

# Patterns from the Jewish Neighborhoods of Baghdad



*what we left behind.*

Ido Ninburg

When the Jews of Baghdad left in the 1950s, they left behind a vast built space that was suddenly abandoned. In this study, I tried to go through the accessible content and locate the patterns of life encoded in their living environment. I conducted interviews, reviewed all the accessible literature in Hebrew, Arabic, English and German, and sent people to take pictures of the environment under study.

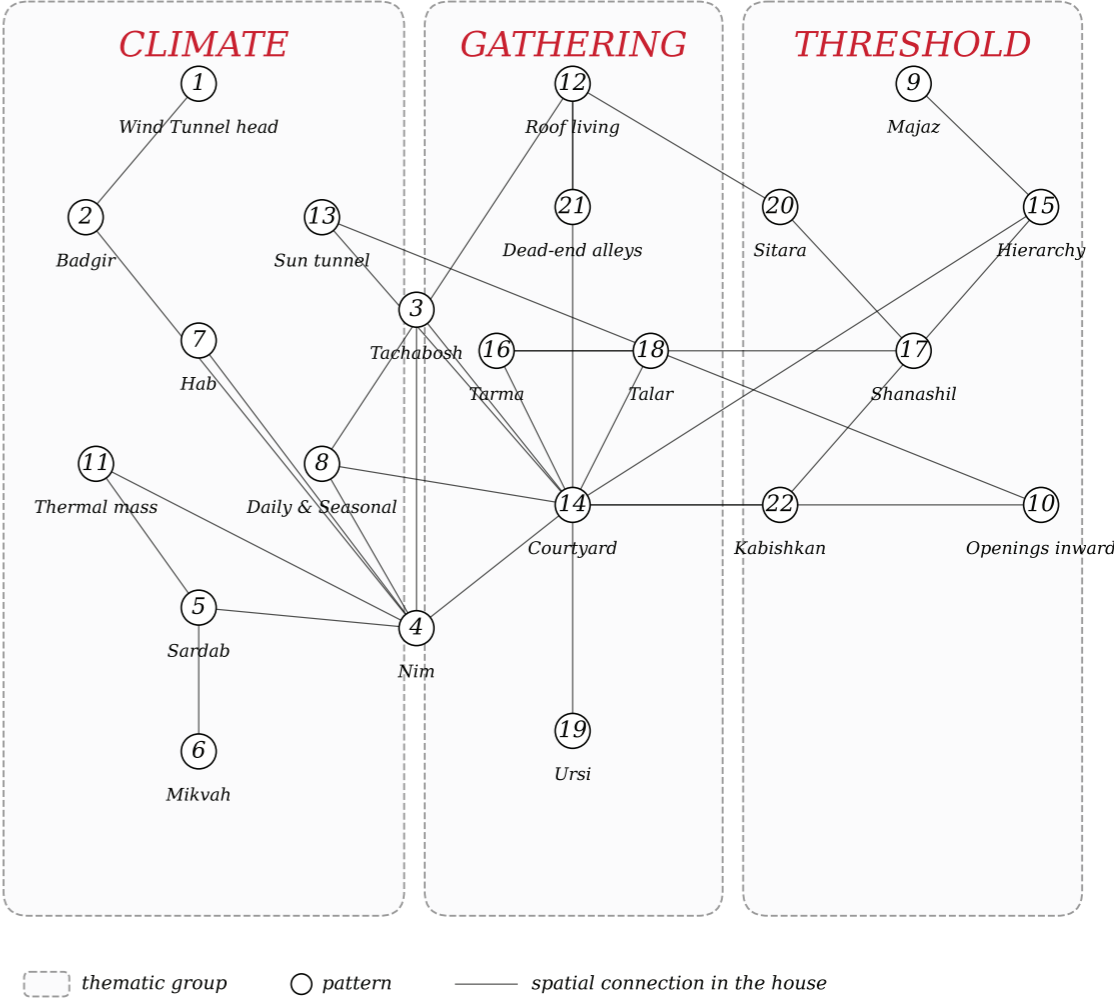
I discovered that the community's built environment was an active factor in shaping a unique local identity, in which spatial patterns that existed from various constraints such as density together manage a space in which the individual and the community are intertwined.

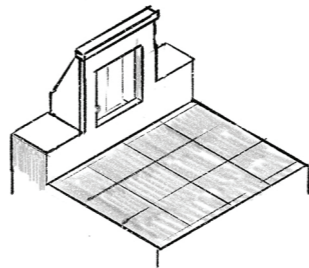
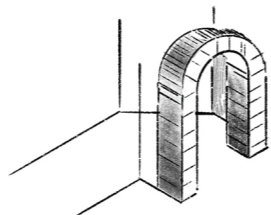
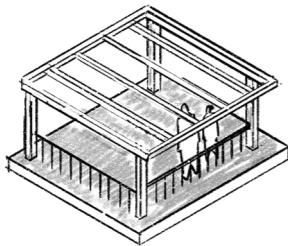
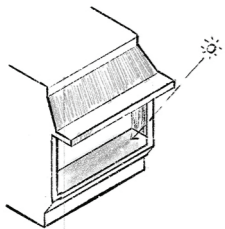
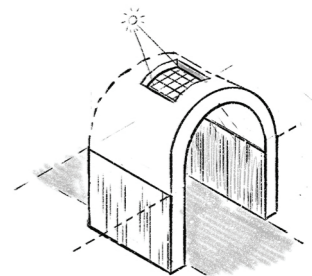
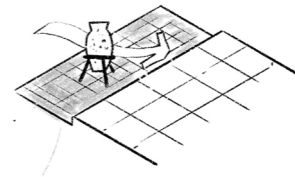
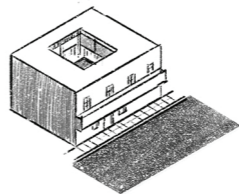
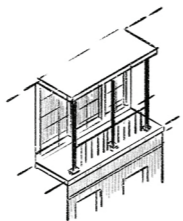
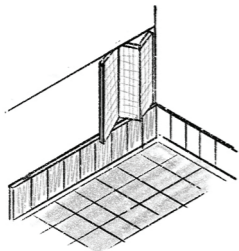
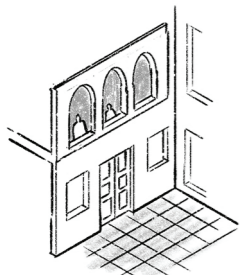
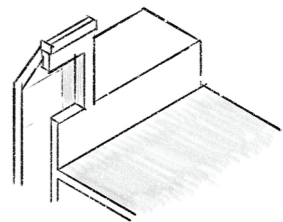
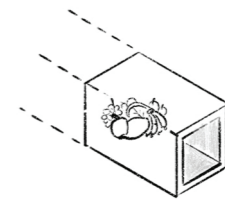
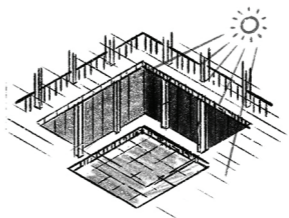
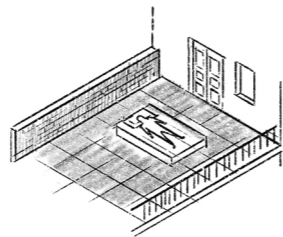
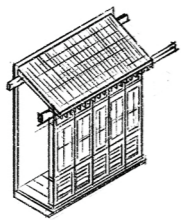
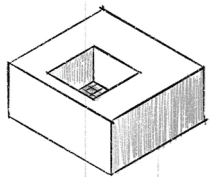
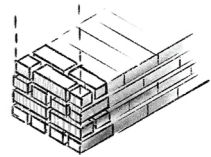
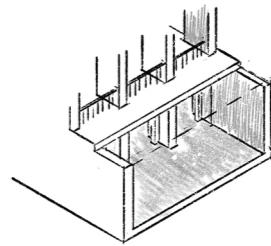
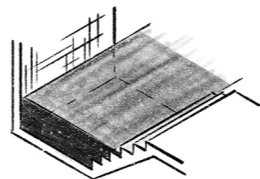
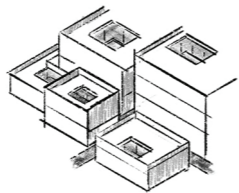
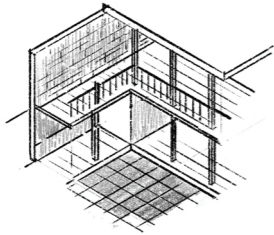
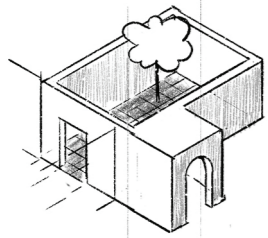
An environment that regulates relationships, determines spaces for gathering, and offers climatic solutions to the harsh Baghdad heat.

