

Multi-Functional Use of Space in Traditional Residential Architecture: Flexibility in the Ottoman Houses in North Nicosia, Cyprus

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Abstract

Usually, flexibility in traditional houses offer the people possibilities to utilize a space to carry out most of the activities they need without extra areas. In other words, people can change the design of a space, and use any fixed furniture to carry out more than one function. Such flexibility allows changes and adjustments to small spaces as and when needed. However, often, fixed furniture could be heavy and it could be difficult to move them. This makes it difficult to utilize some of the spaces for other functions or to accommodate more people.

In the Nicosian culture, like everywhere else, houses serve many aspects of life. The traditional houses offer flexibility enabling multi-functions, and cater to a variety of people's needs. Moreover, Nicosian houses are influenced by domestic and sometimes other economic activities often performed inside the main spaces of the houses.

This study examines flexibility of Nicosian houses. It looks at how they have been used in the past and their transformations. It employs a case study method. It focuses on flexibility of multi-functions and adaptations and ascertains them through a checklist.

In conclusion, it proposes ways to improve the functionality and comfort of traditional architecture employing the often-neglected Ottoman Principles.

Keywords: Flexibility, Multi-functional use, Traditional Houses, Ottoman, North Nicosia

Introduction

People always search for stability. Therefore, they establish houses with multi-functions designed in a way to meet their needs, to include all activities such as sleeping, eating, cooking, and working (Hillier, 2005). Moreover, every social group produces specific patterns for their houses and villages to meet the necessities and face the circumstance of life. Indeed, they produce traditions and traditional architecture.

Transformations of traditional architecture and houses are influenced by culture. They create dynamic environments changing according to the needs of the period (Rahmi & Tamimi,

2023). At the same time, in the past, human needs were adopted to the opportunities available in an environment. As an example, it is seen that the need of the tent arose because people travelled and transported goods (Kronenburg, 2005). On the other hand, often, materials found nearby were used to settle on specific lands (Rapoport, 1969; 1982). In these two settlement patterns, they rely on moveable furniture and local materials from the environment.

Often, flexibility for multi-functional use of space was one of the significant patterns employed to face the circumstances and meet the necessities of the needs of houses. Moreover, flexibility makes a space easy to be modified to meet the people's needs and offers opportunities to utilize the various components of a house. Moreover, flexibility endows a space with a capacity to adapt to the circumstances and necessities in unique ways allowing the shapes that arise to be associated more with the people. Indeed, these aspects are also prevalent in most traditional architecture and more so in Nicosia.

Nicosia is the capital city of Cyprus, the island that had been under the rule of the Ottoman Empire for almost 300 years between 1571-1878. Most of the houses in the walled city of Nicosia are from the Ottoman Period. They mirror the culture that had prevailed in it with natural sources to reflect the religions and Islamic culture (Pulhan, 1997). Thus, the Ottoman houses in general have the patterns of intermingling of open and closed spaces as open, semi-open, and closed areas.

This research investigates flexibility and multi-functional use of space in the Nicosian houses. Its aim is to unravel the complex patterns of flexibility present in Ottoman Houses in Nicosia. Its objectives are:

1. To prepare a checklist that can be used to assess the flexible capacity of the domestic buildings.
2. To identify the patterns of layouts and use of the interior spaces that facilitate flexibility in the house in Nicosia.

Theoretical Framework

The Strategy of Flexibility in Space

Space can be defined as the container of activities where public and private life is realized (Darmayanti & Bahauddin, 2020). In Cambridge Dictionary, the word 'flexible' is defined as 'ability to change or be changed easily according to the situation' (<https://dictionary.cambridge.org>) and in the Oxford Dictionary the same word is defined as 'The quality of bending easily without breaking' (www.oxfordlearnersdictionaries.com).

Scholars such as Rabeneck (1974), Sheppard (1974), Town (1973), Groák (1992), Maccreeanor (1998) and Schneider and Till (2007) used different meanings of flexibility as shown in the Table 1.

