

A Study of Iraqi Houses: Materials, Construction Techniques, and Decorative Features

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ABSTRACT

Courtyard houses have a unique charm. For those who wander through the neighborhoods that still preserve these buildings or homes, stories and memories passed down through generations come alive once more. Similarly, there are stories about the strong family ties and human relationships that bind the people of the neighborhoods together. Considered one of Iraq's most significant folkloric landmarks, the courtyard houses are regarded as witnesses to all the social and cultural transformations Iraq has undergone. Some have withstood the test of time and remain standing, enhancing the grandeur of urban development. The houses represent the city's historical and urban character. These houses embody traditions passed down from the past and are transmitted as a legacy to future generations. They are also regarded as the cornerstones of national and local identity. The aim of this study is to examine the materials used and construction methods. Furthermore, decorative and ornamental elements used in both interior and exterior spaces, as well as the decorative materials on facades, roof structures, and their uses will be thoroughly examined and analyzed. This study will analyze and examine every aspect related to traditional houses in that term.

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1. INTRODUCTION

Traditional houses are significant building types that represent a rich heritage in many cultures. These houses are generally recognized by architectural features and design elements specific to a particular region or community. Traditional houses are usually built to adapt to local climatic conditions and environmental factors. Constructed using materials such as wood, stone, earth or other natural elements, traditional houses also stand out for their architectural details, ornamentation and decoration. Whilst bearing the traces of the past, traditional houses continue to serve as living spaces and an integral part of identity for people in certain regions today.

This research aims to examine the building materials and decorative elements used in historical and traditional courtyard houses found in Iraq. More specifically, the materials and decorative elements used in traditional courtyard houses in Baghdad form the core focus of this study.

The types of building materials used both inside and outside courtyard houses, as well as the construction techniques employed, will be examined in detail. The materials, varieties and craftsmanship of the windows and doors used on the façades, which reflect the region's civilization and architectural character, will be discussed. Furthermore, decorative elements considered a key factor in reflecting the homeowner's social status and adding aesthetic value to the house—will be analyzed in terms of the ornamentation used in interior spaces, decorative details and material quality.

Furthermore, the decorative motifs, woodwork, plasterwork, use of colour and how aesthetic sensibilities are reflected in the architecture of traditional Baghdad courtyard houses will be examined. By evaluating the relationship between building materials and decoration, the roles of these elements in shaping both functional and cultural identity will be highlighted.

2. MATERIALS AND TECHNIQUES OF IN TRADITIONAL HOUSES

In traditional architecture, the building envelope is the fundamental component that acts as a barrier between the internal and external environments and encompasses all the main elements and materials. The building envelope is a structural element that provides comfort to the building by reducing environmental effects such as energy, heat, sound and light [12]. Building materials possess different physical properties depending on their composition, usage and durability, enabling them to perform functions such as reducing heat inside the house and reflecting sunlight. Additionally, they provide sound insulation between rooms and possess reflective properties. These materials are based on the principle of resisting heat transfer, reducing heat gain and reflecting sunlight as much as possible [1]. Traditional houses in Baghdad employ a strategy to cope with summer heat: this strategy involves protection, flexibility and adaptation. Protection lowers the internal temperature and reduces the temperature throughout the house. It also delays the onset of extreme heat until the late afternoon or evening. The exchange of hot and cold air takes place away from the interior. Resilience, on the other hand, is characterized by the use of materials such as plaster, brick, wood, stone, and palm trunks and leaves. These materials can remain durable for many years and ensure the sustainability of the buildings' structures. Furthermore, these materials are readily available in the local environment.

Brick was used as the building material for the walls, whilst stone was used for the foundations. These materials have a high thermal mass and are capable of storing the heat energy they absorb during the day and releasing it again after sunset [20]. Consequently, thermal equilibrium is achieved between the heat gained and lost within the building via the building envelope. With these characteristics, the building envelope of traditional houses is not merely a barrier separating the interior environment from the exterior, but also a structure in harmony with its surroundings [21].