# Why pattern language?

The methodology that underpins the design research is based on Christopher Alexander's idea of "A Pattern Language" and was developed into a pedagogical tool in the context of TUDelft by Dean. Van Dorst and Rooij. Analysis of patterns and connections in space becomes templates, rules of thumb that allow for generalization of the built environment. By combining several patterns, patterns that arise from a particular context can be revealed.

## Pattern Field Jewish Neighborhoods of Baghdad — what we left behind





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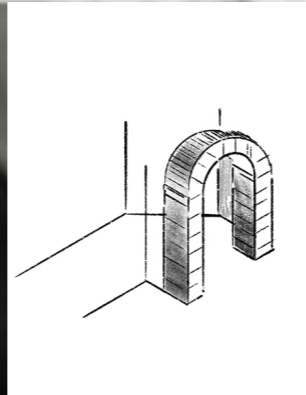
# *I Threshold*

Architecture sets the privacy in Baghdadi's building through a series of spatial mediations and divisions. Not only does one find the front door but also a system where the first floor facade is almost closed off to the street (Reuther, 1910, pp. 6, 113), one could observe his movements from the balcony through the dense Shanshil. But following the front door called "Majaz", the curved entrance L-shaped blocks the courtyard view (Raeuther, 1910, pp. 26-27). In conjunction with other elements, architecture becomes the basis for using Indirection as the key principle. This architecture highlights the inner facade rather than the outer facade (Reuther, 1910, pp. 23, 37). The building becomes less understandable

as a linear sequence and more like a gradient of elements.

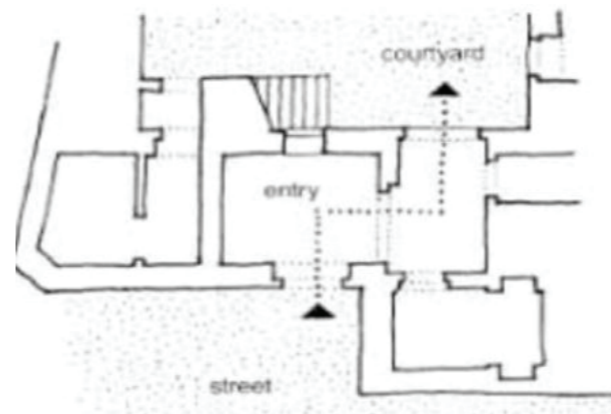
The above point becomes even more true when considered in light of the Jewish Quarter. The built texture of the older Jewish sections was tight, with paths that were narrow, winding, shady, and minimized sunlight while maximizing the closeness of the buildings (Golany, 1994, pgs. 60-61). The Shanshil enabled the residents of a building to view the streetscape without their actions on the inside becoming evident from outside the building (Golany, 1994, pgs. 103-105; Reuther, 1910, pg. 113). The ground-floor wall itself was constructed as a blank, windowless brick wall, an architectural form which Golany

specifically describes as a solution to the spatial need for privacy (Golany, 1994, pgs. 105-106). While the spatiality of the Jewish Quarter did not only magnify a previous issue, it created a situation where the mediations needed to be adjusted.

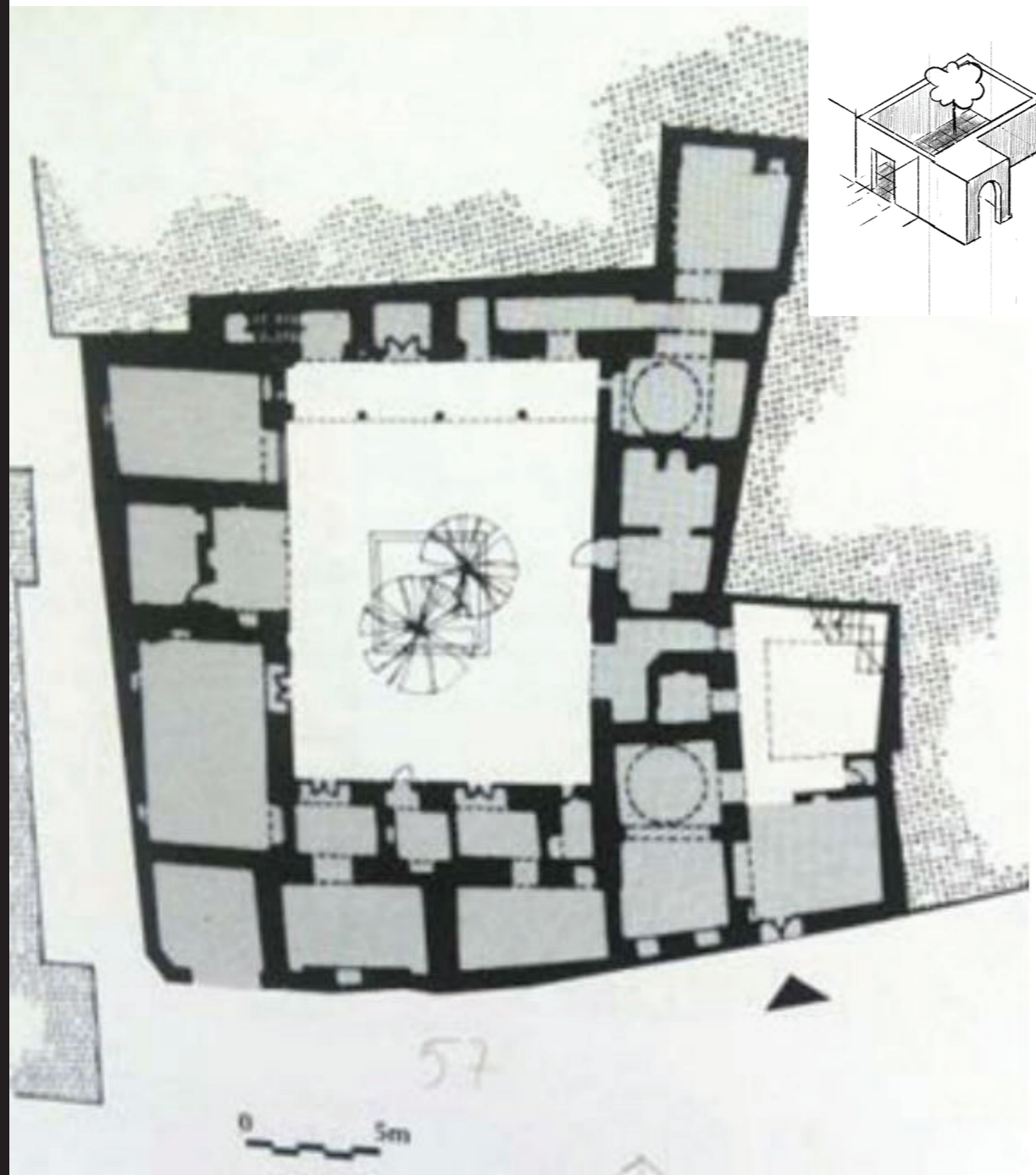


## 1. *Majaz Broken entrance*

The entry way into the Baghdadi building does not open into the courtyard. Rather, there is a bent pathway that acts as an intermediary between the street and the house interior (Warren, 1982; Langenegger, 1911). This design ensures privacy for the occupants by making the viewing of the courtyard from outside impossible (Golany, 1994). The pathway serves as a transition from the public to the private environment and accentuates the introverted nature of the home, since it revolves around a secret courtyard. The typical dimensions of the pathway are 2 to 4 meters in length and 1 to 2 meters in width (Diva Hanna Al-Khatun, 2018).