Table 1: Definitions of Flexibility
Source: Omar, 2022

No	Authors	Flexibility
1	1973 Andrew Rabeneck, David Sheppard, Peter Town	It is proposed against "tight-fit functionalism". (p.698) Flexible housing should be capable of offering "choice" and "personalization" (p.698)
2	1992 Steven Groák	It is "capability of different physical Arrangements". (p.15-17)
3	1998 Gerard Maccreeanor	It is "a designed idea that leads to the collapse of the traditional layout". (p.40) "Flexibility does not imply the necessity of endless change and breakdown of accepted formula". (p.40)
4	2007 Jeremy Till, Tatjana Schneider	It is "achieved by altering the physical fabric of building" (p.5)

Principles of Flexibility

Flexibility principles have affected both the interiors and exteriors of buildings and are considered one of the foundations of architecture. In fact, Schneider & Till (2007) point out

that flexibility exist in “housing that can adjust to changing needs and patterns, both social and technological”. According to Bostrom (1987), accessible housing does not look different from other housing but has features that in only minutes, can be adjusted, added, or removed. There are four main principles for flexibility of housing as follows:

Adaptation Principles

Adaptability offers alterations to develop and give a solution for improving spaces to be changed or modified for new purposes. The principal also relies on gradually developing according to the user needs such as increasing the number of people in the same space as the Fig. 1 shows.

Movable Part Principle

This principle considers using flexibility as a physical property for the geometrical shapes inside the interior spaces in order to utilize the space as a multi-functions space (Abdulpader, Sabah & Abdullah, 2014). These manifest in spaces such as houses in Japanese culture as shown in the Fig 1.



Fig 1: Geometrical Spatial Organization in Japanese Culture - interior

Source: <https://www.fiverr.com/frederickpormes/make-isometric-japanese-restaurant>

Multifunction Elements Principle

This principle allows changing the room type from the old structure approach to new functions (Živković, Keković & Kondići, 2022). It relies on using the structure within the wall, floor, and ceiling as storage for the room furniture and using as a user need. It also allows for integration, separation and division of a space. An example is the Gary Chang house where it creates a 350 square-foot to include 4 rooms as shown in the Fig. 2.

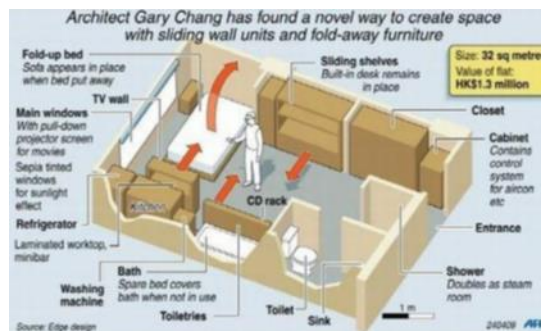


Fig 2: Gary Chang House

Source: https://www.researchgate.net/figure/Left-Naked-House-by-Shigeru-Ban-Right-Plan-of-a-Hong-Kong-apartment-by-Gary-Chang_fig2_280643004

Within the context of flexibility, Duffy (1990) has divided the structure of architecture into 6 layers where these layers aim to increase the lifespan of the buildings. He argues that it can change the use of a space according to the user needs.

The pattern of flexibility is divided into 3 main categories according to Hofland & Lans (2005) as shown in the Table 2.

Table 2: Flexibility Pattern
Source: Hofland & Lans, 2005

Pattern	Type of flexibility
Structural	Possibility for change of floor plan.
	Possibility to reshape apartments.
	Modernization flexibility.
Functional	Robustness for calamities.
	Neutral for furnishing.
	Flexibility for changing safety requirements.
	Wheel chair adaptability.
	Capacity for expansion.
	Multi functionality.
	Finance flexibility.
	Capacity to shrink.
	Parking flexibility.
Character	Character flexibility .

Structural Flexibility

It establishes a 'modular unit system' in order to control the structural system from all the directions by creating spaces without any walls and then dividing as the needs arise. Table 3 shows the structure of the classifications contained in extendibility expansion from Freidman, (1998) and Gulaydin (2004).

Table 3: Structural Flexibility Pattern
Source: Gulaydn, 2004 and Freidman, 2002

Gulaydin								
Direction Expansion			Scale Expansion			Form Expansion		
Horizontal and vertical	Vertical	Horizontal	Settlement	Building	Component	Clustered	Linear	Radial
Freidman								
Add-on				Add-in				
Expansion design beyond the accommodations (add-on)				Growth into a space within the perimeter of the original volume'				

According to the table above, the patterns of structure as Gulaydin, (2004) articulates relies on form, scale, and direction. However, Freidman (1998) articulates it relying on broadening from outside by addition.

