which were themselves magnificent in grandeur, one got a view of about 400 feet from this location. The renowned winged bulls defended them in pairs and massive double-door leaves that swung on pivots **(Plommer , 1956, p. 67).**

The most well-known of all their contributions to art, the palmette, that fan of elongated leaflets sprouting from a small fan-shaped center, appears to have been devised by the Assyrians or their close neighbors. On their enameled brickwork or sculptured stone sidewalks, however, they typically

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arranged tiresome strips, one with rosettes, one with lotus buds and flowers, and one with palmettes, beside or within each other ad nauseam **(Plommer , 1956, p. 68).**

Palaces in Samarra such as the Al-Ash and Al-Jesr, built around 870, show multi-layered moldings deeply carved into the interior of the arches, giving the appearance of an arch. The floors were sometimes marble, most often tiled. Reception rooms in palaces in Samarra had decorative carved or molded plaster adorning the lower part of the walls, and plaster also decorated door frames, niches, and arches, in three distinct patterns. Other palaces that have been excavated often have a central surrounding room surrounded by four outward-facing iwans. The only Abbasid palace to leave Baghdad is located in the Al-Ma'in neighborhood overlooking the Tigris River. The palace was built under the rule of Caliph Al-Nasir li-Din Allah (1179-1225). The palace stands on two high floors and has a central courtyard and an iwan with a brick roof and facade. Excavations and restoration efforts show that it most likely functioned as a school rather than a palace. Some scholars believe that it is the Sharabiya Madrasa, an Islamic theological school built in the 12th century. The palace's structure and design share close similarities with Al-Mustansiriya University. Certain parts of the palace were reconstructed by the General Organization for Antiquities and Heritage, including the restoration of the Grand Iwan and the adjacent facades. **(Al-numman, 2008, p. 106).**

The Abbasid cities were placed on huge sites. Samarra's palaces and mosques stretched along the shores of the Tigris and Rivers for 40 kilometers (25 miles). To match the size of the sites, monumental buildings were erected, such as the massive spiral minarets of the Abu Dulaf Mosque and the Great Mosque of Samarra, which had no counterparts elsewhere. The double-pointed, vaulted arch appeared before the Abbasids took power, but became a standard in Abbasid architecture, as the point became more prominent. The first fully developed example of a four-pronged pointed arch was at the Palace of the Lover, built between 878 B.c and 882B.c **(Hillenbrand, 1994, p. 391).**

1.1 Problem statement: According to previous studies of Assyrian and Islamic architecture, the research problem consists of:

The rich heritage and evolution of Assyrian architecture have played a crucial role in shaping Islamic architectural (Abbasside era) styles in the region. However, there is a notable gap in research regarding the influence of Assyrian architecture on Islamic architectural styles in Iraq, despite the extensive focus on historical and archaeological structures such as palaces, temples, and city walls in most studies. This influence remains an understudied area in architectural history.

1.2 Research hypothesis: The architectural shapes of Assyrian architecture exerted a pronounced and enduring influence on the evolution of Islamic architecture in Iraq during the Abbasid era. This influence is manifested in the adoption, adaptation, and integration of distinctive Assyrian design elements into the Islamic architectural repertoire, resulting in the enrichment and transformation of Islamic building styles. The enduring impact of Assyrian architectural shapes on Islamic architecture during this period is a testament to the cross-cultural fertilization of ideas, design concepts, and construction techniques, thereby contributing to the uniqueness and development of Islamic architectural traditions in the region. Through a detailed analysis of this architectural interplay, we aim to illuminate the profound and lasting effect of Assyrian building shapes on the course of Islamic architectural development in Iraq during the Abbasid era.

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1.3 Research objectives: The importance of this research:

1. To examine the shape of Assyrian architecture in Iraq during the Abbasside era and understand their significance within the broader context of architectural development.
2. To investigate the possible influences of Assyrian architecture on the development of Islamic architectural styles in Iraq during the Abbasside era, specifically focusing on building shape.

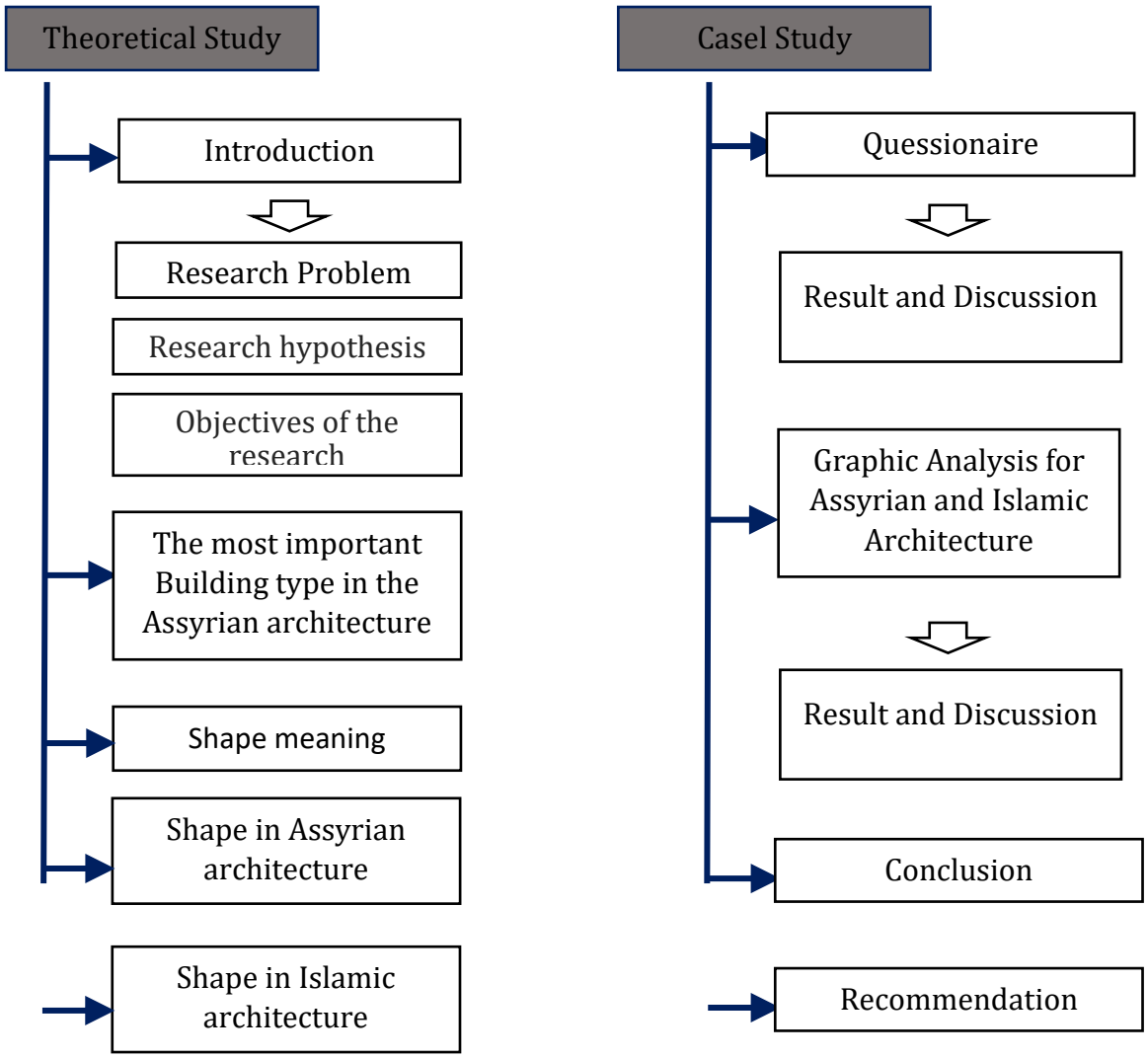

Figure 1. research structure by (Researcher)

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2- The most important Building type in the Assyrian Architecture

2.1: Assyrian palace

The ancient Near East's imperial model of kingship can be credited to Assyria as its originator. However, our understanding of the Assyrian court itself is still limited. Its palaces are sometimes referred to as remote, inaccessible places, which has led to the oversimplified assumption that they were divided between public and private parts. The Assyrian court's first spatial model, set within its actual palaces, is presented in this restoration. Understanding the operations of this early imperial court can shed light on the emergence of subsequent courtly civilizations in antiquity, of which Assyria was the forerunner **(Groß & Kertai, 2019, p. 3).**

The physical remnants of Assyria's palaces, in addition to artistic representations and literary information about those palaces' operations, are the sources that can be used to recreate Assyrian courtly culture. A large and varied corpus of palaces that is exceptional in the history of the ancient Middle East was produced as a result of the existence of numerous urban centers and the establishment of new royal centers, including Kalhu under Assurnairpal II (883–859), Dur–Sharrukin under Sargon II (722–705), and Nineveh under Sennacherib (704–681). There was at least one primary and one military royal palace in every capital. The two principal palaces of Kalhu, which were built in the ninth century, provide the bulk of the information. They were used until the fall of the Assyrian Empire, but were occupied by the royal court up until the conclusion of Sargon II's rule. After its opening, Dur-Sharrukin was almost immediately abandoned. In the seventh century, Nineveh served as the main royal metropolis **(Kertai, 2015, p. 4).**

The Most Important Palace in Assyrian Period:

1- The old palace in Assur city.
2- The northwest palace in Kalhu city.
3- The Royal place in Dur-Sharrukin city.
4- The north palace in Nineveh city.
5- Southwest palace in Nineveh city.