*A threshold between the street and the courtyard, blocking direct sightlines.*

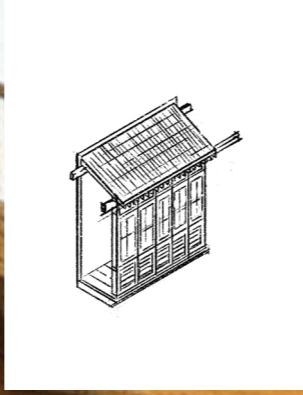
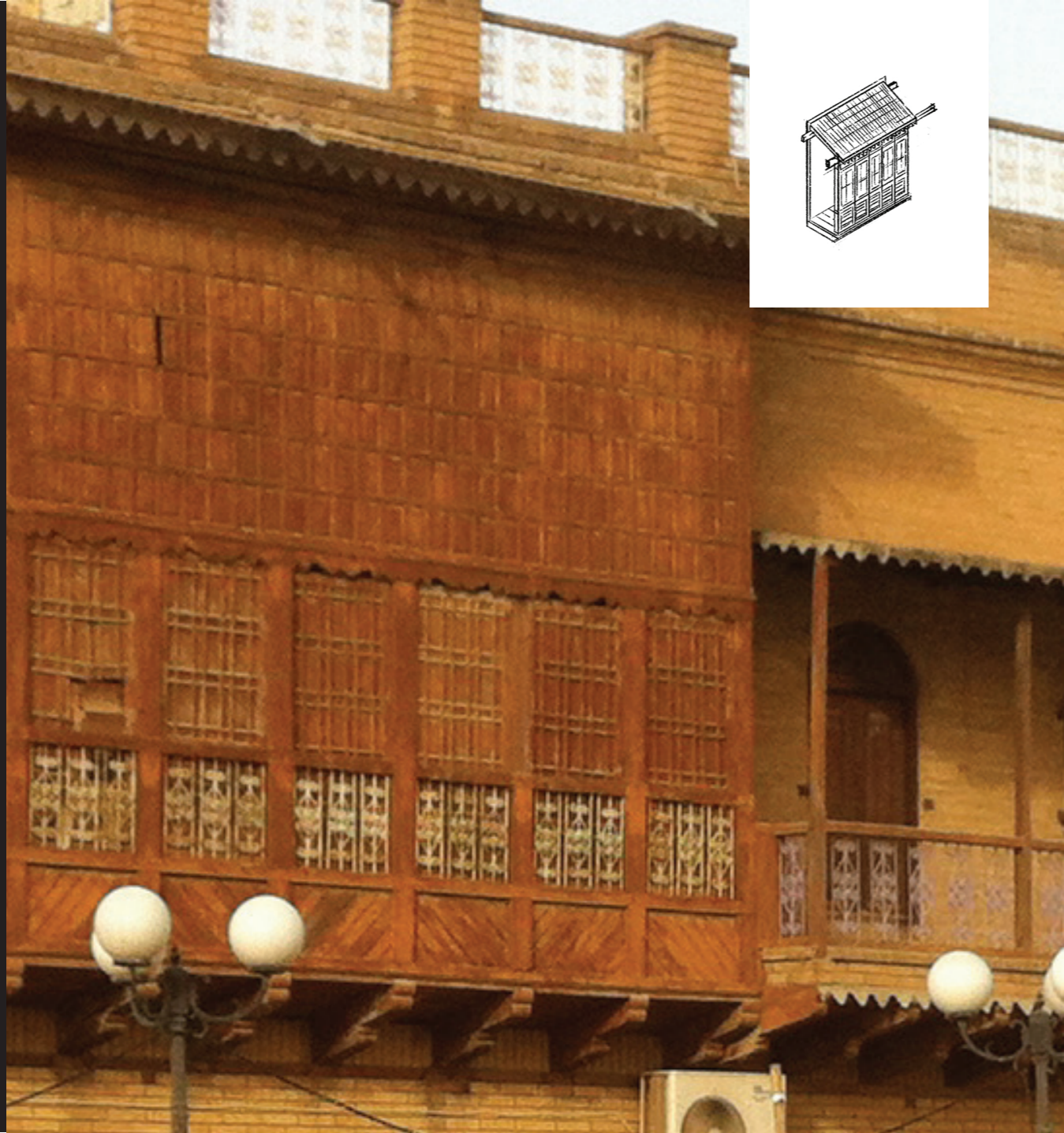


## 2. Hierarchical spaces system

Movement becomes an ordered process involving movement through different spaces in the house according to increasing degrees of privacy. Movement from the external environment begins in an L-shaped corridor or path, which does not provide a view of the interior space (Golany, 1994).

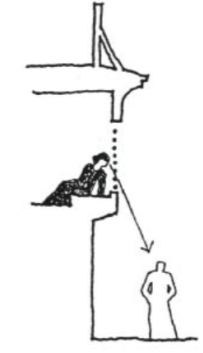
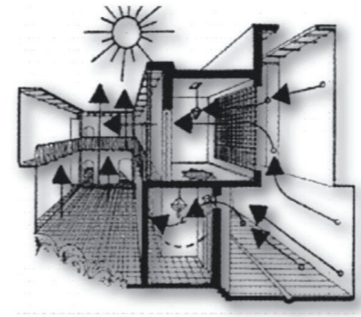
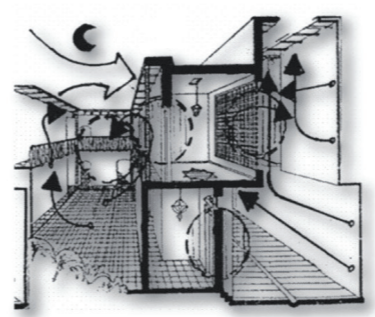
creating a barrier between the courtyard and the room spaces.

The flow then opens up to the courtyard space, the main flow space for the rooms around it. Design features such as the use of L-shaped passages, the use of smaller doors, and small steps to enter the rooms emphasize this ordering process and inhibit entry to the more private areas (Al-Azzawi 1978). Utility rooms and corridors surround the courtyard,



### 3. Shanashil Screened Wooden Balcony

The wooden balconies typical of Baghdad are made from a combination of local and imported woods (Almusaed & Almssad, 2021). Their goal is to open up as many ventilation options as possible while maintaining privacy with the help of various wooden screens (Golany, 1994). Reuther explained that in the densely populated Jewish neighborhood, their widespread use can be seen when the balconies of neighboring houses almost touch each other. In Jewish houses he finds a balcony not far from the entrance allowing to see who is at the door from a safe place.



Shanashil position in the Baghdadi house (Almusaed & Almssad, 2021).

a one sided view to the entrance (Ragette, 2011).