Functional Flexibility

Functional flexibility aims to utilize the spaces as much as possible as one can, by using all the directions of the area to form the space by using structure or furniture, versatility, and convertibility. It forms the units by reconfiguration or separation, and creates a plumbing system and electricity, in order to meet the people' needs as seen in the Dom Eno House as depicted in the Fig 3.



Fig 3: The Dom Eno House, 1919
Source: Estaji, 2017

Le Corbusier relies on the developed plan to create space using existing columns where it establishes an empty area and can add every function that needs by using mobility and transformation elements (Risselada, 1991).

Character Flexibility

In character flexibility, the interior space is redesigned. It also ensures the exterior and interior privacy (Schneider & Till, 2007). One of best examples of this is the Robie House where the number of rooms are increased with movable walls as shown in the Figs 4a & 4b.



Fig 4a: Robie House Interior
Source: <https://www.archdaily.com/60246/ad-classics-frederick-c-robie-house-frank-lloyd-wright>

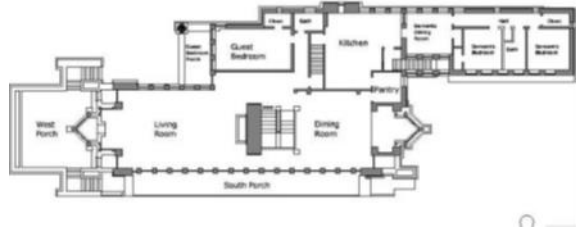


Fig 4b: Robie House Plan

According to Elliott (2002), the Robie House is considered the best example of the open plan that makes the spaces free-flowing.

Type of Flexibility

One of the strategies of flexibility is a physical property to allow changing the interior space to meet the user's needs (Abdulpade, Sabah & Abdullah, 2014). Moreover, according to Schaeffer & Vogt (2009), strategies of flexibility as a physical property uses 5 elements: walls, floors, ceilings, stairs, and mobile cells. It is divided into 4 main types:

1. Sliding Walls Type

It is created by using a movable wall to control the spaces as needed. It is also limited to slips elements concepts (Hall & Hall, 1969) and is used in furniture such as Skinner (1971) defines as seen in the Fig. 5.



Fig 5: Sliding Walls
Source: <https://360photography.in/?p=15918>

2. Transforming Elements

Transforming elements can modify a room activity by increasing the hidden inside movable walls or fixed wall furniture in the same room as seen in the Graham Hill apartment as shown in the Fig 6.



Fig 6: Transforming Elements

Source: <http://www.apartmenttherapy.com/lifeedited-graham-hills-tinyapartment-treehugger-171768>

3. Pop-Up Interactive Unit

The name comes from the design processes of remaining forms' to create many shapes in the same spaces at the same time. It also relies on imagination and centralization. Moreover, it is characterized by being easy to transport in a short time and that makes it the best temporary strategy as seen in the Fig. 7 (Skinner, 1971).



Fig 7: Pop-Up Interactive Unit

Source: <https://360photography.in/?p=15918>

4. Multi-Folding flexibility

This involves multi-functions looking to create a unit with a lot of furniture and storage inside a wall, floor, or ceiling. This furniture is characteristic of machines that can easily be folded or used (Skinner, 1971). Moreover, Gary Chang's House is one of the best examples, where it uses folding furniture inside the wall and many separated parts (Amin & Cohendet, 2004). (Fig. 8).

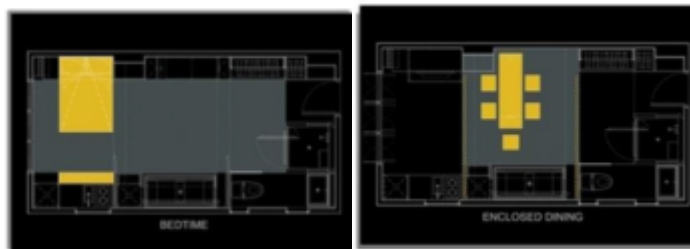


Fig 8: Gary Chang's House Plans

Source: <http://www.archdaily.com/59905/gary-chang-life-in-32-sqm/>

When discussing the elements of flexibility within the internal structure, it is seen that floor and ceiling limit the area of the building as boundaries of the space and uses the wall to divide the space into many. The elements serve flexible strategies by storing the flexible furniture (movable, modular and foldable) as well. According to Gjakun (2015), it includes:

- Flexible Walls: using moveable walls or partition walls to divide the space
- Flexible Floors: establishing the floor to use it as a secondary level
- Open space: kind of spaces used as multi-functional spaces to meet the building needs

Space is thus a complex entity, although often viewed as being empty. The emptiness enables occupation and habitation. However, it's enclosure can even define more significant aspects of being and becoming. As the feelings experienced in an architectural space and especially in domestic spaces are different for each person, relationships between spaces or the spatial organizations can establish the self of an individual and also establish sense of identity (Pallasmaa, 2018).

Review of Literature

According to Oliver (1975) and Kronenburg (2005), human beings are flexible creatures. Kronenburg (2005) says that the first type of accommodation equipment established by the ancient people were multifunctional and easy to move. They were things like tents used for fast and easy transportation. Moreover, according to Schaeffer & Vogt (2012), a feature of multi-functional equipment was that they could be extended or shrunk depending on the functional needs. As in the case of the tent, this gives the ability to modify the tent area as needed.

Functionality of space and flexibility exists in abundance in many domestic spaces. For example, Dinçyürek, Numan & Pulhan (2003) have examine the urban traditional houses and show that they rely on the area, and has had more influence of the environmental factors. They argue that it leads to a continuous change in the forms of the houses if affected by the foreign powers. Similarly, Gilani (2012) has looked at the urban traditional houses in Nicosia. He says that they are characterized by their multi-functional spaces where it could change the area according to the user needs. This could be such as using the room for sleeping at night and for other activities during the rest of the day. It also has the capacity to change the design of the furniture.

According to Oliver (1975), 'traditional' is one of the many terms used to define such environments. Rapoport (1969;1982) argues that traditions are related to life aspects such as values or norms. Therefore, socio-cultural aspects are considered the main forces that establish houses. According to Hertzbecker (1991), the Ottoman house style depends on the modules of permanent with the same dimensions to be utilized as multi-functions spaces. Moreover, modularity is considered as a reflection of the development of the family's growth from the possibility of functional changes such as expansion and division. Modular flexibility is also a characteristic by the capacity to distribute the house tasks between the upper floor and the ground floor.

In Cyprus, the traditional houses are looked at better together with multiculturalism where many different people from many different backgrounds lived in the same place through ages and all of them utilized houses as multi-functional spaces. Christodoulos (2008) says Nicosia was under Lusignan Rule and at that time, it acquired a medieval design structure. Then the city has changed under the Venetians until 1570 when the Ottoman-controlled it and spread their culture. In that period, until the end of it, the social structure and the environment of the building has changed in the city. For that, the Ottomans houses are the most design prevalent in the city (Pulhan, 1997).

Indeed Gilani (2012) has looked at the urban traditional houses in Nicosia. He says that they are characterized by their multi-functional spaces where it could change the area according to the user needs. This could be such as using the room for sleep at night and for other activities during the rest of the day. The room layout can also be changed by the use of the furniture.

Moreover, the spaces rely on the room design established by a beam or arches in the middle of the rooms in order to divide them into two or more sub-spaces. In addition, the design of open spaces and closed areas have been established between it. They are called semi-open and in Turkey called 'sünderme' and inner hall where these zones were established to utilize in a flexible way. They helped transitions between the zones. The traditions of the Turkish people also have utilized sünderme as multi-functional spaces where they are used for hosting guests, sleeping, and resting (Erturk, Erturk & Gunce, 2007).

As Oktay, Dinçyürek & Turker (2007) point out, the courtyard was in the same pattern of flexibility used by children as a playground. It was also used to do other house jobs such as cleaning and processing the olives, tomatoes, grapes, and carobs.

The main room in the house called a Sofa room have been used as a living room, and is considered a closed space. At the same time, it has been used for eating, cooking, and sleeping, Oktay (2006) also argue that every sub-space in the Ottoman traditional houses has different functions in the same space and the users can convert and exchange between them. It was flexible because the spaces were used as bedrooms for all the family members or for two functions such as a bedroom and a living room or a kitchen and a storage. On the other hand, the space has a heating facility to cook and raise the temperature of spaces.