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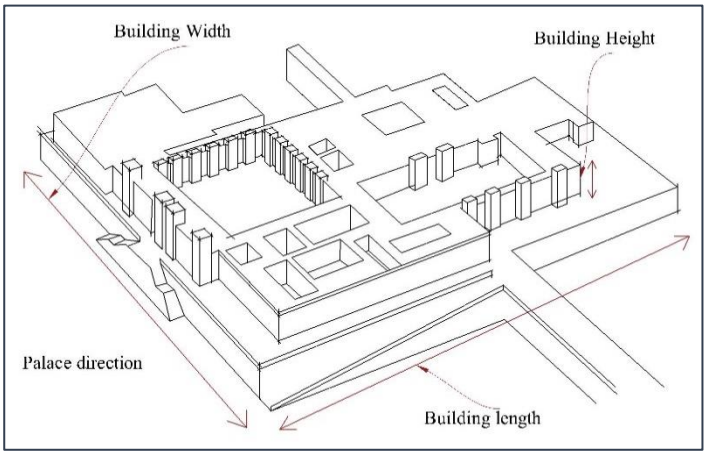

Figure 2. Sargon II palace in Dur-Sharrukin(Researcher)

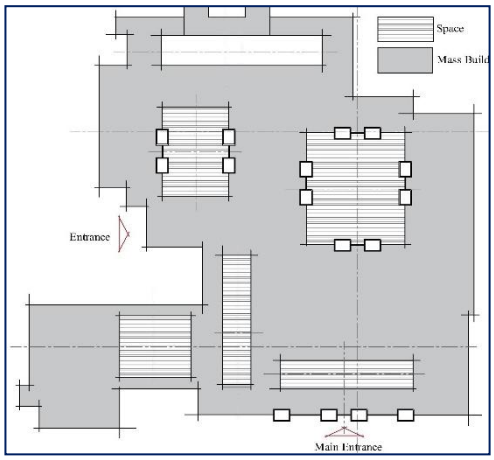

Figure 3. sanharib palace in Nineveh (Researcher)

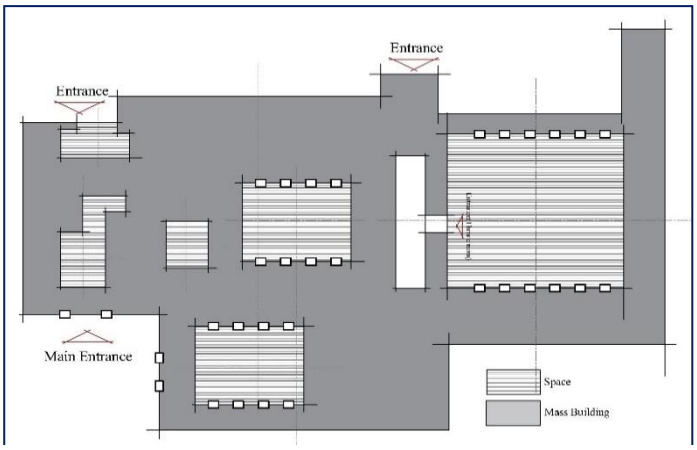

Figure 4. Ashur nassir-pal palace in Nimrud(Researcher)

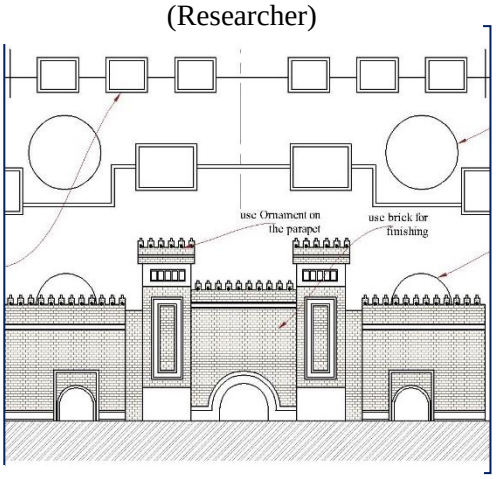

Figure 5. Palace gate (Researcher)

Assyrian palaces formal characteristics: according to Preview studies (By researcher):

1. Massive Size: Assyrian palaces were massive structures, often covering extensive areas. These palaces were among the largest buildings of their time, showcasing the wealth and power of the Assyrian rulers.
2. Courtyard Layout: A common feature of Assyrian palace design was a central courtyard. This open space was often surrounded by columns or porticoes and served as a focal point for various activities and ceremonies.
3. Imposing Gateways: Assyrian palaces were typically entered through grand, imposing gateways. These gateways were characterized by colossal guardian figures, often depicting human-headed winged bulls (Lamassu) or lions, which were believed to provide protection.
4. Mudbrick and Stone Construction: Assyrian palaces were constructed using a combination of mudbrick and stone. Mudbrick was used for the core of the walls, while stone was employed for the outer facades, creating a visually striking contrast.

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5. Decorative Bas-Reliefs: The outer walls of Assyrian palaces were adorned with intricate bas-relief sculptures. These depicted scenes of warfare, hunting, religious ceremonies, and royal processions. The bas-reliefs served both decorative and narrative purposes.
6. Columned Halls: Assyrian palaces often featured large, columned halls with cedar wood or palm tree columns. These halls were used for various functions, including receptions and official ceremonies.
7. Terraced Architecture: Some Assyrian palaces, like the Northwest Palace at Nimrud, featured a terraced architectural design with multiple levels and grand staircases.
8. Use of Cuneiform Inscriptions: Cuneiform inscriptions were a common feature on palace walls. These inscriptions were often used to commemorate events, achievements, or to convey important information.
9. Throne Rooms: Assyrian palaces included impressive throne rooms where the king received visitors and conducted official business. These rooms were often lavishly decorated and served as symbols of royal authority.
10. Siege Scenes: Some palace walls featured reliefs depicting siege scenes, highlighting the Assyrian military prowess. These reliefs portrayed the capture of enemy cities and the deportation of prisoners.
11. Use of Color: While the original colors have faded over time, it's believed that Assyrian palaces were once vividly painted, adding to their aesthetic appeal. C
12. City Walls and Fortifications: In some cases, Assyrian palaces were integrated with city walls and fortifications, further emphasizing their role in defense and governance.

2.2: Assyrian temple:

The Assyrian kings prioritized architectural achievements, particularly temple buildings, despite their military focus. They documented these achievements in numerous texts, expressing pride in their connection to the gods and their historical significance. Their writings were characterized by accuracy and realism, unlike military campaigns, which often used exaggerations for political and media content.

Temple architecture in the modern Assyrian era:

The King Ashur Nasirpal II (883 - 859 BC) was one of the most prominent kings of this era, known for his achievements in architecture and art. He was known for the reconstruction and decoration of the temples of the gods Enlil and Ninurta, the gods Aya and Damkina, the gods Adad and Shala, the god Sin, the goddess Kula, the goddess Ishtar Sharrat Nebakhi, the temples of the great gods, and the statues of wild animals of bright bronze and placed them at their towers. He also made statues of lions of white limestone and alabaster of the Baroto type. A long inscription on an obelisk was revealed at the entrance to the throne room in the northwestern palace in the city of Kaleh **(2012 ,حسين, pp. 492-493).**

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The most important temple in Assyrian period:

1- The Assur Temple in Assur city.
2- The Nabu Temple in Kalhu City.
3- The Nabu Temple in Dur-Sharrukin City.
4- The Ishtar Temple in Nineveh City.

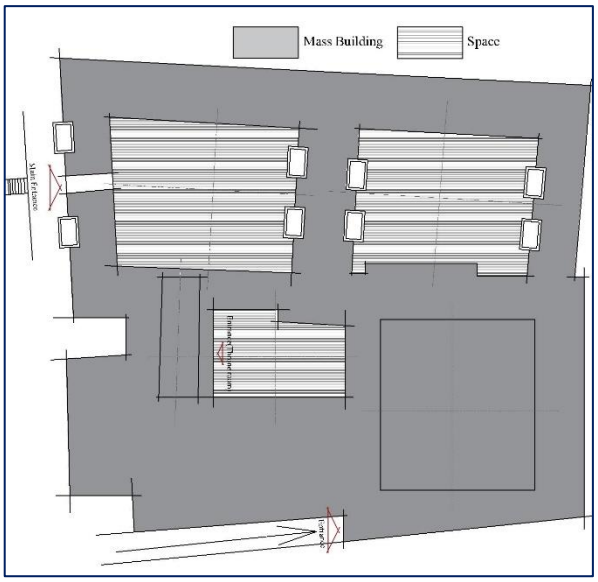

Figure 6: Nabu temple in nimrud (Researcher)

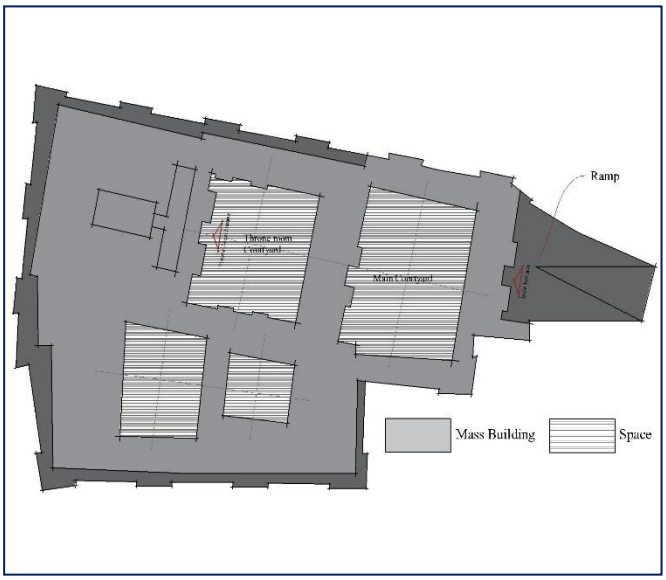

Figure 7: nabu temple in khorsabad(Researcher)

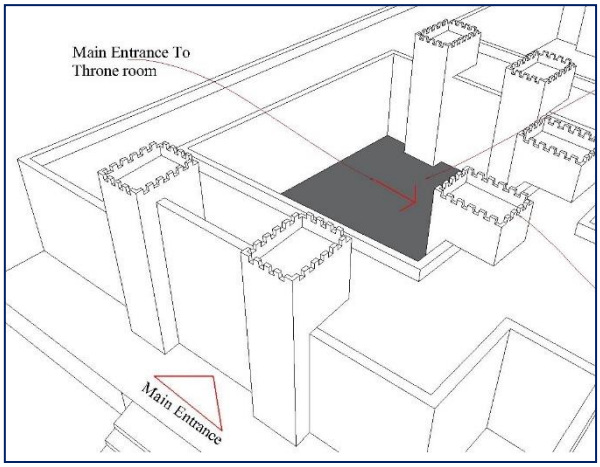

Figure 8: Court yard in side temple building(Researcher)

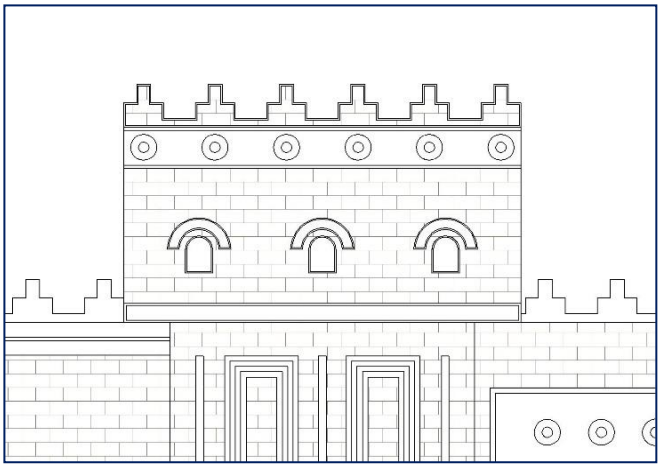

Figure 8: the ornament on the wall (Researcher)

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Assyrian Temples formal characteristics: According to Preview studies (By researcher)

1- Ziggurat Design: Assyrian temples often featured ziggurats, which were stepped, pyramid-like structures made of mudbrick or stone. The ziggurats served as platforms upon which the temple itself was built. The ziggurat design symbolized a connection between the earthly realm and the divine.
2- Terraced Construction: Ziggurats were constructed in a series of receding terraces or platforms, each one smaller than the one below. These terraces provided access to the temple at the top and were often adorned with staircases and ramps.
3- Central Sanctuary: At the top of the ziggurat, there was a central sanctuary or temple chamber where religious rituals and ceremonies took place. This sanctuary was typically dedicated to a specific deity.
4- Guardian Figures: As with Assyrian palaces, guardian figures known as Lamassu were often present at the entrances of Assyrian temples. These large, winged, human-headed bulls or lions served as protective spirits and symbols of divine protection.
5- Cuneiform Inscriptions: Assyrian temples often featured cuneiform inscriptions, which were used to commemorate religious events, offerings, and the temple's dedication to a particular god or goddess.
6- Decorative Elements: Assyrian temples were adorned with decorative elements such as relief sculptures and friezes that depicted mythological and religious scenes. These carvings served both decorative and narrative purposes.
7- Altars and Offering Tables: Within the temple sanctuary, there were altars and offering tables where priests conducted religious rituals, including sacrifices and libations.
8- Use of Mudbrick and Stone: Similar to other Assyrian architecture, a combination of mudbrick and stone was used in temple construction. The outer facades were typically constructed with stone, while the core of the structure was made of mudbrick.
9- Orientation: Assyrian temples were often oriented towards the cardinal points, with the main entrance facing a specific direction, which had religious significance.
10- Roof Construction: Assyrian temples typically had flat roofs made of wooden beams covered with reeds, mud plaster, and sometimes terracotta tiles. These roofs were supported by a series of columns and beams.
11- Courtyard Areas: Some temples included open courtyard areas adjacent to the main temple structure. These courtyards were used for various religious and ceremonial activities.
12- Water Features: In some cases, temples were associated with water features such as fountains or pools, adding to the aesthetic and symbolic aspects of the architecture.