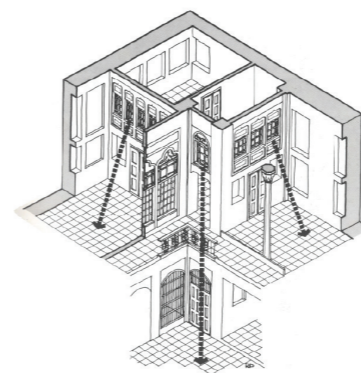


## 4. *Kabishkan* Observation Mezzanine Room

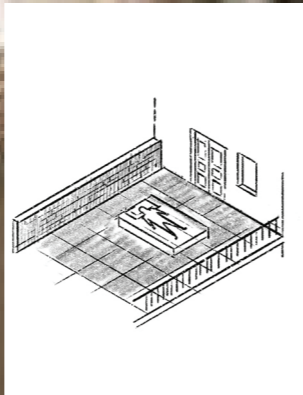
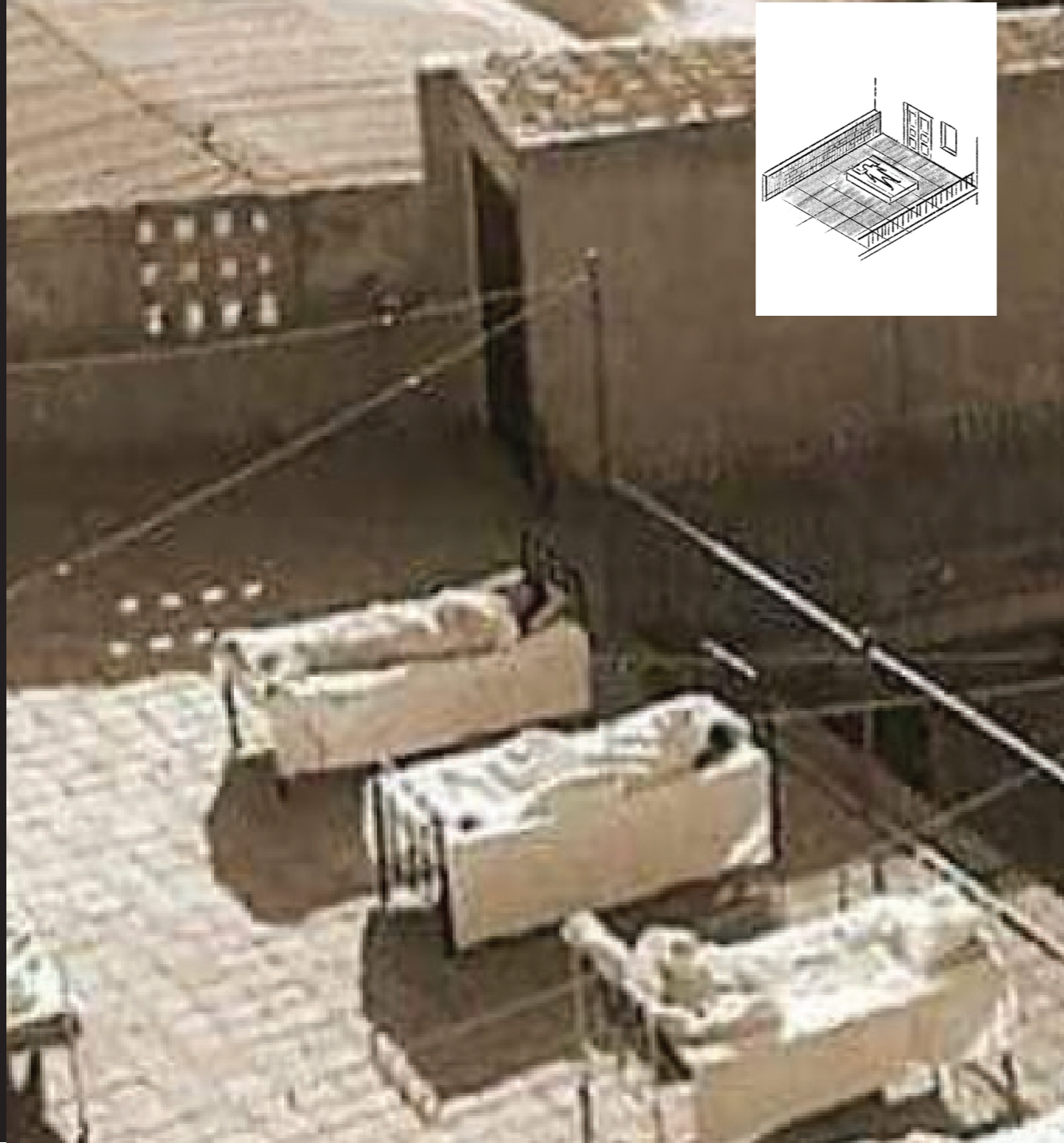
A principle formulated by Fathi and Warren (1983) as a recurring design rule in traditional domestic architecture, particularly in Baghdad, is the concept of the *kabishkan*. Based on the spatial organization of entrances to rooms through arcaded elements, this system often generated a relatively dense network of corridors. Some of these corridors were subsequently adapted into mezzanine levels, typically positioned within corner spaces.

These intermediary rooms frequently overlooked adjacent interior volumes and, within a Muslim socio-cultural context, were often designated for use by women. Architecturally, such spaces can

be identified by their comparatively small openings facing the street, which both ensured privacy and signaled their specific functional and social role within the domestic layout.



*Looking towards other common spaces.*  
(Fathi and Warren, 1983)



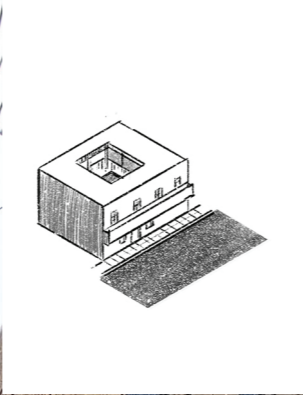
## 5. *Sitara Roof Parapet Screen*

A brick parapet that surrounds the roof of traditional Baghdad houses provides privacy while allowing the roof to function as a living and sleeping space on summer nights.

Typically 1.5meter high, it blocks views from neighboring roofs and the street while maintaining openness to the air and sky. In many cases, the sitara incorporated perforated brick patterns that allowed the Shimal, the prevailing north wind, to pass through and ventilate the roof. In Baghdad's densely populated Jewish Quarter, sitaras were often built at greater heights to ensure improved privacy between adjacent houses (Golany, 1994).

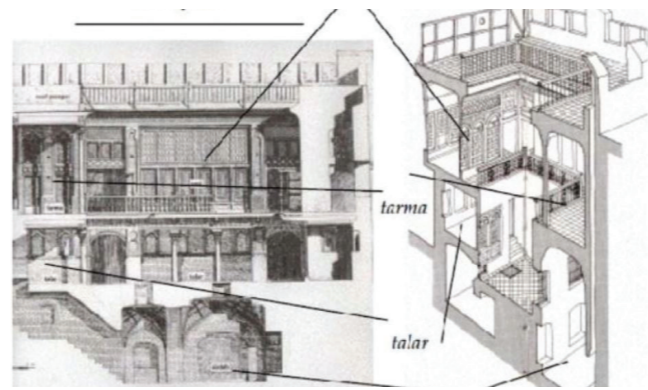


A section of Iraqi house.



## 6. Inward-Facing House

The façade of the house towards the street is often relatively opaque both overall and especially at the ground floor level, whereas large openings are oriented towards the interior courtyard (Langenegger, 1911). This maintains the privacy of its inhabitants and helps create a sheltered interior space that remains cool and free of dust.



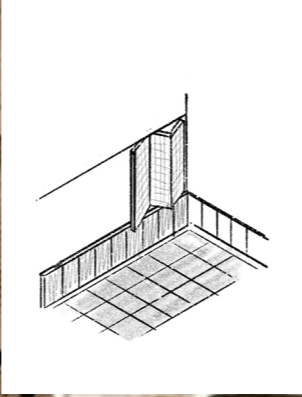
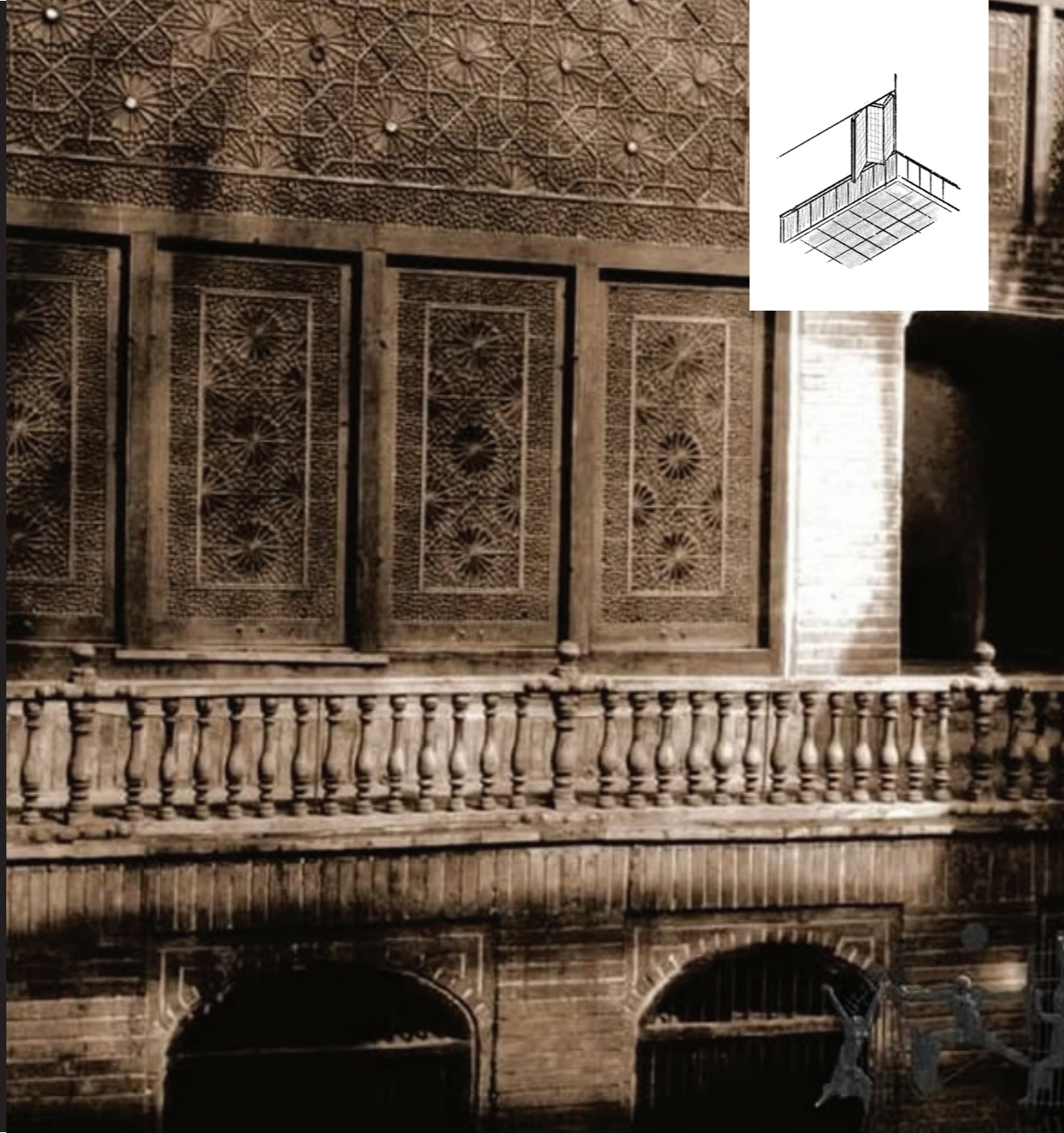
Iraqi traditional house components, Al-Haidary, 2008