Foundations: Strip foundations made of solid fired bricks and mortar using lime and ash or lime and sand. The thickness of the foundation is determined by the wall above and the required depth. Foundation thicknesses generally range from 7 cm to 12 cm [5].

Retaining Walls: Retaining walls are considered one of the most important walls in a traditional Baghdad house. These walls are typically found in the basement (Serdab) rooms, the semi-basement (Neem) rooms, and sometimes in the external walls and those facing the courtyard. As part of the internal walls, the retaining wall is always thick, with a thickness ranging from 70 cm to 90 cm. This wall consists of two layers of broken bricks and a layer of broken bricks in between. The outer layer is mostly made of melted-bricks or baked bricks, whilst the inner layer is made of different types of broken bricks. The walls facing the courtyard are thinner than the interior walls and are generally 45 cm thick [2].

External Walls: The external walls of traditional courtyard houses are quite thick; they are generally 50–70 cm thick and consist of brick cladding. These walls have a heavy construction [2]. **Internal Walls:** The internal walls of the cellar (Serdab) and the room below the cellar (Neem) are quite thick, usually having a brick thickness of 50–70 cm. The building materials used for interior walls are similar to those used for retaining walls. The interior walls between habitable rooms are approximately 50 cm thick and are built of brick [5]. **Parapet Walls:** The roof terrace of the traditional house features parapet walls, which are always constructed in two sections. The lower section consists of brickwork with plaster (jus) as mortar, measuring 22.5 to 25 cm in thickness. The upper section will be 19 cm

thick, the same thickness as Iraqi bricks. Their function is to isolate the roof from neighbors and provide privacy on the lower floor [18]. Wooden columns: The columns on the ground floor and first floor of courtyard houses in Baghdad are always made of wood. This type of timber is generally found in north-eastern Iraq [4]. The materials used include either brick or stone (thick), timber-framed infill + glass, brick domes or vaults, and timber beams [8]. As showed in Figure 1.

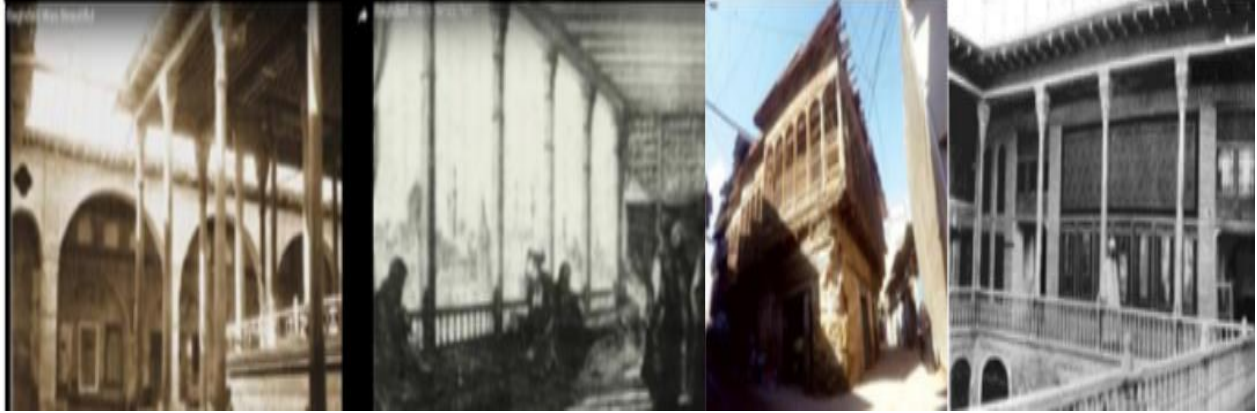


Figure 1. Materials and techniques in houses [8].

3. DECORATIVE FEATURES OF COURTYARD HOUSES

In Baghdad houses, a variety of materials are used together for decorative purposes. Combinations of materials such as wood, plaster, stone, ceramics, glass and metal are frequently employed in the decorations. These materials enrich the aesthetics of the houses, creating a distinctive appearance. Various materials are used for decoration in Baghdad houses, and the muqarnas is one of the most striking of these decorative elements [22].