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3- The most important Building type in the Islamic Architecture (Abbasside era)

3-1: Mosque: The congregational mosque is an important public facility in the Islamic city due to its essential role in the life of its society. It was a center for discussing political, religious, educational and social affairs, and was used by the Prophet to address the Muslim community and teach them about their religion. After the conquests expanded and the cities expanded, the mosque was like a court, where the Emir would deliver his first sermon explaining his policy, plans and directions, and presenting the principles of government and the duties and responsibilities of the people. Other functions were added to it, such as lessons and Sufism. **(عثمان، 1978، صفحة 210)**

One of the most important mosques in Iraq during the Abbasid era is the Great Mosque in Samarra:

The Great Mosque of Samarra is situated on the banks of the Tigris River in Samarra city, Iraq, some 120 kilometers north of Baghdad. It was constructed in the ninth century on a project ordered by Al-Mutawakkil, the Abbasid ruler. The Great Mosque took up an area of 17 hectares, with the structure itself taking over 38,000 square meters of that space. For the following 400 years, it held the title of largest mosque in the world until Hulagu Khan's army demolished it in 1278 during their conquest of Iraq. Its once-great mosque is now reduced to its majestic 52-meter minaret and outside walls **(Farhatullah , 2018, p. 17).**

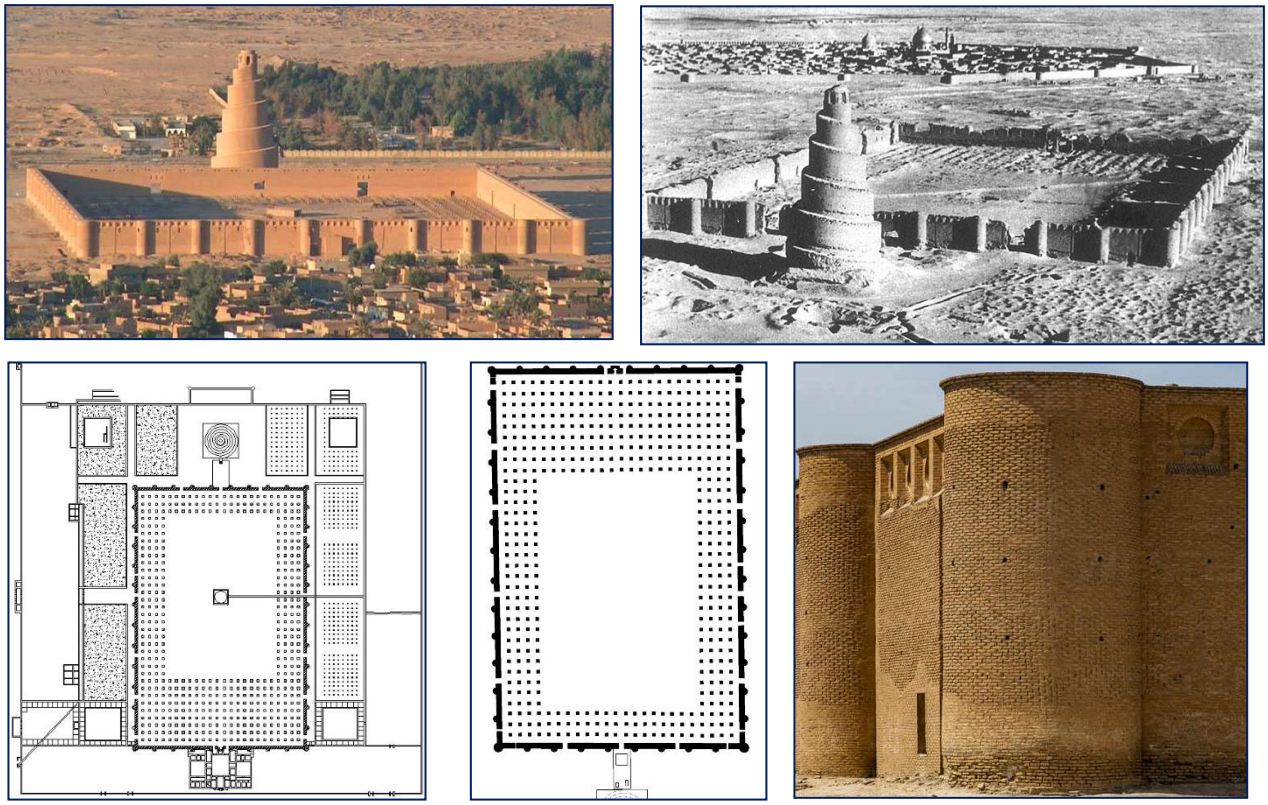

Figure 9: The Great Mosque on Samarra in Iraq (Abbasid era) (Farhatullah , 2018).

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3-2: The Madrasa

The end of the fifth century AH saw the emergence and spread of other religious facilities in the Islamic city, such as schools established by Sunni jurists and adopted by the state. The Seljuks, Atabegs and Ayyubids were interested in establishing these schools and endowing endowments for them, and the Mamluks multiplied in capacity from the establishment of religious facilities. These schools established a well-established scientific system and traditions that were influenced by and followed by European universities **(1978 ,عثمان, p. 217).**

One of the most important Madrasa in Iraq during the Abbasid era is mustansiriya madrasah In Baghdad:

This school was known as Al-Mustansiriya by the name of its builder, the Caliph Al-Mustansir Billah Abi Jaafar Al-Mansur bin Al-Zahir bi-Amr Allah Al-Nasir Li-Din Allah, born in the year 588 AH / 1192 AD, and pledged allegiance to the caliphate on the day of his father's death on the thirteenth of Rajab in the year 623 AH / 1226 AD). **(م 2017 آذار ,الطيف, p. 254)**

Caliph Al-Mustansir left numerous monuments, including the Al-Mustansiriya School (631 AH 1233 AD), Khan Harbi, bridges, mosques, and gorges. Most of these buildings still exist in Baghdad's center, bordered by the Tigris River, Al-Asafia Mosque, Al-Mamoun Street, Al-Mamoun Bridge, and Haraj market. (See figure 10) **(م 2017 آذار ,الطيف, p. 254).**

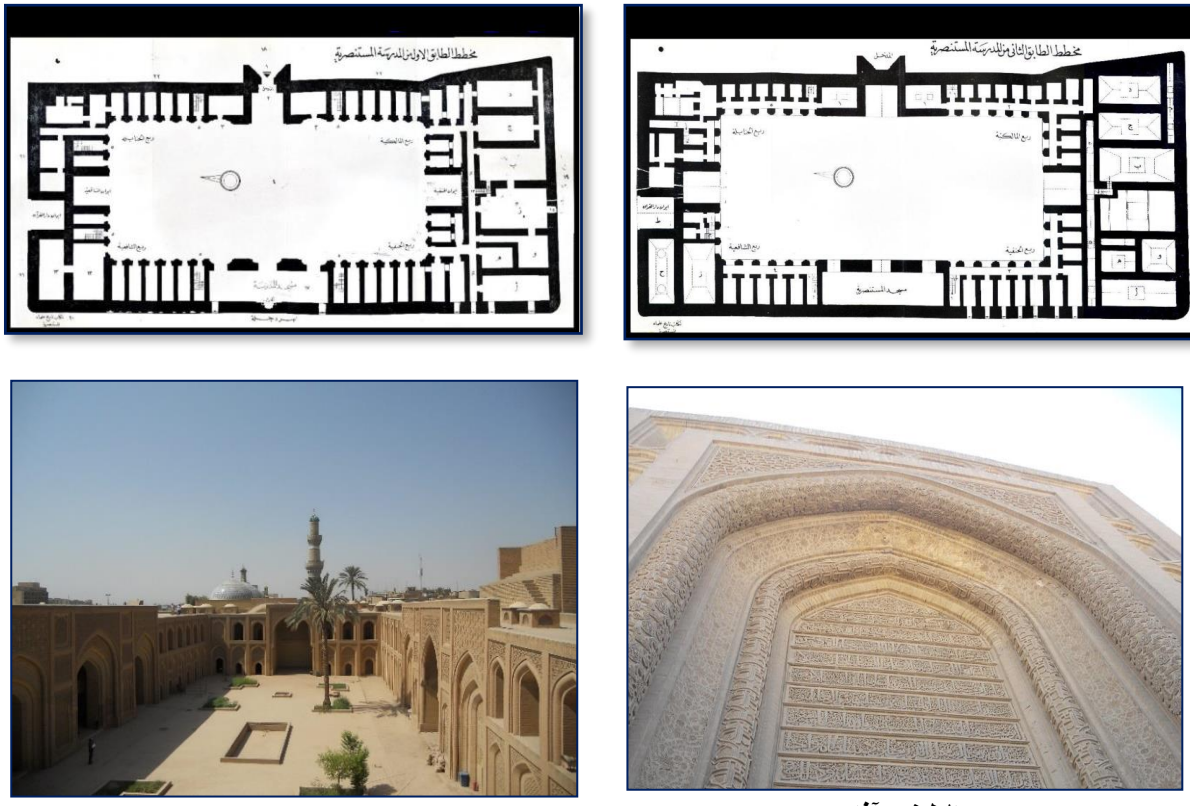

Figure 10: Mustansiriya madrasah In Baghdad (م 2017 آذار ,الطيف, pp. 270-271).