## *II Gathering*

In the Baghdadi-Jewish context, gathering spaces can be defined by their closure or openness in relations to other spaces. Mechanisms of limitation for the purpose of shared presence such as a brick railing, or a dead-end alley.

Spatially, the courtyard is the heart of the gathering. Reuther says that the main architectural development actually occurs in the interior facades of the building, such as the *tarma* (Reuther, 1910, pp.32, 37). These facades, some of which are set back: *Tarma*, *Talar*, *Ursi*, *Kabishkan* and others, define gatherings at different levels of privacy and different openness to the outside. Some link

many of these patterns to security, Golany links the morphology of closed alleys to looting habits (Golany, 1994, pp.60-61) while Golshtein Sabah links it to the need for communal space, (2021, pp. 26-27).

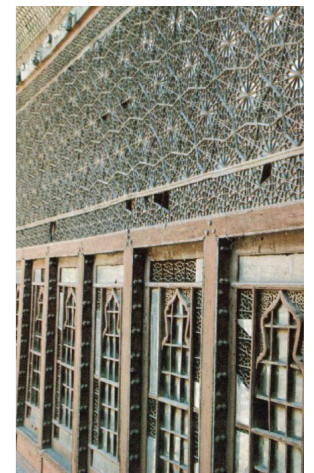


## 7. *Ursi Open salon*

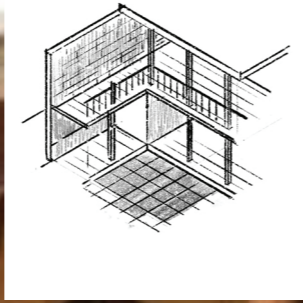
A living room used in winter and defined by a large façade of sliding windows, from which it takes its name, facing the Tarma (Reuther, 1910, p.6). Intricate woodwork, mirrored glass, and patterned stained glass created the most decorative and impressive façade of the house (Warren & Fathi, 1983, pp. 70-71). When fully opened, it becomes (almost) a balcony, connecting a closed room to the courtyard and allowing for a transition between closure and openness.



*Iraqi traditional house components (Al-khafaf, 1992).*



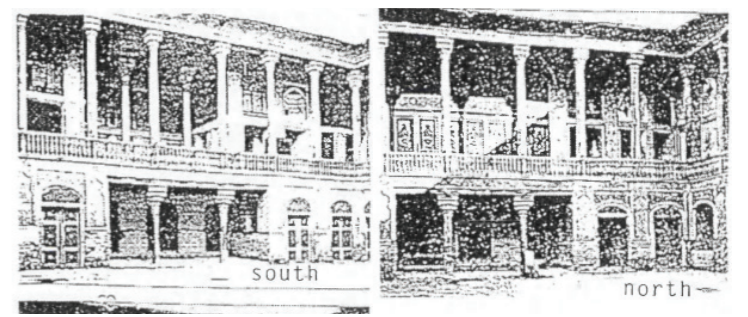
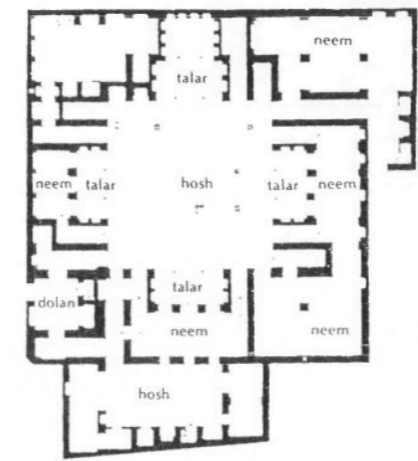
*An elaborate ursi before repair (Warren & Fathi, 1983)*



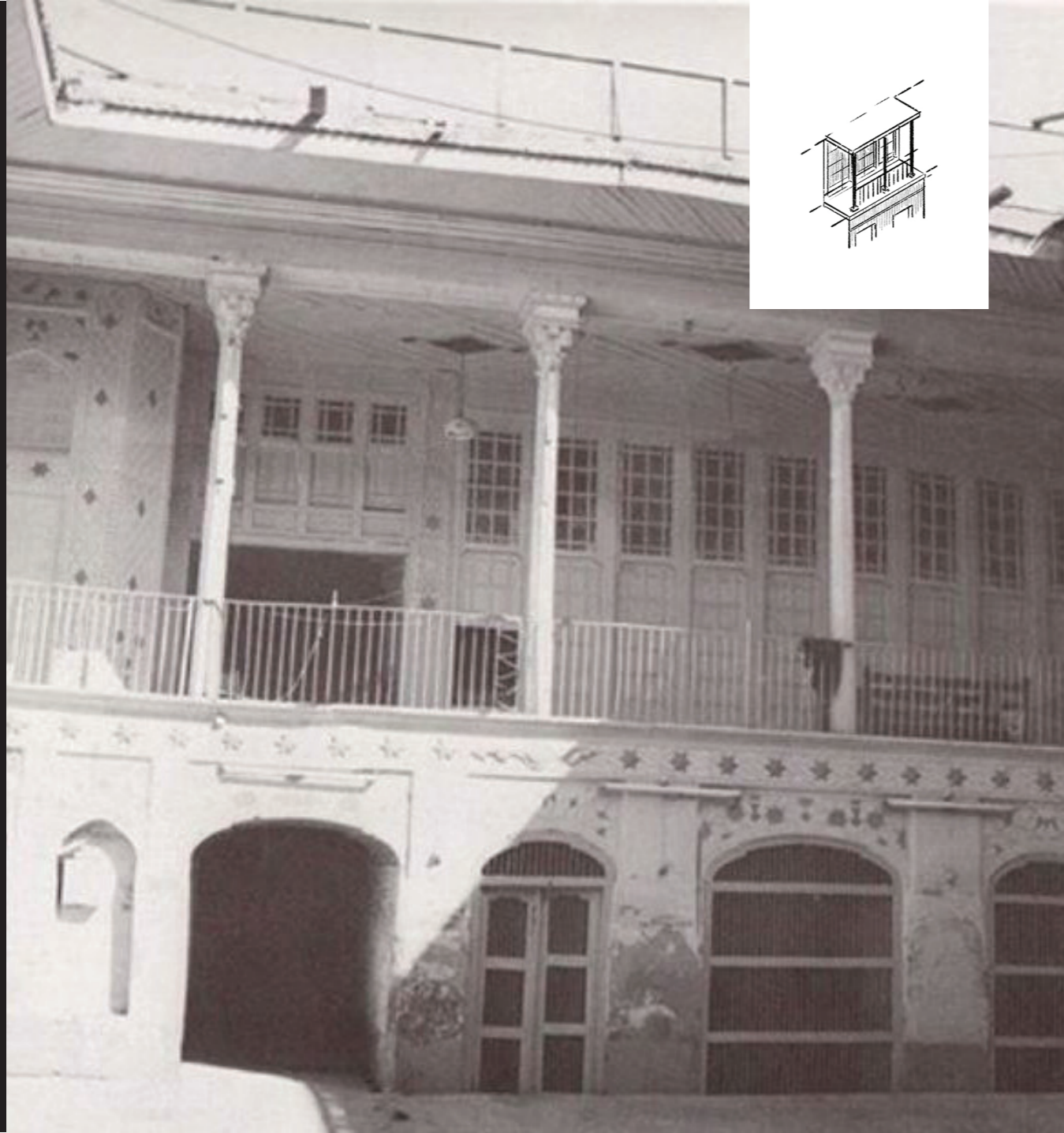
## 8. Talar Shaded summer salon

An open summer salon, usually located on the upper floor and oriented toward the courtyard. Reuther describes it as a room enclosed by walls on three sides and opened on the fourth side through a row of columns toward the Tarma or the courtyard (Reuther, 1910, p. 7). Warren and Fathi also place the Talar within the courtyard-facing arrangement of the Baghdadi house, where upper-floor rooms and galleries frame the central open space (Warren & Fathi, 1983, pp. 46-47). This makes the Talar a defined interior space, but one that gathers through openness rather than enclosure. Its columned facade allows air, shade, and visual connection to pass between the room and the central courtyard.