Muqarnas: A form of ornamentation used in Islamic architecture. This is a distinctive feature of Islamic architecture and is in harmony with the local aesthetic sensibility of Islamic structures. Warren and İhsan Fethi [18] stated: “Muqarnas” is one of the most characteristic aspects of construction and decorative techniques in courtyard houses in Baghdad. Plaster, wood, brick and stucco are among the materials frequently used in Baghdad houses for aesthetic and decorative purposes.”

Wooden columns: In Baghdad houses, the columns on the ground floor and first floor are generally made of wood. Wooden columns contribute to the traditional architecture and natural aesthetics of the house. To highlight these columns, the capitals are richly decorated [19].

4. Decorative Features of Courtyard Houses

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Ornamental features: Panels made of brick, stone, wood and mirrors are used in some houses for decorative purposes on opposing walls or ceilings, on roofs, in rooms or in galleries. The ceiling of the rooms in a Baghdadi

house consists of a shallow dome. There are also brick vaults and arches on the walls and ceilings that form geometric decorations [4]. As shown in figure 2.



Figure 2. Decorative wooden columns along the edges, brick ceilings and arches, and Muqarnas ceilings [4].

There are also those colorful windows used in interiors, particularly in the decoration of homes and rooms. They are exactly the same as the windows used in Uris's room. In some large and medium-sized homes, there is a fountain in the center of the courtyard used for decorative purposes [15]. During the summer months, fountains in open courtyards are used to lower the air temperature and increase relative humidity. These fountains are decorated in a variety of colours, and colorful ceramics are used for ornamentation. The fountain, with its soothing sound that evokes a sense of comfort and tranquility, as well as the beautiful sight created by the movement of the water, [6]. Combined with the design of the fountain, this creates a versatile aesthetic form [2]. Carved, neatly cut and molded bricks were used to introduce geometric and arabesque decorative brickwork to doorways, window openings and façades. At times, mosaic-patterned bricks were used on the building's surfaces specifically on cornices, friezes and corner pieces to create complex shapes [3]. As shown in figure 3.



Figure 3. Decoration of the Entrance [3].

5. Facade Features

The facade of the houses consists of the entrance, windows, and Shanashil, balcony and balustrade sections. Figure 4. illustrates the facade elements

The entrance is generally an element that remains in the shade. The entrance is arched in shape, but the doorway is flat. The interior of the arch is filled with carved bricks. The entrance is decorated with carved brick and marble (Khaznadar, 2016). As for the window, it is usually situated in line with the façade. Windows come in two main

forms: arched or flat. Furthermore, there are two types of window depending on their location: wall-set windows and windows situated within the Shanashil. The window is usually framed by an ornate brick frame [10].

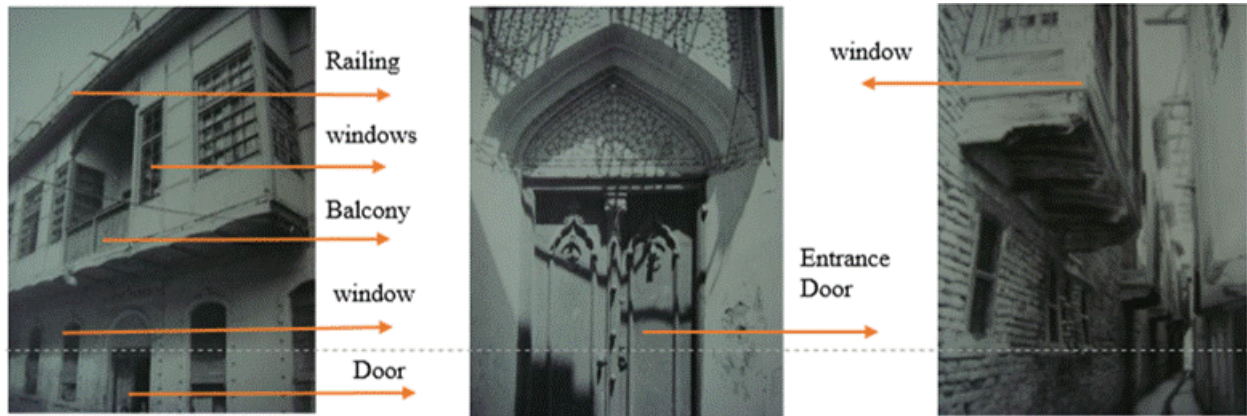


Figure 4. Façades in Houses [10].