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3-3: Public bathrooms:

There are civil establishments that were established to serve the general population of the Islamic city, such as public baths, which were frequently established in the Islamic city for functional needs linked to the Islamic call for cleanliness and purification, and the inability of all the public to include private bathrooms in their homes, and the desire of those who are able to establish these baths to invest their money in their construction. It generates abundant revenue due to the high demand for it. Hence, the public baths abounded in the Islamic city, a clear number, and the city authorities organized their establishment and the related provision of water sources and drainage channels, and the smoke emanating from their construction, sometimes governing the determination of their locations and unit **(1978 ,عثمان, pp. 221-222).**

3-4: Palaces:

A: Palace architecture in the first Abbasid era:

Abu Jaafar al-Mansur built Baghdad's capital, a prominent landmark with a green dome and golden gate. He built luxurious palaces for himself, his children, and senior state officials. The golden period of the Abbasids integrated strength, prosperity, and increased resources. Sheikh Al-Khudari described Baghdad during Al-Rasheed as a pinnacle of glory and pride. **(88 صفحة ،2018 ،يوسف الأخرس).**
The most prominent palaces of the first Abbasid era:

- Al-Ukhaidir Fortress palace
- Al-Jawsaq Al-Khaqani Palace

B: Palace architecture in the second Abbasid era:

There is no indication of a boom in construction and reconstruction during the reign of Al-Wathiq, except that the caliphs used to build their own palaces, some of which bear their names, with great palaces that could be exploited. This represents the work of Al-Wathiq, so he built a palace for him, which he named after him (Al-Haruni), and it was one of the best palaces. **(يوسف الأخرس، 2018، الصفحات 97-98).**

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The most prominent palaces of the Second Abbasid era:

Dar al-khalifa palace of Samarra	al-'Ashiq palace of Samarra

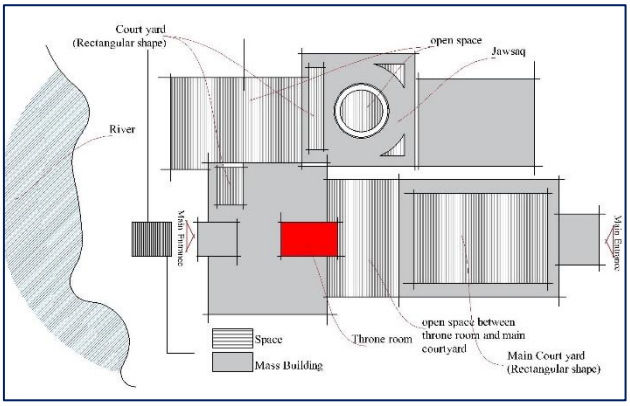

Figure 11: Dar al-khalifa palace (Researcher)

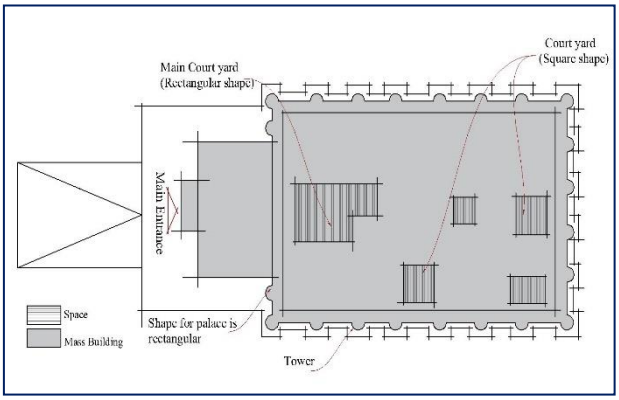

Figure 12: al-'Ashiq palace of Samarra (Researcher)

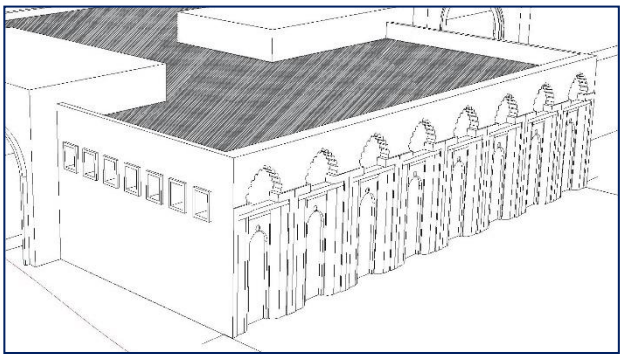

Figure 13: Dar al-khalifa palace of Samarra (Researcher)

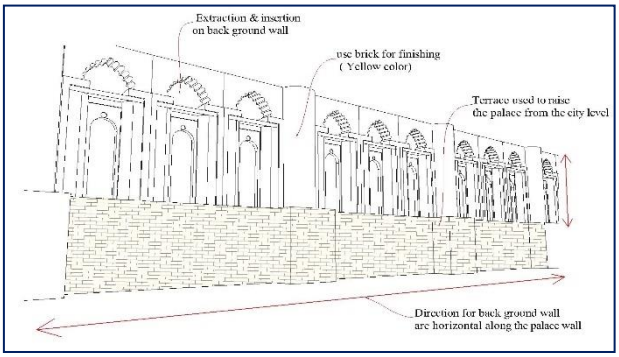

Figure 14: al-'Ashiq palace of Samarra (Researcher)

4. Shape meaning:

4-1: Shape in language:

Form generally refers to a thing's structure and shape. It can also refer to how objects are arranged, placed, and related to one another. As a result, language form describes the arrangement of the so-called surface aspects of language. The grammar of a language is the set of rules that specify how certain linguistic aspects are to be ordered. **(Lahey, 1988)**

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4-2: Shape in architecture:

- The shape is formulation—the process by which information is transformed into a tangible thing that can be accessed by others, given permanence, and willed to the race. The form is as diverse as the haphazard interactions of nature. As varied as the ideas themselves, form in art. It is the outward manifestation of all human development; it is a live representation of both his most rudimentary tribe and his most advanced civilization. The form is one of the many facets of a legend, including its bardic, epic, sculptural, musical, artistic, and architectural manifestations, as well as its endless religious symbols, as well as its expression and traces of self. The very shape of content is related to provisions. **(Shahin, 1957)**
- The relationship between the sanctity of meaning in architecture and its association with memory and history at the individual and societal levels underlines the necessity of connecting form in architecture with the storage of historical meanings of form in the individual memory and the assembly. **(Mohamed , 2019)**
- The shape is one of the primary and basic elements for defining and distinguishing stereoscopic, and it is composed of several complex and combined forms characterized by unity to reach through that the expression of the stereotype. **(Al-Obaidi, 2012)**
- Significant Form, there must be one quality which is the essence of Art and is found in all works of art. He calls this essential quality significant form. But what does he mean by "significant form"? And how do we come to experience and know this quality? Features of Significant Form "Lines and colors combined in a particular way" and "certain forms and relations of forms" that produce the aesthetic emotion are the features of significant form. For either, all works of visual art have some common quality, or when we speak of "works of art" we gibber. Everyone speaks of "art," making a mental classification by which he distinguishes the class "works of art" from all other classes. . **(Bell's , 1964)**

4- Formal Interpretation in Architecture:

Visual analysis of form is crucial in architecture, involving picture visualization. Architects, designers, choreographers, and photographers can express their vision through images. Visual acuity and communication depend on architects' visual narrative abilities, with visual sharpness and visualization involving different events.

5-1: According to Vitruvius : The most important principles of form**: (Vitruvius, 1914)**

1. Order.
2. Eurhythmy.
3. Symmetry.
4. Propriety.
5. Economy.
6. Unity.
7. Scale.

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5-2: According to Bruno zevi: The most important principles of form**: (Zevi, 1957)**

1. Unity.
2. Symmetry.
3. Balance.
4. Emphasis or accentuation.
5. Contrast.
6. Proportion.
7. Scale.
8. Expression or character.
9. Truth.
10. Propriety.

6- According to the Theoretical studies the Indicator of the Building shapes of the Assyrian and Islamic architecture are(by researcher):

1- The shape of the general body of the block in the horizontal projection .It has four possibilities:

Square	Rectangular	Mixed	Irregular

2- Direction: Bears three possibilities:

Vertical	Horizontal	Balanced

3- The ratio of mass to space: Determination in numerical scale depending on the relationship of both mass and space.

4- Mass Directing: Bears two possibilities:

Within the four directions	Not within the global directions

5- The type of mass structural system: Bears three possibilities:

Linear structural system superficial structural system	Volumetric composition system

6- Mass floor level: Bears two possibilities:

Higher than the level of the city floor, either by using an artificial terrace or a natural hill.	At the same level as the city floor.

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7: Case study

7-1: Questionnaire

The purpose of the questionnaire is to gather information and opinions from participants regarding the influence of formal characteristics of Assyrian architecture on Islamic architecture in Iraq during the Abbasid era. The researcher prepared a questionnaire composed of 4 questions. The questionnaire form (survey) distributed to 15 different staff academic all of them have specialization in: History of architecture, Heritage architecture (local), Theory of architecture

7-1-1:Questionnaire form

○ *Please answer all questions by entering an X in the rectangle as shown below(Researcher)*

Shape of Building	1	What distinctive shapes are commonly found in Assyrian and Islamic buildings?				
		Architecture	*Square*	*Rectangular*	*Mixed*	*Irregular*
		Assyrian				
		Islamic				
	2	Stairs and ramps were used in Assyrian and Islamic architecture. In your opinion, were they used for defensive reasons?				
		Strongly Agree	*Agree*	*Neutral*	*Disagree*	*Strongly Disagree*
	3	How important is it to identify the influence of Assyrian architectural forms on Islamic architecture in Iraq (the Abbasid era)?				
		Historical Continuity	*Architectural Evolution*	*Cultural Exchange*	*Preservation of Identity*	*All of them*
	4	Do you think that Assyrian building forms will continue to influence the design of Islamic architecture in Iraq in the future?				
		Strongly Agree	*Agree*	*Neutral*	*Disagree*	*Strongly Disagree*
Assyrian Building				*Islamic Building*		

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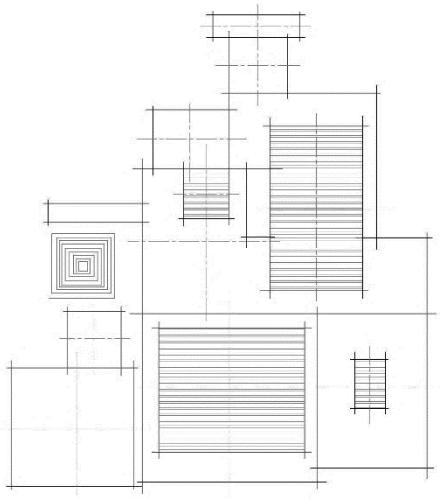

Figure 15: Sargon II palace in Dur-Sharrukin (Khorsabad)