As a gathering pattern, the Talar works as an intermediate space between the private room and the collective life of the house. It is more open than the Ursi, but still more spatially framed than the courtyard itself. Reuther notes that Talars could function as summer or winter rooms depending on their orientation: when facing north, they became shaded and airy halls suitable for summer use (Reuther, 1910, p. 7). The Talar therefore combines climatic performance with social use. It creates a place for sitting, receiving guests, and remaining connected to the courtyard, while still offering shade, elevation, and architectural definition.



Iraqi traditional house components (Al-khafaf, 1992).



## 9. Tarma Shaded Upper Gallery

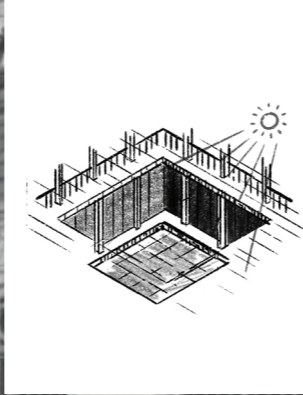
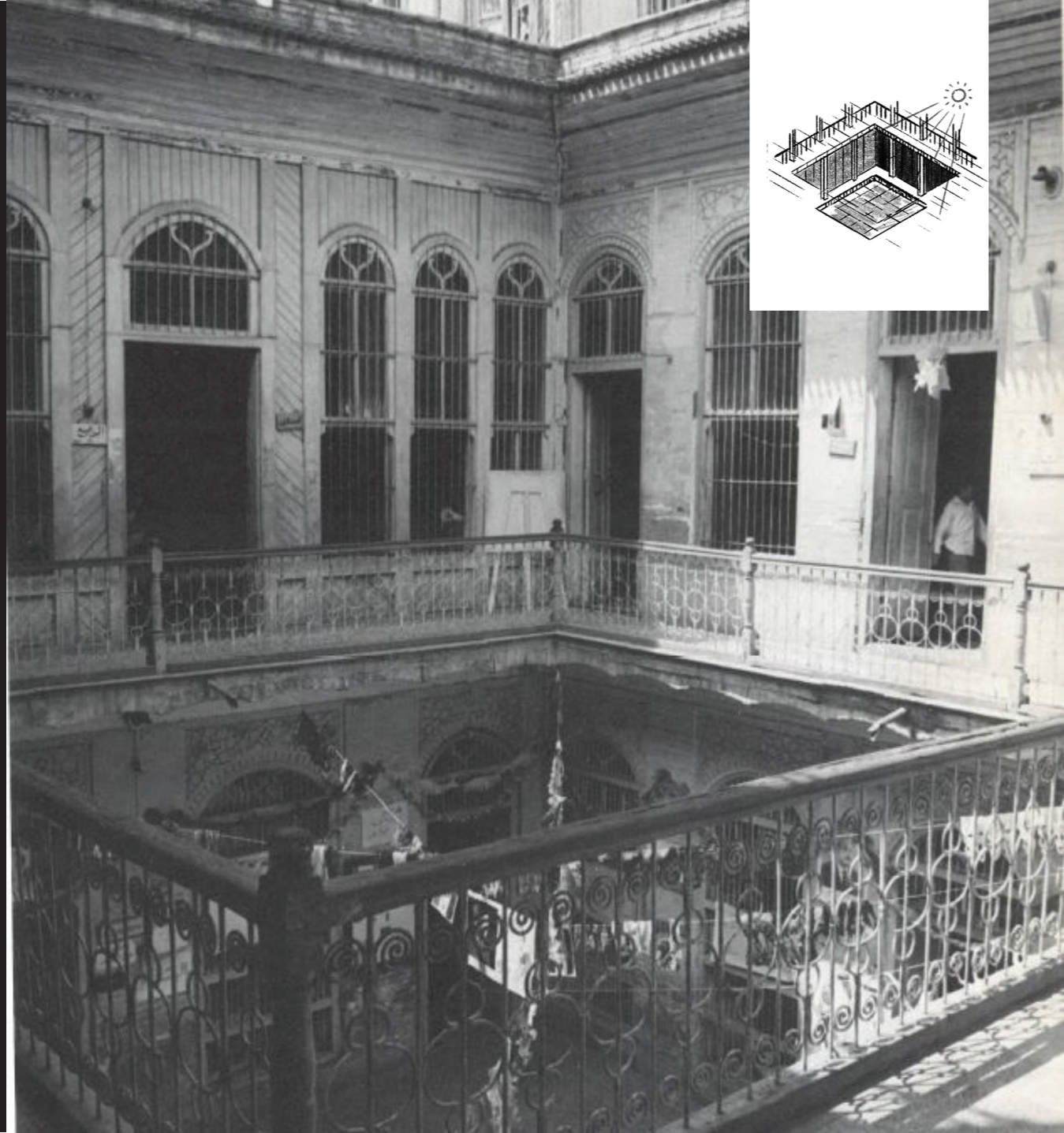
The Tarma is a covered column gallery in the traditional Baghdadi building, usually located on the upper floor along the edge of the courtyard. It is a semi-open space: shaded and protected, but still visually connected to the central life of the house. Reuther describes the Tarma as a key element of the courtyard house, sometimes forming a continuous gallery around the courtyard (Reuther, 1910, p. 12).

As a gathering pattern, the Tarma works as the inhabited edge between rooms and courtyard. Its thin wooden columns, railing, roof cover, and elevated position allow people to sit, move,

observe, and remain connected to the house while staying in shade and privacy. It also connects related spaces such as the Ursi and Talar, making the upper floor a continuous social layer around the courtyard (Reuther, 1910, pp. 6-7), (Warren & Fathi, 1983, pp. 46-47).



*Iraqi traditional house components (Al-khafaf, 1992).*



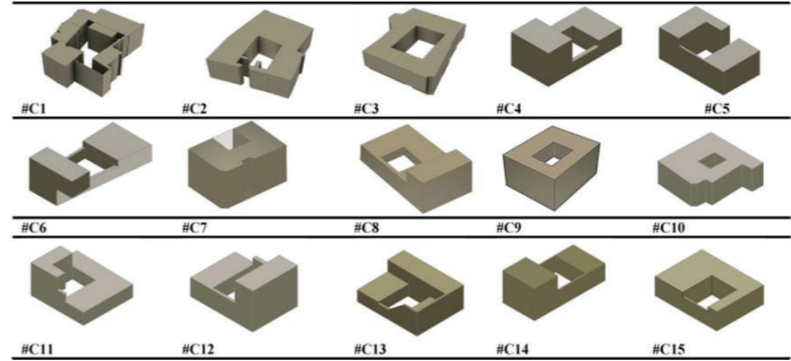
## 10. Hosh Courtyard typology

The Hosh is the central courtyard of the traditional Baghdadi house and the main organizing space around which domestic life is arranged. Langenegger describes the common urban house plan as a grouping of rooms around an almost square courtyard, whose verandah roofs are supported by slender wooden column arcades (Langenegger, 1911, p. 9). The Hosh is therefore not simply an empty open space, but the spatial center that gives order to the rooms, galleries, and upper-floor living areas around it.

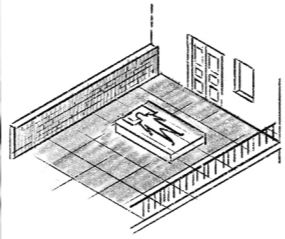
As a gathering pattern, the Hosh works by producing an inward-facing world. Warren

and Fathi describe the Baghdadi house as a courtyard system in which rooms and galleries face the central open space rather than the street (Warren & Fathi, 1983, pp. 46-47). Reuther similarly emphasizes that the courtyard facade receives greater architectural attention than the street facade, because the courtyard functions as a living space within the house (Reuther, 1910, pp. 32, 37).

