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Doctoral School of History

Doctoral Programme in Archaeology

Closing Systems of the 12th and 13th Century Buildings
in the Near East

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Summary

The research examines doors and windows of medieval Near Eastern buildings of the 12th and 13th centuries, which synthesized European and native architectural knowledge, and shows that closing systems can reveal additional data on the builders and the historical context of the structures. The study is divided into a theoretical and practical part. The theoretical study involves examining written and visual sources to establish the origins of builders and construction techniques used in the medieval period, and analysing the structure, types, locking systems, and metal elements of medieval doors and windows. The practical study involves selecting case studies chosen to represent a diverse range of buildings, conducting on-site investigations, and creating virtual reconstructions and 3D models of doors and windows to provide insights into their original states. Although the reconstructions may not be completely accurate due to the absence of surviving material evidence or prototypes, the findings contribute to a deeper understanding of the evolution and main types of doors and windows used in the Crusader Near East.

Introduction

In the field of material culture studies, the presence of doors and windows is a common feature in the design and construction of buildings. These elements are primarily conceived to keep out intruders and protect the building from the effects of weather. However, besides their physical function, their construction has a cultural significance and material importance so deeply embedded in our consciousness that they often go unspoken.¹ They make all the difference in architecture, marking the line between what is properly inside and what is properly outside. Their absence would render a castle devoid of its fortification and a church devoid of its sanctity. Indeed, doors and windows, as architectural elements, hold a remarkable influence over human behaviour, generating a series of cultural laws that pressure on the person who crosses to change status.²

Scope and research questions:

During the 12th and early 13th centuries, the Near East experienced a significant historical epoch marked by the Crusades and the settlement of Europeans, resulting in unprecedented levels of cultural changes. Once the Crusader states were established, the settlers erected numerous buildings throughout the newly conquered lands. The structures varied from small chapels to considerable fortifications. This research focuses on the study of their closing systems, specifically doors and windows, encompassing their typology, constituent elements, materials, installation techniques, and other related aspects. The primary objective is to answer the question: **What were the characteristics and construction techniques of medieval Near Eastern doors and windows, and how can this knowledge aid in the historical understanding of these structures?**

This research might answer several other questions: Were the same leaf design and closing mechanism conceived for military buildings and ecclesiastical buildings? Did the geographical location play a role in the conception and design of church doors? Do the closing and locking systems differ when the church is more frequented and more important? When were the leaves more decorated?

While some publications may contain photographs and drawings of contemporary and historical doors and windows, they often lack written information, limiting their usefulness for

¹ Cicero 1936: 740.

² Sieghert & Peter 2012: 11.

this study. Moreover, the availability of relevant sources on this topic is scarce in Western literature and almost non-existent in Eastern literature, further emphasizing the significance of shedding light on a lesser-explored aspect of architectural history in the Near East. In addition to the lack of written sources, the surviving material data is extremely limited. Despite the increasing number of precise studies in medieval architecture in the 20th century, the perishability of doors and windows posed challenges for scholars in the fields of architectural history and archaeology.

Aim and objectives

This is not a research on the cultural significance of doors and windows, it is a guide to provide architects and archaeologists with insights into the physical characteristics of doors and windows in medieval buildings in the Near East, including their composition, construction techniques, and dating methods. The aim is to foster a more realistic approach to the reconstruction of these elements based on historical evidence while trying to understand their evolution in the area and in the same building.

Methodology

This will be achieved by various research methods. Written sources, including historical documents and descriptions will be examined. Drawings and photographs of existing medieval buildings can provide visual references for understanding their form and details. Parallels from similar buildings in the region and in the West can be studied to identify common features. In addition to the theoretical work, field investigations were conducted, including on-site inspections, documentation, and photographs. Finally, creating virtual reconstructions and 3D models based on the available evidence will provide visual representations of how these elements may have looked in their original states.

Relevance

The preservation and restoration of the selected structures is of paramount importance to safeguard the cultural heritage of the area. However, in many places, the process of closing these structures is not carried out effectively. Even, many of these medieval sites still do not have doors or window shutters. By understanding how these elements were originally built and functioned, restoration efforts can prioritize historical accuracy. The findings of this research have practical implications for the restoration of medieval and Crusader monuments in the

Levant and other European countries. It will also help the periodization of the buildings and the better understanding of the defensive measures taken by the Crusaders.

Challenges

It is worth mentioning that in addition to the lack of resources, one challenge has been the deteriorated state of many medieval buildings, including their doors and windows. These elements have often been destroyed, blocked, or heavily restored with new stones, making it difficult to discern their original closing systems. Moreover, the restrictions imposed by the COVID-19 pandemic and limited travel opportunities have further limited access to the sites for detailed investigations. While this study can be developed much further, it can be considered a foundational effort in the field of medieval buildings of the Levant.