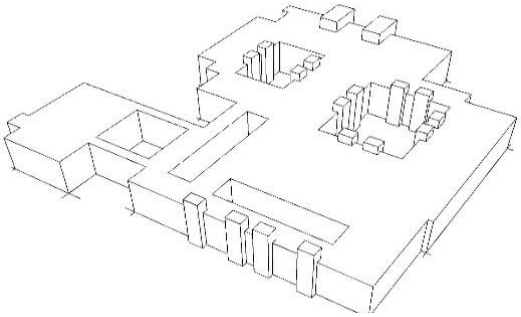

Figure 16: Sanharib palace in nineveh

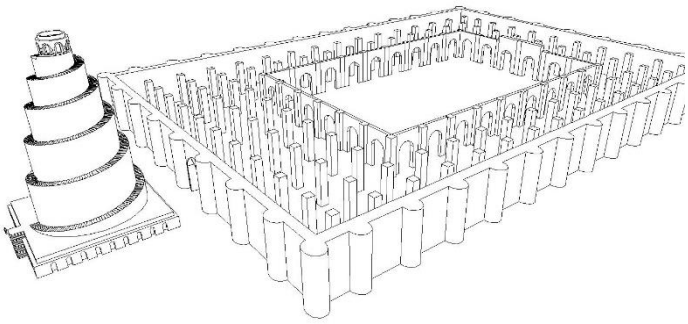

Figure 17: Big mosque in samarra

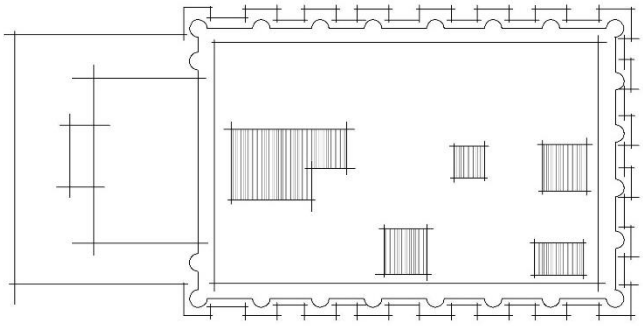

Figure 18: al-'Ashiq palace in Samarra

6-1-2: Result and Discussion for Questionnaire

A-Question one

Table (1): the result for Question 1(researcher)

Option		Score	Frequency	Percentage	Multiply	Average score
Assyrian	Rectangular	3	5	33	99	39.94
	Mixed	4	8	53	212	
	Irregular	2	2	14	28	
Islamic	Rectangular	4	10	80	320	
	Mixed	3	5	20	60	
	Irregular	2	0	0	0	
Total			30	200	719	
Mean and Standard Deviation			119 ± 122			

The survey's findings about the unusual shapes frequently seen in Assyrian and Islamic structures are shown in the table (1). On a scale of 2 to 4, participants were asked to rank the forms, with 2 denoting "Irregular," 3 denoting "Rectangular," and 4 denoting "Mixed."

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In summary, the table provides insights into the distinctive shapes commonly found in Assyrian and Islamic buildings according to the participants. "Rectangular" is identified as a common shape for both Assyrian and Islamic buildings, with the highest frequency of responses. The second most common shape for Assyrian buildings is "Mixed," while "Mixed" is also mentioned for Islamic buildings but with a lower frequency. Interestingly, no participant chose "Irregular" as the distinctive shape for Islamic buildings. The standard deviation of 122 indicates a wide spread of responses, indicating varying degrees of agreement and disagreement among the participants on the distinctive shapes found in these architectural styles.

B-Question two:

Table (2) :the result for Question 2(researcher)

Option	Score	Frequency	Percentage	Multiply	Average score
Strongly Agree	5	4	27	135	28.57
Agree	4	8	53	212	
Neutral	3	2	13	39	
Disagree	2	1	7	14	
total		15	100	400	
Mean and Standard Deviation			100 ± 91		

The answers to Question 2, which asked participants if they believed that Assyrian and Islamic architecture utilized stairs and ramps for defensive purposes, are shown in the table (2) that is provided. The table shows the results in terms of scores, frequencies, percentages, and calculated numbers like the "Multiply" column and "Average score." The table also includes information about. The table provides insightful information about the participants' views on the usage of ramps and stairs for defense in Assyrian and Islamic architecture. Although the majority of participants agree or strongly agree with the statement, there is also an observable percentage of neutral responses, which suggests some uncertainty or lack of agreement on the subject. The significant spread of replies and the relatively high standard deviation point to a wide range of participant viewpoints.

C-Question three

Table (3): The result for question 3(researcher)

Option	Score	Frequency	Percentage	Multiply	Average score
Historical Continuity	3	6	40	120	48.6
Architectural Evolution	4	8	53	212	
Cultural Exchange	5	10	66	330	
Preservation of Identity	2	4	27	54	
All of them	1	2	13	13	
total		30	199	729	
Mean and Standard Deviation			145± 127		

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The answers to Question 3, which evaluates the significance of determining the effect of Assyrian architectural forms on Islamic architecture in Iraq during the Abbasid era, are presented in the table (3) that is provided. The table shows the results in terms of scores, frequencies, percentages, and calculated numbers like the "Multiply" column and "Average score." The table also includes information on the replies' mean and standard deviation.

The table offers insightful information on the participants' viewpoints on the significance of determining how Assyrian architectural styles influenced Islamic building in Iraq during the Abbasid era. It demonstrates that participants have a variety of viewpoints because many respondents believed that it was important to maintain historical continuity, evolve architecturally, trade cultures, and preserve one's identity. The comparatively high standard deviation points to a wide range of perspectives among the participants and suggests differing weights given to these various criteria.

D-Question four

Table (4) : the result for Question 4(researcher)

Option	Score	Frequency	Percentage	Multiply	Average score
Strongly Agree	2	1	7	14	26.33
Agree	3	2	14	42	
Neutral	5	7	44	220	
Disagree	4	4	28	112	
Strongly Disagree	1	1	7	7	
total		15	100	395	
Mean and Standard Deviation			79± 89		

The views on whether Assyrian construction methods will continue to influence the growth of Islamic architecture in Iraq are analyzed in Table (4) of Question 4. Let's discuss it. The table summarizes the study's conclusions about the influence of Assyrian architectural designs on the growth of Islamic architecture in Iraq. Participants were asked to rate their degree of agreement with a statement on a scale of 1 to 5, with 1 signifying "Strongly Disagree" and 5 denoting "Strongly Agree."In conclusion, there are a variety of views expressed in the replies to the question of whether Assyrian architectural types would continue to impact the development of Islamic architecture in Iraq in the future. Although there isn't a strong majority, the most often expressed position is "Neutral," which denotes some amount of ambiguity or lack of agreement on the subject.

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7-2: Graphic analysis:

7-2-1: Assyrian Graphic analysis: For Assyrian architecture, I took 10 examples, which consist of (palaces, temples, ziggurats, city walls and doors). For each example, I did a graphic analysis and the results derived from Assyrian architecture came from these examples:

1- The Palace of Sargon II at Dur-Sharrukin (Khorsabad)
2- Sanharib palace in Nineveh
3- Ashur nassir-pal palace in Nimrud
4- Nabu temple in Nimrud
5- Nabu temple in Dur-Sharrukin (Khorsabad)
6- Ziggurat in Dur-Sharrukin (Khorsabad)
7- The City wall –khoursabad
8- The City wall- Ninveh
9- Nergal Gate – Nineveh
10- Al-masqa Gate – Nineveh

Table (5): The Palace of Sargon II at Dur-Sharrukin (Khorsabad) (by researcher)

The type of Building style	The name of Building style	Site	Assyrian Era
Place	Sargon II	Dur-Sharrukin (Khorsabad)	Neo-Assyrian period
Description			
This palace is located in Khorsabad (Dur Sharrukin), 15 km northeast of Nineveh. It was built by the Assyrian king Sargon II (722-705 BC) in the eighth century BC. **(Sharif, 1982)** Free stone work may be seen on the ramp that connects the palace's lower and upper terraces in the southern corner, and on the right are the remnants of the bridge's arches that once connected the palace's upper terrace to the Nabu Temple terrace. Khorsabad's royal mansion is split into two halves and is located on the town's northwestern edge, separated from the habitations by a wall. The town wall supports the core, which is located on a higher level. It consists of the regal palace, a ziggurat-enclosed temple, three larger long cellars with broad ante-cellars for the moon god Sin, his wife Ningal, and the sun god Shamash, as well as three smaller long rooms without ante-cellars for Adad (the storm god), Ninurta (the god of war and the chase), and Ea (the god of the freshwater ocean and of wisdom). **(strommenger, 1964)** In front of this main terrace is a considerably lower, horseshoe-shaped patio. The palaces of the royal family and prominent officials were located here. There were two gates from the town that allowed access. The palace of Sin-akh-usur, a brother of Sargon II (from left), is in the eastern corner. In the western corner, close to the city wall, is another palace. To the east of this is the temple of Nabu, the god of wisdom and the art of writing. **(strommenger, 1964)**			

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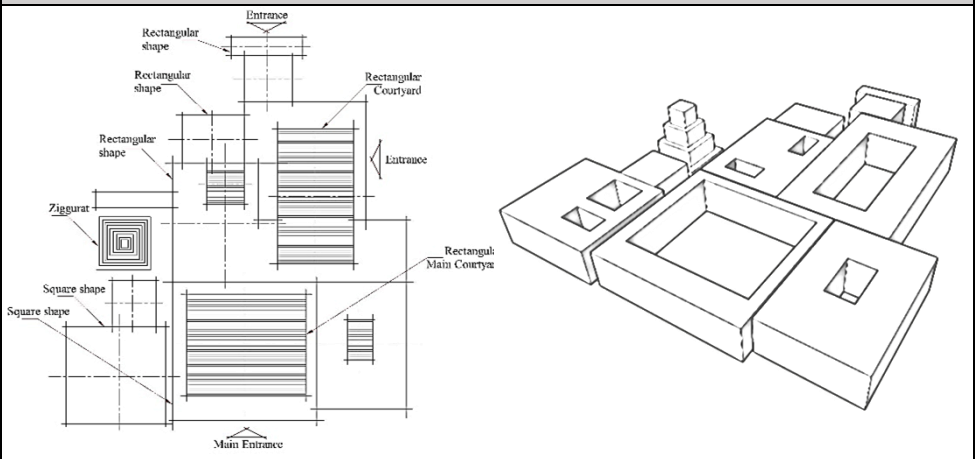
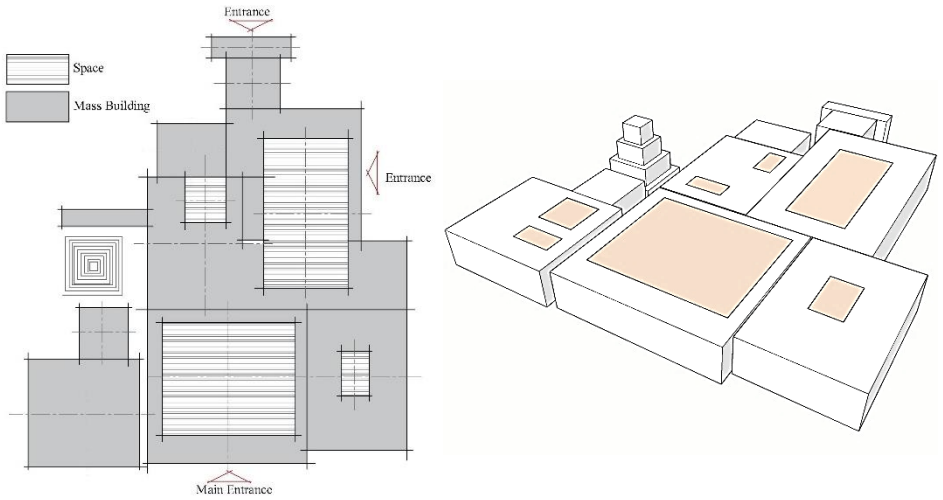
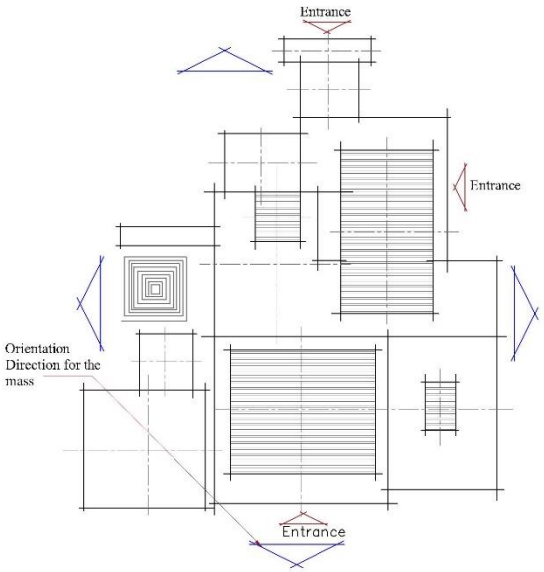
No	Main Indicat	Sub Indicat	Graphical analysis
1	Building shape	The general body of the mass	
2	Building shape	The ratio of the mass to space	
3	Building shape	Mass orientation	