Moreover, Ateshin (1997) show that the living spaces in the traditional houses of Cyprus was huge. They were rectangular in shape in order to accommodate most of the activities. Furniture in the houses were moveable in order to be easily rearranged as needed. Ther have also been a room established without middle construction from inside (Turker, 2002).

As a summary, research shows that spaces in the traditional dwellings of Nicosia have been multi-functionals area used for daily activities such as *sündürme* sofa, and *eyvan*. They have also used flexible construction with partition walls that made of wood, used to divide the rooms into many parts (Kılıç, 2021).

The Nicosia Ottoman Houses

According to Numan & Pulhan (2001), Ottomans culture cares for family rules where a greater consideration exists on gender roles and privacy. They also care about social intercourse in the daily life. Therefore, the houses contain two main parts. The first one is a courtyard and the second is a building. The courtyards are located on the back of the building away from the road or inside it, and the building often contains two floors (Ateshin ,1997). Urban houses are of two types. According to Pullhan (2002), first one is a house with an outer hall called *Sündürme* and the second is a house with an inner hall known as the *Sofa*.

The Table 4 shows the most common room types in the Outman houses in Nicosia where all the houses have these rooms as follows.

Table 4: Common Room Types in the Outman Houses
Source: Kuban, 1995

Room Type	Function
Sofa	Used as a living room, and at the same time, it was used for eating, cooking, and sleeping
Sündürme	Used for hosting guests, sleeping, and resting
Eyvan	The main entrance where it a high door inside a 3 high wall
Wood a partitions wall	Divide the room into many parts
The courtyard	Used by children as a playground and to do the house jobs such as cleaning and processing the olives, tomatoes, grapes, and carobs
Taşlık	Utilized to connect service spaces with courtyard such as a fountain and a pond.
Köşk	Big room with high number of of windows
The Başoda	the larger room in the ottoman house creates to serve the guest and is designed to be very large with a lot of windows to get benefit from the sunlight and to get a scenery view. Moreover, they put a lux design on this room such as lamp niches, ornamentation, and timber ceiling mirrored the significance of this room.

In the urban houses in Nicosia, the rooms are considered as closed areas utilized for the multi-functional needs such as cooking, sleeping, and as a living room for all the family activities that life demands (Pulhan, 1997). Indeed, Pulhan, (1997), Dinçyürek, (1998), Numan & Pulhan, (2001), Dinçyürek & Turker, (2007), Erturk, Erturk, & Gunce, (2007) see the courtyard as a semi-open space because it connects the outdoor and indoor spaces.

Ottoman houses thus have private spaces in the rooms and the inner and outer halls. The hall at the same time is classified as semi-open when the hall connects the courtyard with the rooms.

Research Methodology

In the Walled City of Nicosia in North Cyprus, there are traditional houses constructed during the Ottoman Period. These houses have met the needs of the users for many years. This research investigates the architectural design of traditional houses in terms of flexibility strategies discussed in the theoretical framework. It reads the spatial organization of the traditional Ottoman houses within the framework of flexibility.

It employs case studies as a research methodology, and looks at three houses. They are chosen to have the most typical plan layout of their time. At the same time, they all have had restorations and are in very good condition. Another reason is that Derviş Paşa Mansion is used as a museum, Saçaklı Ev is used as an art & cultural center and Boncalian Mansion was used as a restaurant recently. Thus, they offer opportunities for making direct observations.

Data was collected through site visits when photographs were taken. Architectural drawings were taken to the site visits when analyzing the rooms of each floor. Hence multi-functional spaces, semi-open and open spaces and furniture layouts were recorded to be used for assessment of the houses within the context of flexibility.

A historical-interpretative method is used for the study within the case studies. During the first stage, direct observations are done, while use of the spaces are found from literature and archival material (text and photos). During the second stage, drawings and readings are compared to deepen the understanding of the use of spaces that meet the daily activities and room types.

Flexibility of these houses are assessed using the aspects discussed in the theoretical frame work. Patterns of flexibility, types of flexibility, flexible furniture design, elements of flexibility within the internal structure, flexible materials and flexible mechanisms are employed as the parameters.