The Hosh allows light, air, and human flow while allowing exterior of the house to remain relatively closed.



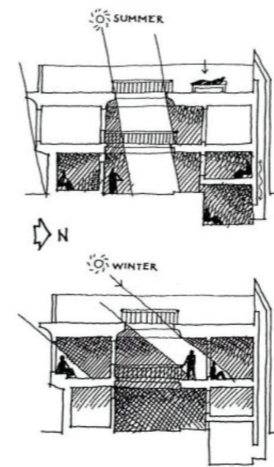
*Iraqi traditional house components, Al-Haidary, 2008*



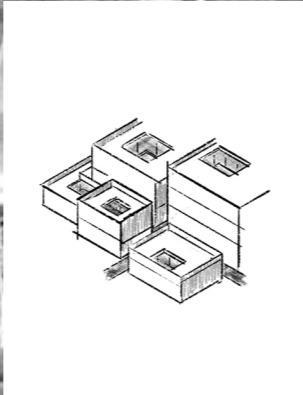
## 11. *Sath* The roof as a living area

The roof of the Baghdadi house is a significant gathering space. In the summer, daily domestic life moves upstairs: sleeping, sitting, and social activities often take place on the roof terrace (Reuther, 1910, p. 5).

The roof creates an open surface for interpretation, where the household gathers at sunset, the protection it offers is through the *sitra*, from the railings that define the view of the neighbors (Langenegger, 1911, p. 61) and allow air to enter. Adjacent roofs created a (essentially loose) network of high spaces) so that it also operates at the urban level.



Use of roof during summer (Diler & Serbest, 2017)



## 12. Morphology of dead-end alleys

The Jewish Quarter in Baghdad presents a dense morphology, Al-Ta'at, the Jewish Quarter creates a network of narrow and shady alleys, many of which have no exit. Golany describes the quarter as a compact urban fabric in which limited land space pushes buildings to develop vertically around private courtyards at the expense of the spatial logic of the alleys, which remain winding, narrow and shady (1994, pp. 60-71).

slowing down traffic, limiting exposure and daily contact points between neighbors, so that social life is very close to the center of the house (Golany, 1994, pp. 60-71, Warren & Fathi, 1983, pp. 46-47). . It's interesting to see that the structures redefine her while she defines them.

That is to say, the alley is a semi-closed neighborhood space between the house and the city. Similar to other patterns, but on a larger scale, the alley operates through proximity,



two Shanashil "kissing" (Al-Saffar, 2020)



Iraqi traditional house components, Al-Haidary, 2008

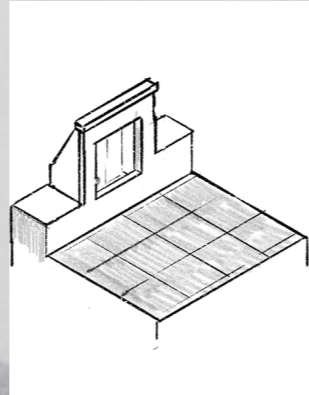
### *III Climate*

The Baghdadi house was a climatic instrument as much as a dwelling. Thermal comfort could not be produced at the room scale; it had to be produced through the section. Heat propagates through the ground as a slow thermal wave, taking approximately three months to reach a depth of ten metres (Golany, 1994, pp. 126-127), and the house exploited this directly by developing four underground and semi-underground spaces at distinct thermal levels (Reuther, 1910, pp. 16, 19).

Reuther identifies the organising principle: rooms are distinguished not by social function but by their thermal character at different hours and seasons. “One moves, according to the season or time of day, from the cellar up to the roof” (Reuther, 1910,

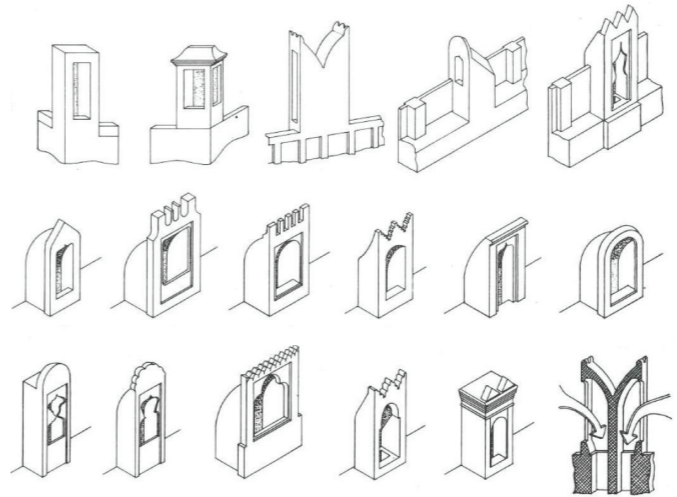
p. 5). The ten patterns follow this descent. The Badgir wind-catcher captures the north-northwest wind at roof level and channels cooled air down through the wall into the Nim at roughly minus two metres, the primary summer gathering space (Langenegger, 1911, pp. 179-182; Reuther, 1910, p. 16). The Tachabosh, a mezzanine platform at courtyard level, intercepts rising cool air for those unable to descend further (Reuther, 1910, p. 19). Below the Nim, the Sardab serves cold storage and afternoon retreat; at the base, the Mikvah reaches the water table and in Jewish houses doubles as a ritual bath (Reuther, 1910, pp. 16, 19). The Hab, a porous clay vessel in shaded north-facing niches, cools water by evaporation (Reuther, 1910, p. 25).

The household moved vertically through this stack across the day and the seasons, with a thermal differential between roof and Sardab approaching thirty degrees Celsius in summer (Golany, 1994, pp. 126-127).

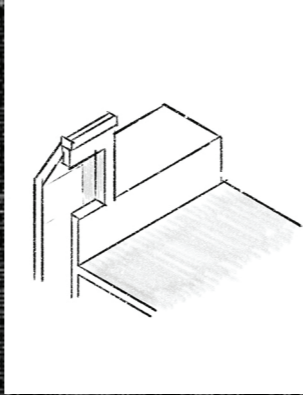
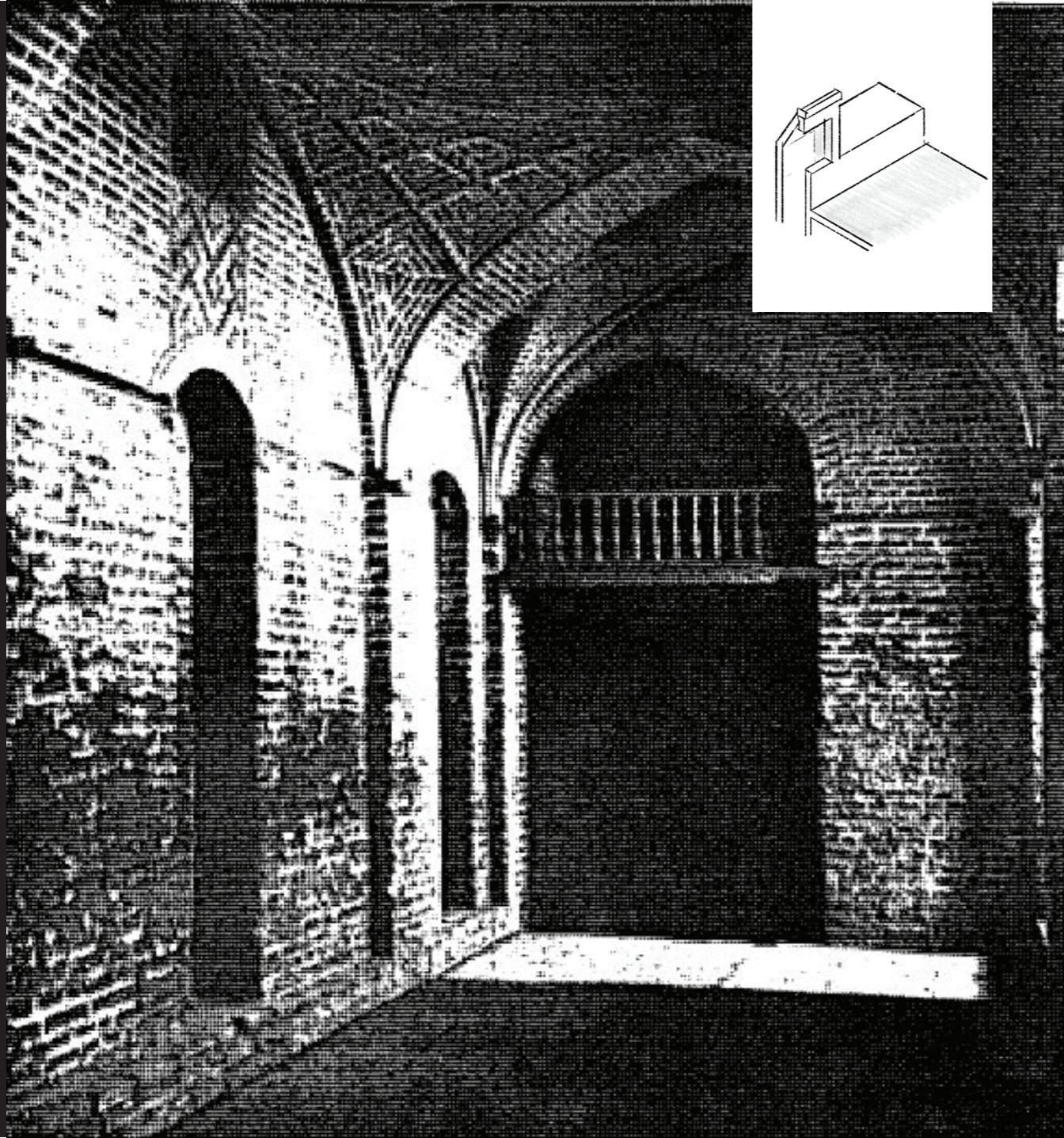