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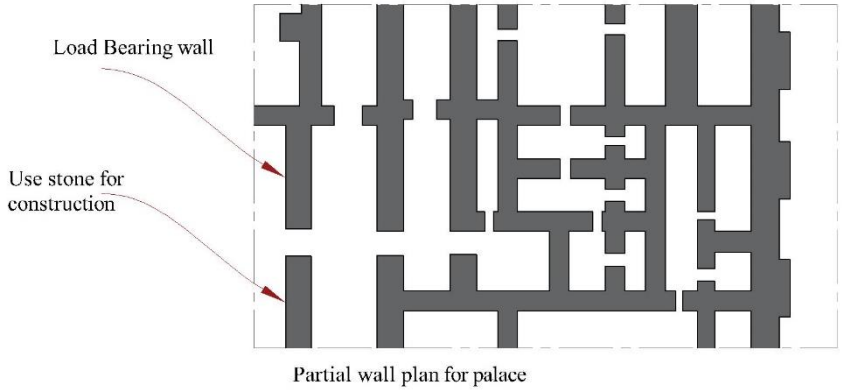
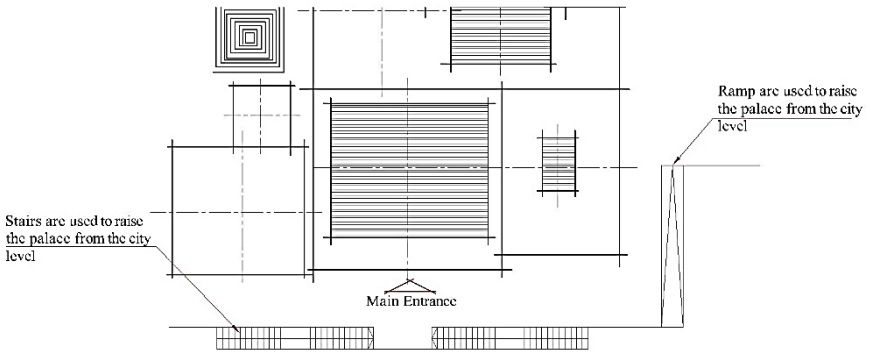
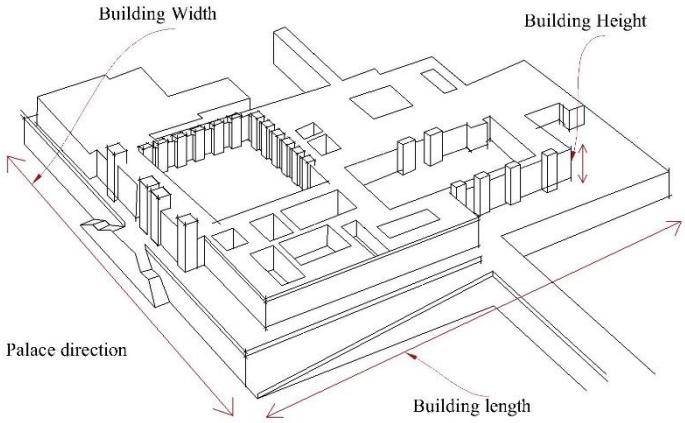
4	Building shape	Structure system for palace	
5	Building shape	The level of the building's floor	
6	Building shape	Mass Direction	

7-2-2: Islamic Graphic analysis: For Islamic architecture (the Abbasside era), I took 7 examples, which consist of (palaces, mosques, external walls, and doors). For each of these examples, I did a graphic analysis and the results extracted from Assyrian architecture came from these examples:

1. Mustansiriya Madrasah - baghdad
2. Big mosque - samarra
3. Abu Dulaf Mosque-Samarra.
4. Al-'Ashiq palace of SamarraT
5. Dar al-khalifa palace.
6. City wall surround Baghdad.
7. Bab al-Wastani – Baghdad

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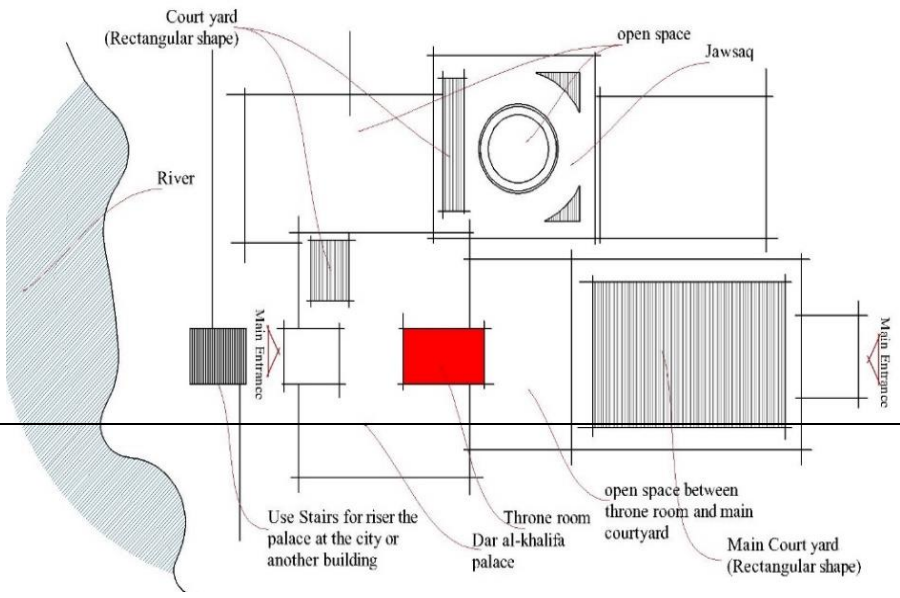
Table (6) Dar al-Khalifa palace – Samarra(Jawsaq palace) (by researcher)

The type of Building style	The name of Building style	Site	Islamic Era
Place	al-Khalifa(Jawsaq)	Samarra	Abbasside
Description			
The main palace of Sammara constructed by AL-MUTASIM The Kasr-el-Khalifah, also known as Khalif's palace, was one of the most well-known Islamic palaces at the time of the city's founding in 221/836. It is a long, shaped mass of ruins on the edge of a high bank, divided by three cross walls. Its extreme length landwards is about 900 paces, the breadth of face towards the river 130 paces, and of the landward face 580 paces. The jail is identified as one vault that has been deeply dug and is known as Jibb. Jibb's entrance is a narrow shaft, and people must have been lowered into it and raised out of it using a rope. The Lions' Den, also known as Birket-el-Seba, is a nearby deep square hole. From the Jibb to the Birket, a small underground passageway is cut, and it is reported that offenders have been tossed out the door to be eaten by wild animals. A sloped platform supported by arches descends to the hawi from the face towards the river. Outside the palace, at its NW corner, are beautiful ruins of a turreted structure known as the Hamam, or the bath. The palace complex is situated on the conglomerate of the Tigris's east bank, which was deposited by former riverbeds during the Tertiary period. Large-scale cutting of subsurface buildings was made possible by the material's relative softness. The garden is situated in the Tigris flood plain on the west side of the palace, which has a steep slope of roughly 10 meters to the flood plain. Even though the aggregate cannot be removed in its entirety by the Tigris bed's numerous shifts within the flood plain, the river has been removing the southwest corner of the western garden since the third or ninth centuries. A barrier was built in Samarra in the middle of the 1950s to direct floodwater from the Tigris into the Tharthar valley. **(Plommer , 1956)**			

No	Main Indica	Sub Indica	Graphical analysis
1	Mass Building	The general body of the mass	