Table 6: Proposed Flexibility Checklist Table

Source: Omar, 2021

Flexibility Patterns	1	
	Spatial (structural) Flexibility	
	Functional Flexibility	
	Character Flexibility	
Flexibility Type	2	
	Sliding walls	
	Elements of Transforming	
	Pop-Up	
	Flexibility multi-folding	
Flexible Furniture	3	
	Movable	
	Modular	
	Foldable	
	Multiple functions	
Flexible Materials	4	
	Solid	
	High flexibility	
	Manufactured	
Flexibility Elements into the structure	5	
	Wall	
	Floor	
	Ceiling	
	Open space	
	Closed space	
	Semi-open	
Flexible Mechanisms	6	
	Plumbing Extensions Tools Mechanism	

Table 6 shows the strategies of flexibility as articulated by the scholars such as Gulaydin (2004), Freidman (1998) and Schneider and Till (2007). They explain the elements of flexibility within the internal structure. Habraken (1972) also explains flexible furniture design, while Hofland & Lans (2005) and Van Eldonk & Fassbinder (1990) explain the patterns of flexibility. The table includes all the flexible strategy elements that are divided into 6 aspects.

Introduction to the Case Studies

In this research, three Ottoman houses in Nicosia in the walled city are examined. The first house is Bohcalian Mansion House built at end of the 19th century, located Şehit Salahi Şevket Street (Victoria Street) with building number 53. The second one is The Eaved House built in 1850s. The building is located in the Kütüphane Street with building number 8. The 3rd house is Derviş Paşa Mansion that was built in 1801. The building is located in Beliğ Paşa Street.

Case Study 01: Bohcalian Mansion House

The Bohcalian Mansion house (Fig.10b) plan (Fig.10a) shows that the house has two floors with an inner sofa room on the ground floor. The U shape staircase connects the upper sofa and ground-floor sofa. The sofa room (Fig. 10a) reflects flexibility and it is used as a multi-functional transition space from public to the private side.

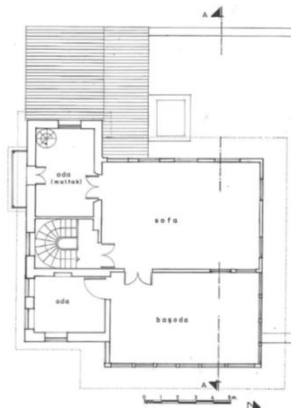


Fig 10a: Bohcalian Mansion House
Second Floor Plan
Source: Turkan, 1998



Fig 10b: Bohcalian Mansion House
Source: Author, 2023

The Sofa was used in the living area room and for transition. The 'Başoda' (main guest room) was used as a guest room and generally the bathroom and kitchen are located at the courtyard.

Case Study 02: The Eaved House

The Eaved House L-shaped plan (Fig.11 a) shows that the house contains two floors that bounds an inner court. The 'başoda' (main guest room) to the right of the entrance. The room to the left of the entrance is for daily activities. A linear staircase leads to the second floor and kitchen, while the bathroom, and storage are located on the ground level in close relation with courtyard.

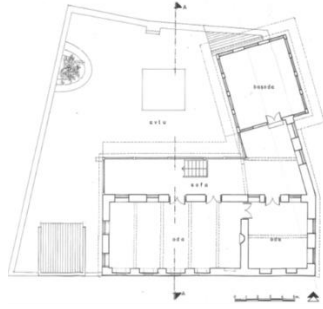


Fig 11a: The Eaved House
Ground Floor Plan
Source: Turkan, 1998



Fig 11b: The Eaved House
Source: Author, 2023

Case Study 03: Derviş Paşa Mansion

Derviş Paşa Mansion (Fig.12a) plan (Fig. 12b) shows that the house contain two floors, with 5 rooms and a main living room (Sofa). The Başoda serves the guests, and there are 3 bedrooms. It has two Eyvans: one to be as the main entrance and the other one as the balcony. The staircase is in the courtyard. Moreover, there are five service areas located in the courtyard such as the kitchen, the bathroom, the storage, the bathroom, and the laundry.