Chapters

This research moves from a macro context of the material aspects and techniques of medieval Near Eastern windows and doors (Part I) to the visualization of the ornamentation and the details used in the design of leaves and shutters in selected case studies in Lebanon and Syria (Part II).

Part I

Chapter 1

Limited research exists on medieval shutters and leaves in the Near East, mostly drawn from Western sources like Eugène Viollet-le-Duc and Rachel Touzé. Insight from English church articles is scarce, especially on locking mechanisms. Medieval manuscripts, old photographs, and building surveys supplement understanding, aided by dating techniques like dendrochronology. Reconstruction methods involve architectural surveying and 3D software.

This research focuses on Crusader-built structures in the 12th and 13th centuries, influenced by settlers from diverse European regions. These settlers, including knights and peasants, contributed to Near Eastern architecture, with significant influence from France and Italy. Native workforce, comprising Muslims, Jews, and Eastern Christians, also played a vital role. Despite challenges in pinpointing the most influential group, evidence suggests a strong presence of French and Italian builders.

Chapter 2

Doors varied in size and construction in the Near East, featuring reinforced wooden boards and essential components like hinges and locks for security. Window types evolved from small, unglazed openings to larger, glazed structures, with shutters providing security. Drawbars were common locking mechanisms, while metal elements like hinges and nails served structural and decorative purposes. Medieval depictions and photographs illustrate the evolution of door and window design, revealing ornate details and security features.

Part II

Chapter 1

In the present study, several factors were considered when selecting the medieval structures to be examined. Firstly, the focus was on medieval churches and two of the most well-preserved Crusader castles. The case studies were geographically diverse, differed in importance and the number of people who frequented these structures, and varied in terms of who built them.

Chapter 2

This chapter included the results of two surveys in Mount Lebanon: Jubayl and Koura.

Jubayl district has a total of 65 medieval churches and chapels, not counting the cavernous ones. 40 of them were in good shape where all the openings could be inspected. The majority do not show evidence of having a drawbar in the past (category A) but 7.7% (category B) have evident and strong drawbars, which means they were intended to be refuges in times of danger, and around 15.4% (category C) were locked by combining different elements or show pieces of hybrid systems. The bar-sockets encountered vary considerably in size and shape according to the dimension of the space that the drawbar was securing, and most of them are filled completely or partially.

The region of Koura, much like Jubayl, exhibits a concentration of medieval chapels and churches. A total of 61 medieval churches were visited in Koura, with a majority being affiliated with the Greek Orthodox Church. Nevertheless, unlike Jubayl, only a limited number of these churches have preserved elements that offer insights into their original locking mechanisms or the appearance of their ancient door shutters. These examples will be described herein.

Chapter 3

This chapter includes the study of one door of Saint John in Jubayl, Balamand church, and Tartous Cathedral. The four steps for accurate reconstructions are: dating the church, choosing

the door, establishing parallels, and conducting on-site surveys. The following table represents the results on which the reconstructions were based.

	Dating the church	Choosing the door	Establishing parallels	On-site survey
Saint John Church	First Half of the 12th century	East door	East of France	Two pivot leaves and a small half draw bar
Balamand Church	Second half of the 12th century	South door	South-west and North-east of France	Two hinges leaves with two draw bars
Tartous Cathedral	12 th and 13 th century	North door	Occitanie, France	Two pivot leaves and a draw bar

Chapter 4

Al-Marqab Castle

The construction phases of the castle are: Pre-Hospitaller phase, two consecutive Hospitaller phases, and Post-1202 construction period.

Doors: Two typologies were established for the doors of al-Marqab, one based on the frame types and the other based on closing systems. The types of frames present are the pointed arch, the straight lintel, the superimposed arches, and the segmental arch. The pointed arch is the most used in the whole fortification. The types of closing systems are pivot leaves, hinges, and the combination of pivots and hinges. The majority of the doorways has pivot leaves. The chapter also includes three reconstructions of doors. The first one, the entrance, is a big door with superimposed arches, two pivot leaves, and a draw bar. The second one is the entrance to the donjon, it has a straight lintel and one pivot leaf. The third door is a small pointed arch door with two hinges.

Windows: There are four types of windows: bars and pivot shutters, bars and hinged shutters, bars, and bars and glass, with glass being only employed in the church. The predominant type is the bars and hinges. A window in the donjon was selected for the reconstruction as it is one of three windows that present the same characteristics: A voided tympanum and a cupboard in

the side wall. It resembles a domestic medieval window where the tympanum is filled with dormant glass to let light in without having to open the shutter. The result of the reconstruction was to add “crown glass” to the tympanum because it was commonly found in excavations of the Frankish Near East. Also, a shutter with two hinges and latch was added to the reconstruction in the places of the corresponding holes and breakouts in the side walls.