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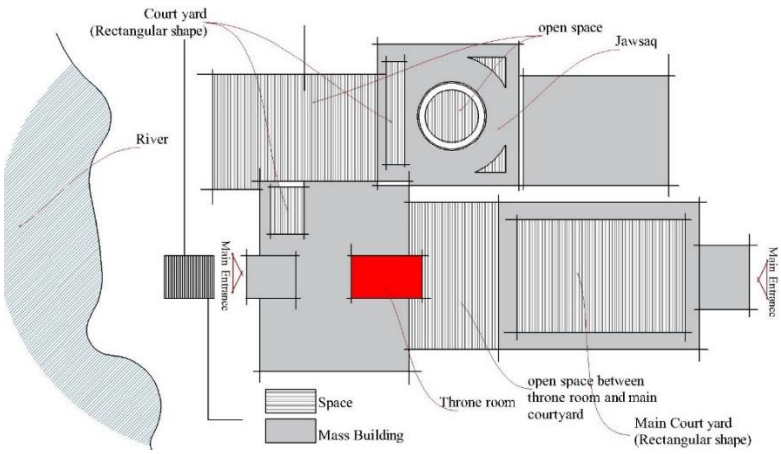
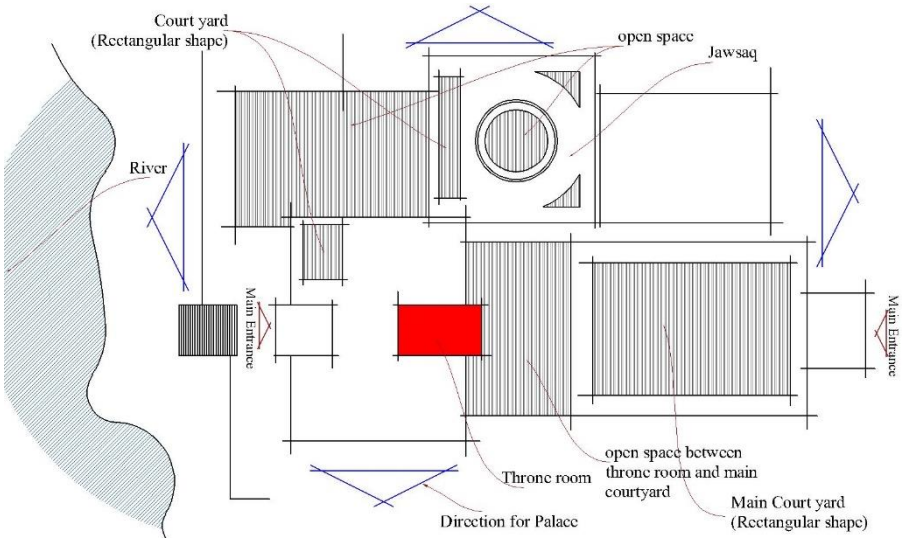
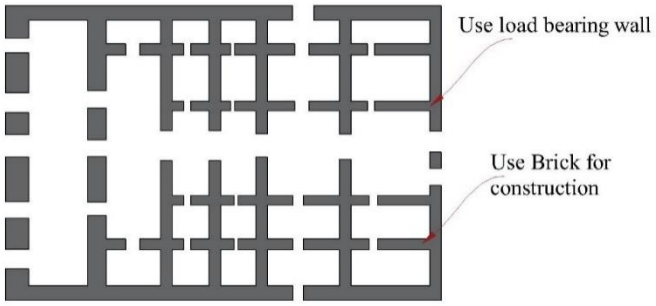
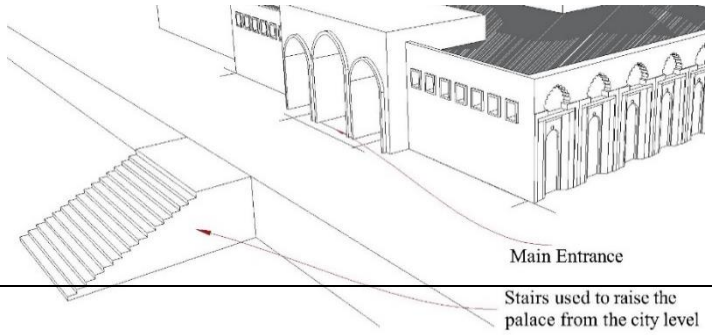
2	Mass Building	The ratio of the mass to space	
3	Mass Building	Mass orientation	
4	Mass Building	Structure system for palace	
5	Mass Building	The level of the building's floor	

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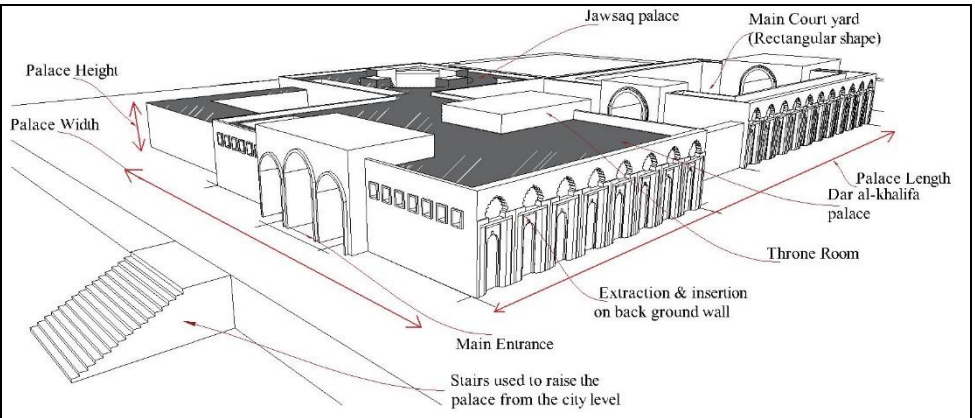
6	Mass Building	Mass Direction	

7-2-3: Graphic analysis Result and Discussion

A-The general body of the mass

Table(7): The percentage of the totality of general body of the mass(by researcher)

	Percentage %100(Assyrian)	Percentage %100(Islamic)
Square	%26	%10
Rectangular	%20	%60
Mixed	% 40	%10
irregular	%14	%20

This table (Table 7) presents the percentage distribution of the response totality of the general body of the mass, categorized into two groups: Assyrian and Islamic. Each group has four different shapes of masses: Square, Rectangular, Mixed, and Irregular.

According to the table, mixed masses are more common in Assyrian replies (representing 40% of the total), but rectangular masses are more common in Islamic responses (representing 60% of the total). Rectangular forms are more prevalent in the Islamic group, whilst mixed shapes are preferred by the Assyrian group. Both groups have varied preferences for mass shapes. The table offers a side-by-side comparison of the response distribution across various mass forms and cultural affinities.

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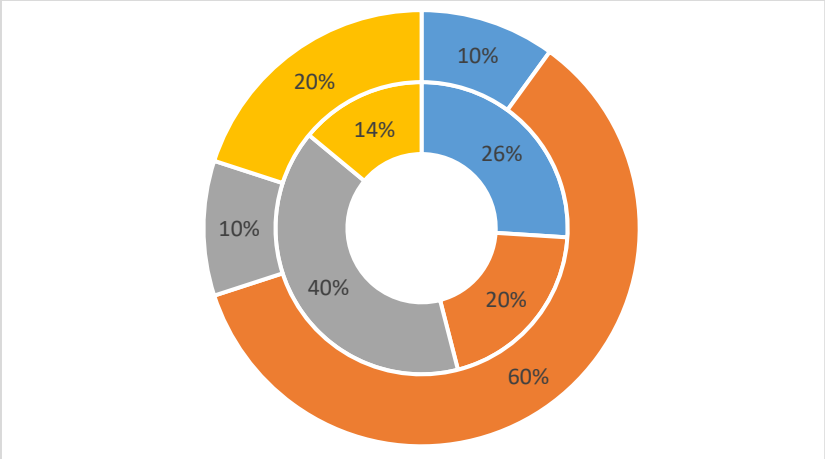

Figure (19): Comparative Assyrian and Islamic Architecture for the general body of Mass

B-mass Orientation

Table(8): The percentage of the totality of mass orientation(by researcher)

	Percentage (Assyrian)	Percentage (Islamic)
Within the four directions	%60	%42
Not in the four directions	%40	%58

Table 8: Which compares the distribution of mass orientation in Assyrian and Islamic architectural styles, 60% of Assyrian structures favor orientation in the four cardinal directions, whereas 42% of Islamic structures also favor this orientation preference. Contrarily, 58% of Islamic architectural styles and 40% of Assyrian architectural designs stray from the four cardinal directions. highlight the differences in design methods for each style, with Assyrian structures mostly adhering to the four directions and Islamic structures showing a stronger tendency towards non-cardinal orientations.

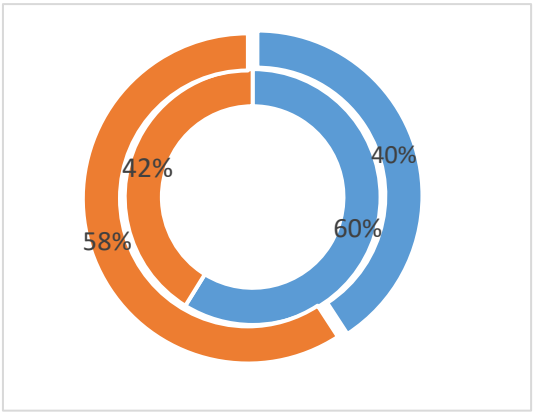

Figure 20: A comparative chart of Assyrian and Islamic Architectures for the mass Direction

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C- The level of the building's floor in relation to the city

Table(9): The percentage of the totality of the level of the building's floor in relation to the city (by researcher)

	Percentage (Assyrian)	Percentage (Islamic)
Industrial terrace	%100	%57
Natural plateau	%0	%43

Table 9: shows how the building's floor levels are distributed in relation to the city. Notably, 57% of Islamic structures have this feature, in contrast to 100% of Assyrian structures that are all located on industrial terraces. In contrast, 43% of Islamic buildings are found in a natural plateau setting. stresses a clear predilection for urban location, with Islamic architecture showing a broad distribution of building floor levels between natural plateaus and industrial terraces, whereas Assyrian architecture is mostly found on industrial terraces.

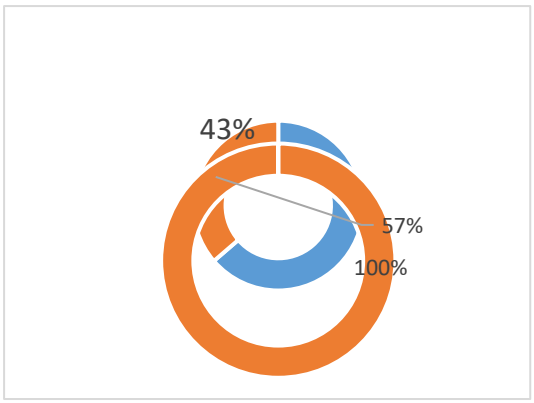

Figure 21: A comparative chart of Assyrian and Islamic Architectures for the level of the buildings floor in relation to the city

D- Structure mass system:

Table(10): The percentage of the structure mass system(by researcher)

	Percentage %100(Assyrian)	Percentage %100(Islamic)
Load-bearing walls	%80	%72
Mass carving(Column)	%20	%28

The distribution of Structure mass systems among both Assyrian and Islamic architectural styles is seen in Table 10. Load-bearing walls make up 80% of the structural approach in the Assyrian style, while mass carving (column) makes up 20%. Comparatively, the Islamic style exhibits a comparable yet distinct distribution, with mass carving (column) making up 28% and load-bearing walls accounting for 72%. demonstrate the importance of load-bearing walls in both architectural designs while also emphasizing a notable difference in the volume of mass carving between Assyrian and Islamic styles.

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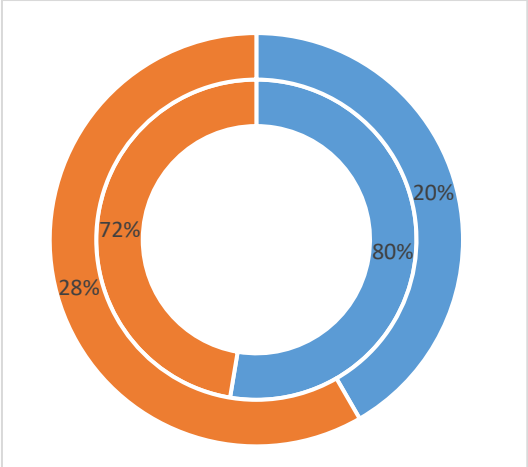

Figure 22: A comparative chart of Assyrian and Islamic architectures for the structure mass system

E- Mass Direction

Table(11): The percentage of the Mass Direction(by researcher)

	Percentage %100(Assyrian)	Percentage %100(Islamic)
Vertical	%80	%72
Horizontal	%20	%28

The distribution of Mass Direction in both Assyrian and Islamic architectural types is seen in Table 11. An obvious vertical orientation makes about 80% of the Assyrian style, whereas a horizontal orientation makes up 28%. Similar to this, the Islamic style maintains a 72% vertical focus and a 20% horizontal orientation. These percentages, highlight the frequent usage of vertical mass direction in both styles, with slight differences between Assyrian and Islamic designs.