Shanashil are typically a relief-carved element and are constructed of wood. They feature windows with steel railings and wooden-paneled screens. The dimensions of Shanashil vary. The balcony here is not a separate element; it is usually incorporated within the Shanashil. A balustrade is a structure that runs vertically along the wall or continues the line of the Shanashil. Brick decorative patterns are not usually found [7]. Façade decorations are decorative elements used to aesthetically complete the exterior façades of buildings as shown in figure 5.

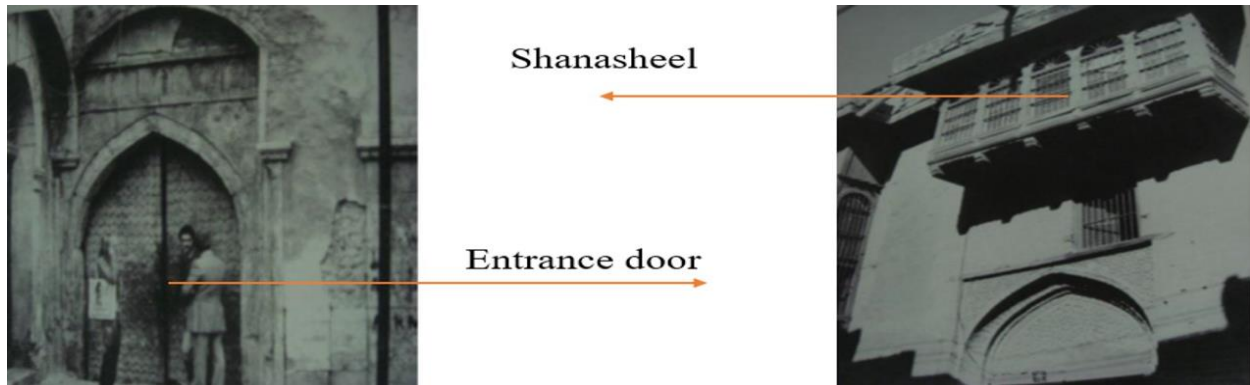


Figure 5. A view of front faced [10].

6. CONCLUSION

Traditional houses are regarded as one of the key historical landmarks of Iraqi civilization. Although they have evolved over the years and various construction methods have been employed, they remain firmly in place to this day. These houses provide us with an example of a stable architectural structure. The aim of this study is to shed light on the building materials and decorative elements used in courtyard houses and to examine them in detail.

Information is provided on all types of building materials used in these houses, the construction methods applied, and the techniques employed. It is noted that local materials found in all regions of Iraq were preferred due to their easy accessibility, and that these materials have proven their ability to withstand the climatic conditions of the summer months. For this reason, these materials were chosen.

The study includes information on the materials used in decoration and ornamentation, where they are used, and how they are applied both inside and outside the house. Although the houses may appear similar in design from the

outside, the presence of elements such as social differences evident in the interior decoration means that not all classes may be equal. In this respect, the interior decoration of the houses emerges as the key element that distinguishes them.

The study provides information on the materials used in decoration and ornamentation, where they are used, and how they are applied both inside and outside the home. Although the houses may appear similar in design from the outside, not all social classes may be equal due to the presence of factors such as social differences evident in interior decoration. In this respect, the interior decoration of the houses emerges as the key element that distinguishes them.

Finally, the study focuses on the façades of courtyard houses, how they are decorated, the elements they contain, and the Shanashil the primary element adorning the façades of Iraqi houses. Shanashil are a key feature distinguishing any house from others. In addition to courtyard houses, any house can be distinguished by its Shanashil.

Courtyard houses continue to inspire admiration today as monuments bearing the traces of the past. These houses offer a fascinating heritage with their rich historical and cultural significance. The building materials used, the approach to ornamentation, the woodwork, and the decorative details are among the most important elements reflecting traditional architectural identity.

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