Although now altered, the second reconstruction was an in-situ double window with a central column. This type of windows is highly used in medieval France and Italy and it is not the only window of this type found in the castle. Numerous carved stones from the end of the twelfth century were found scattered all over the castle forming a double window in which no glass panes were inserted. Gergely Buzás did the 3d reconstruction of the window and he believes that they belonged to the first chapter house of Margat.³

The church: It has two entrance doors, two sacristy doors and six windows. Unfortunately, the original leaves of the chapel did not survive and excavations did not produce locks, hinges, or glass. However, some details may indicate how the doors and windows were shut.

The high number of breakouts and holes on the frame of northern sacristy door, in comparison to the southern sacristy door, reveals the importance of securing the door and the room to which it provided access which increases the probability that it accommodated an important figure. As for the other doors, the western one had two pivot leaves locked with a bar and the northern one had two leaves and six hinges. Concerning the windows of the church, some notches in the intrados suggest the presence of a former saddle bar, an iron crosspiece that holds the glass panels to the masonry, as seen in many church windows in medieval France.

The Crac des Chevaliers

The established periodization of Crac des Chevaliers can be categorized into four primary Frankish periods, as well as two Mamluk periods. Additionally, there are elements introduced during the Ottoman and modern eras that have impacted the castle's layout.

Doors: The doors have the same typologies as those of al-Marqab castle. However, the study of the Crac des Chevaliers showcases a dominance of straight lintel doors, with pointed arches as the second most prevalent frame. The utilisation of hinged leaves surpasses pivot leaves, and the study identifies instances of both closing mechanisms coexisting, particularly on the second floor of the eastern part of the castle.

³ Buzás 2012: 61.

The castle still has many doors that do not exist completely today because the building that held them was destroyed intentionally or unintentionally. Some remaining parts of these doors, such as the frame, the threshold, or evidence of their closing systems in the stone, may help locate destroyed walls or structures. Some places, such as arrow slits and pointed arch doorways in galleries, did not have leaves, but instead had panels or wooden barriers. Although these are missing now, evidence of their presence can be found in holes and breakouts in the intrados of arches or side walls. This led to the attempt to reconstruct the doorways of the galleries. Filling the arch of doorways, whether big or small, is common between the 12th and 14th centuries, especially in France and Italy. Documentations of filled arches of doorways are rare in military architecture, but can be seen in many domestic buildings. These include not only wooden elements but also metal and glass insertions. The most common location of holes in the doorways of galleries is close to the floor on both ends, which suggests a kind of banister. These “banisters” are also seen in many medieval depictions and manuscripts. Moreover, the door of the lion tower was also reconstructed. The leaves were certainly reinforced with nails to withstand intruders. This is apparent by the nail imprints on the stone that cover the entire area of the leaves. By counting the imprints, there were about 1500 nails with a diameter of about 3 cm, but we cannot know the exact quantity because not all nails are visible. The last reconstruction is that of a door in the Great Hall. When Deschamps cleared the right side of the Great Hall in the 1920s, a large hinged door emerged opening into the 120m room which indicates the accurate position of the former hinges. A bar-socket can also be observed.

Windows: The research study in question documents a total of 97 windows, which have been classified into five distinct categories based on their closing system mechanism. These categories include windows with bars, those that incorporate both bars and glass, pivot shutter closures, hinged shutter closures, and a combination of hinged and pivot shutter closures. The most numerous types are those with hinged shutters.

The reconstruction includes a window in room 42 on the second floor. The current state of this window is noteworthy due to the presence of visible remnants on its jambs, which suggest the prior installation of glass panels and bars. The visible evidence on the frame appears to resemble the closing system commonly found in medieval church windows, which utilized bars and glass panels held in place by saddle bars within the stone frame. Finally, the last window is of an unknown function featuring a carved stone in the shape of half a circle at its base. It is clear that the window was fitted with a shutter of approximately 78 cm in length, which was able to rotate via two hinges and remain secured in a closed position via a latch

mechanism. This conclusion is supported by the presence of two indentations in the left jamb that indicate the former location of the hinges.

Periodisation:

1. First of all, inspecting the distribution of frame and closing types on the maps of the castle reveals that the superimposed or double arched doors are Frankish and can be found in the same wall that surrounds the northern and western sides of the inner courtyard.
2. In the inner castle, the predominant type of door is hinged and pointed-arched, including those featuring superimposed arches. This led to the conclusion that hinges and pointed arches as indicators of Frankish building techniques
3. Most of the doors in the outer castle, built by the Mamluks, had pivot leaves and straight lintels, similar to those in the Baybars and Qalawun towers. The only exception is the northern part of the western outer wall which suggests that the builders who worked on the outer wall before tower 141a, and possibly before tower 139b, were not the same as those who worked on towers 141a and onward. Additionally, the only place where the Mamluks used pointed arches for doors is in the *Hammam*.