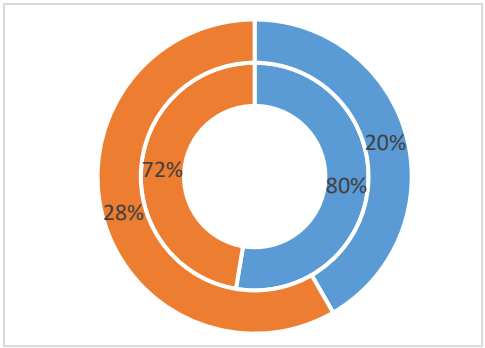

Figure 23: A comparative chart of Assyrian and Islamic Architectures for the mass direction

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F- Mass location

Table(12): The percentage of the mass location(by researcher)

	Percentage %100(Assyrian)	Percentage %100(Islamic)
North West	%80	%50
Southern	%20	%50

The distribution of Mass Location in both Assyrian and Islamic architectural styles is seen in Tables 12. In the Assyrian style, the north and west directions make for 80% of the composition, while the south contributes 20%. It's interesting to note that the Islamic aesthetic places equal emphasis on the south and the northwest, each at 50%. highlight divergent mass placement preferences, with Assyrian architecture favoring the north-west direction while Islamic architecture exhibits a balanced attention to the south and north-west directions.

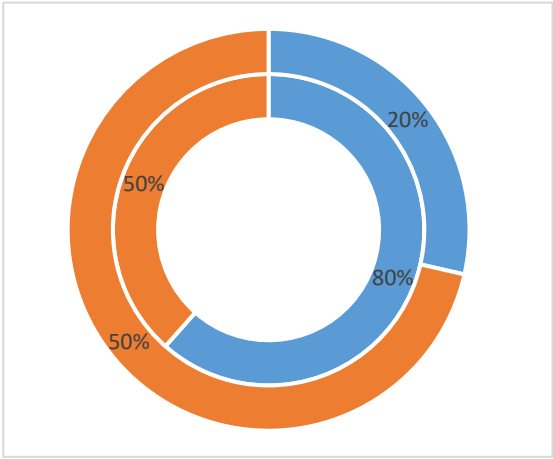

Figure 24: A comparative chart of Assyrian and Islamic Architectures for the mass location

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7-2-4: Spearman correlation test for building shapes:

1- Between the general body of the mass and mass direction:

Table(13): Spearman correlation test between general body of the mass and mass direction(by researcher)

	Percentage %100(Assyrian)	Percentage %100(Islamic)
Square	%26	%10
Rectangular	%20	%60
Mixed	% 40	%10
Irregular	%14	%20
Vertical	%80	%72
Horizontal	%20	%28

r-s= 0.88235

The Spearman correlation coefficient (r_s) value of 0.88235 suggests a strong positive correlation between the general body of the mass and the mass direction in both Assyrian and Islamic architecture. This indicates that there is a consistent relationship between the percentages of different shapes (square, rectangular, mixed, and irregular) and the orientation of the mass (vertical, horizontal) in these architectural styles.

According to the correlation study, there is a trend for a larger percentage of vertical mass direction in Assyrian architecture as the proportion of square forms rises. Similar to this, the percentage of vertical mass direction rises in direct proportion to the number of rectangular forms. On the other hand, there is a minor rise in the proportion of horizontal mass direction when the percentage of mixed and irregular forms increases.

This significant positive association suggests that in both Assyrian and Islamic architecture, the form of the buildings is a factor in how the mass is oriented. It implies that distinct mass orientations are more likely to be connected with particular building forms. The link between the general body of the mass and the mass direction in various architectural styles may be influenced by cultural, functional, and aesthetic factors, according to the correlation.

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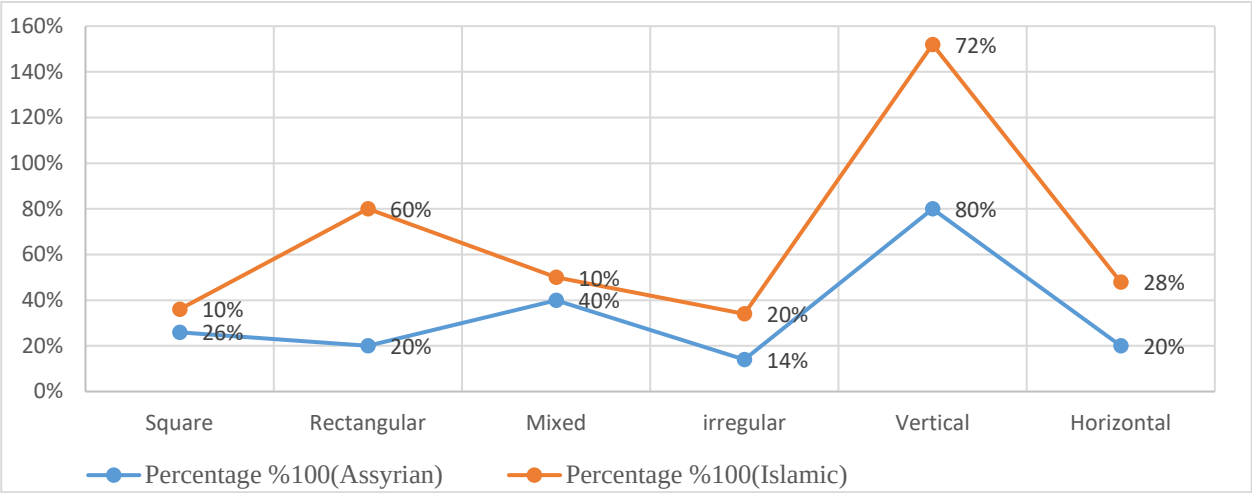

Figure 25: Spearman correlation test graph between general body of the mass and mass direction(by researcher)

2-Between the level of the building's floor in relation to the city and Mass location:

Table(14): Spearman correlation test between the level of the building's floor in relation to the city and mass location(by researcher)

	Percentage %100(Assyrian)	Percentage %100(Islamic)
industrial terrace	%100	%57
natural plateau	%0	%43
North West	%80	%50
Southern	%20	%50

r-s= 0.948683

Table 14: presents the Spearman correlation test results, revealing a correlation coefficient (r-s) of 0.948683 between the level of the building's floor in relation to the city and Mass location for both Assyrian and Islamic architectural styles. This coefficient indicates a strong positive association between these variables. Specifically, the data illustrates that in the Assyrian style, buildings located on industrial terraces tend to have a higher occurrence of mass orientation towards the North West direction. Similarly, in the Islamic style, buildings situated on industrial terraces are more likely to have a mass orientation towards the Southern direction. This robust correlation, drawn from the response table (C6) in Appendix 2, highlights a consistent relationship between the positioning of buildings in relation to the city and their corresponding mass direction, suggesting a design trend influenced by the urban context.

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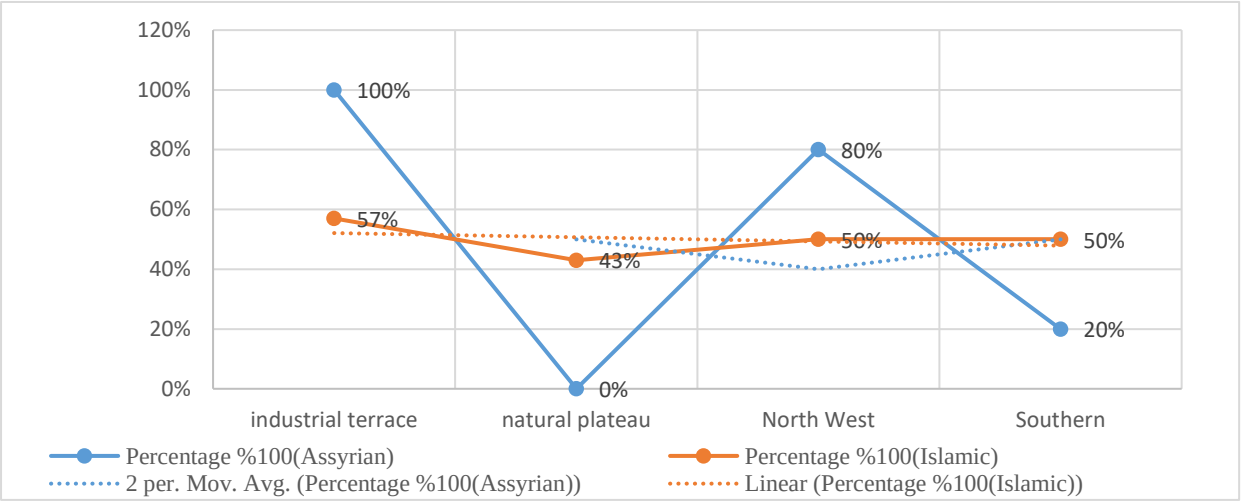

Figure 26: Spearman correlation test graph between the level of the building's floor in relation to the city and mass location(by researcher)

7- Conclusions

After completing the practical side of the questionnaire and graphic analysis, I reached the most important points:

1. reference for Rectangular Shapes and Shared Practicality: Rectangular shapes are frequently used in Assyrian and Islamic architecture because of their usefulness and adaptability. It is the perfect option for fitting varied purposes and spatial configurations due to its inherent symmetry and straight lines. The effective use of space provided by the rectangular form makes it simpler to partition and arrange various spaces within a structure. This predilection for rectangular shapes demonstrates that, despite cultural and historical diversity, there is a common understanding of the practical benefits that architecture should offer.
2. Divergence is observed in mass orientation preferences. Assyrian architecture tends to align masses within the four directions, suggesting a possible emphasis on symbolic or functional alignment. In contrast, Islamic architecture exhibits a more varied approach, emphasizing flexibility in mass orientation.
3. The correlation between building floor levels and mass location indicates a strong association in both architectural styles. Assyrian architecture aligns industrial terraces with a North West mass orientation, while Islamic architecture associates industrial terraces with a Southern mass orientation. This suggests a deliberate design response to the urban context.
4. Both architectural styles share a preference for load-bearing walls in their mass systems, indicating a commonality in structural choices. This could be influenced by functional considerations or the availability of building materials in both Assyrian and Islamic architecture.
5. A strong positive correlation is observed between the general body of the mass and mass direction in both architectural styles. The form of buildings significantly influences mass orientation,

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emphasizing a connection between specific building shapes and mass directions in Assyrian and Islamic architecture.

6. The Spearman correlation test underscores a consistent relationship between the positioning of buildings and their corresponding mass direction in both Assyrian and Islamic architecture. This points to a design trend influenced by the urban context, where building location aligns with intentional mass orientations.

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