Fig 12a: Derviş Paşa Mansion
Second Floor Plan
Source: Turkan, 1998



Fig 12b: Derviş Paşa Mansion
Source: Author, 2023

In all the three Ottoman houses, it is seen that they are designed to meet all the needs of the family members and the guests. Sofa at the center of the rooms is a transition space and it serves as a living room. The main bedroom is generally double the size of the other bedrooms. The courtyard is more like an open-air room where the daily facilities are carried out such as cooking, eating, drying clothes and sitting etc.

Findings

Proposed Flexibility Checklist is used to evaluate the capacity of flexibility of the three Ottoman Houses in the Walled City of Nicosia.

Table 7: Flexibility Capacity of the three Ottoman Houses

Source: Omar, 2023

Proposed Flexible Strategy		
Patterns of Flexibility	Traditional Ottoman Houses (Cases 01, 02 and 03)	
Spatial Flexibility	Living room \ courtyard	√
Functional Flexibility	All rooms \ courtyard	√

Character Flexibility	Additions of rooms	√	
Flexibility Type	2		
Sliding Walls	Cabinets as walls	√	
Elements of Transforming	Furniture	√	
Pop-Up	Courtyard: kitchen, service, play and sleep area	√	
Multi-folding flexibility			X
Flexible Furniture	3		
Movable	Sitting elements, pillows, duvets	√	
Modular	Kitchen		X
Foldable	Mattresses	√	
Multiple functions	Bed and sitting	√	
Flexible Materials	4		
Solid	Wood \ pebble stones \ adobe brick	√	
High flexibility	Wooden construction system filled with adobe	√	
Flexibility Elements into the structure	5		
Wall	Cabinets within walls for storage	√	
Floor			X
Ceiling			X
Open space	Courtyard	√	
Closed space	Rooms	√	
Semi-open	Verandah (porch)	√	
Semi-Closed	Entrance	√	
Flexible Mechanism	6		
Plumbing Extensions Tools Mechanism	Kitchen and wc		X

When the flexibility checklist is used to evaluate the capacity of flexibility of the traditional Ottoman houses, it is seen that the success of the houses meeting the users' needs for a very long time means that they have a very strong capacity of flexibility.

The rooms are designed as multi-functional rooms, allowing the functions to change easily and increase the number of users. The table reveals that the Nicosia Ottomans houses used a flexible pattern strategy, such as functional, spatial, and character in order to modify the furniture. They have used a flexible sliding wall strategy such as the partition wall, and cabinets as dividing walls which allows the re-design of the spaces as needed.

The Sofa at the center of the rooms has created a transitional area richer than the regular corridor. The use of Sofa for daily activities helps this layout to have longevity in the Nicosia Ottomans houses.

Finding of a flexible strategy shows that these strategies have the ability to increase the functions of spaces, such as using the courtyard for cooking, as well as a playing area for children, or sleeping and sitting. It is understood that the flexible strategy has helped the space to absorb all the required functions in one room.

Conclusions

A century from today, Ottoman Houses in Nicosia were large mansions for the Ottoman officers or trades people. The residents were large families where kids, grown-ups and elderly all lived together. It is worth analyzing the structure of the Ottoman Houses to understand how they continue functioning so long within the context of flexibility. In order to do the analysis in this research, a checklist was prepared by identifying the basic elements of flexibility strategy.

It is concluded that in general, a flexible strategy has led to establish multi-functional spaces, which helps the interior spaces to provide for all the aspects that met the users' needs to have a livable optimum space. In this study, a table as a checklist was formed to analyze the

existing Ottoman houses in Nicosia in order to understand the layers of flexibility that can be a guide for future designs.

The analysis of the plans when matched with the Flexibility Checklist Table indicates that the three Ottoman houses fulfill the flexibility strategy. They allow the space to be fully used for different functions and without making façade changes to the street. Additions and changes are made internally. The flexible strategy helps the space to absorb all the required functions in one room.

Moreover, it is seen that houses with higher capacity of flexibility helps to improve the building's capacity of sustainability and feasibility when the façade as an urban element is not changed while the interior changes are provided by flexibility strategy.

This article provided researchers with an understanding of the flexibility capacity of Ottoman houses at Nicosia. It also highlighted the importance of flexibility strategy to create a multi-functional space for future house designs.

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