### 13. Badgirkopf Wind Tunnel head

The upper part of the Badgir is a wind-facing, window-like opening set at roof level. It is usually oriented toward the north, where the prevailing winds approach Baghdad, and is positioned along the edge of the roof (Reuther, 1910, pp. 26-28, 96). In Iraq, this element often appears not as a single opening, but as a series of three to six wind tunnel heads. When the opening cannot face true north because of site limitations, alternative orientations or adjusted forms can be used to capture the available wind (Langenegger, 1911, pp. 179-182).

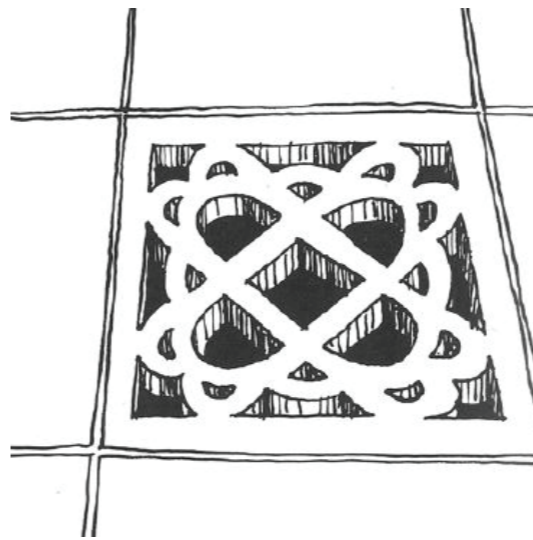


Windcatchers with various forms of wind intakes, Baghdad, Iraq (Golany, 1994, p.124)

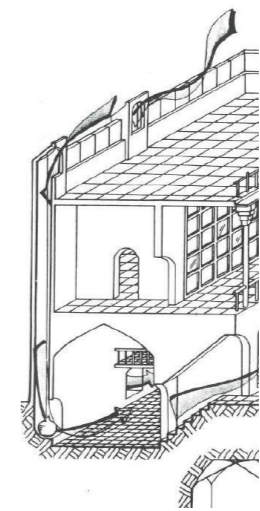


# 14. Badgir Wind Tunnel

An interior wall and an exterior wall with a space between them creates a channel through which air passes, leads directly to the Nim floor (Langenegger, 1911 ;Golany, 1994, p. 126; Reuther, 1910, p. 23). The channel is only horizontal and exists in a single wall. At the end is a decorative opening. These chimneys often came about 11 meter long, with a section of 1mx0.5m (Golany, 1994).



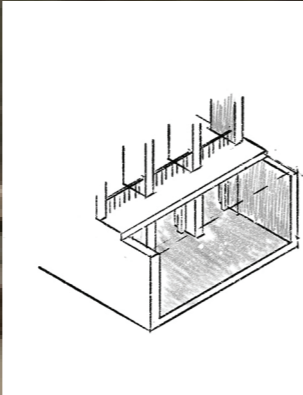
Badgirs outlets and scoops (Warren & Fethi, 1983).



scheme (Golany, 1994, p.125)



Drawn by the author

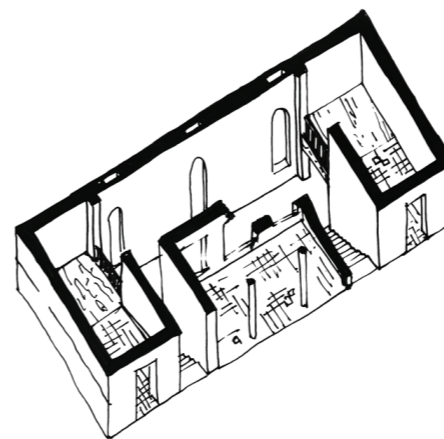


## 15. Tachabosh Ground level balcony

The Tachabosh is a raised platform within the Nim, positioned around courtyard level and overlooking the cooler semi-underground space below. Reuther describes it as a timber floor inserted into the Nim, creating a higher estrade or gallery above the main lower room (Reuther, 1910, p. 19). It allowed people to benefit from the cooler air of the Nim while remaining above the dampness of the floor.

in the Baghdadi house, where imported or non-local timber was often used for structural and interior elements despite the scarcity of local wood (Reuther, 1910, pp. 96-97).

As a climatic pattern, the Tachabosh works as an intermediate level between the courtyard and the deeper summer rooms. It is not as cool as the Nim or Sardab, but it offers a more accessible place to sit, rest, and remain connected to the lower cooling system. Because it was built as a timber platform, it also reflects the selective use of wood



*Tachabosh and Nim axonometric*



## 16. Nim -2 meter

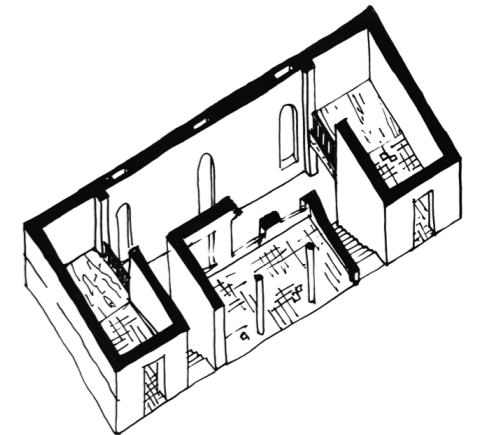
An underground space used within the summer cooling scheme of the typical Baghdadi House. According to Reuther, the Nim differs from the deeper Sardab in that, whereas the Sardab is entirely underground, the Nim is a lower floor beneath courtyard level, yet still connected to the upper parts of the house (Reuther, 1910, p. 16). By utilizing the thermal mass of the earth to generate cooler surroundings in summer, the Nim remains more accessible than the rooms further below.

from the courtyard or adjacent openings, and could be connected to ventilation shafts or Badgir systems that directed air toward the lower parts of the house. Because it was larger and more accessible than the Sardab, the Nim could become a central summer room for sitting, resting, and sleeping during the hottest hours of the day. In winter, when cooling was no longer needed, these lower spaces could shift toward storage use (Reuther, 1910, pp. 16, 19; Golany, 1994, pp. 126-129).

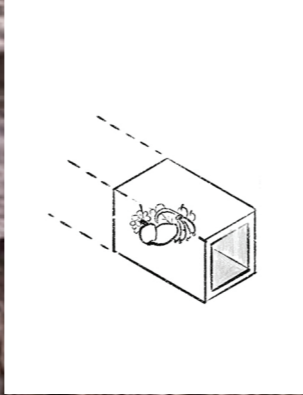
The Nim works through depth, shade, and air movement. It often received limited natural light



Opening in the Nim double wall. image by Kammunah, *The impact of architectural heritage on the development of Najafi architecture.*



*Tachabosh and Nim axonometric*

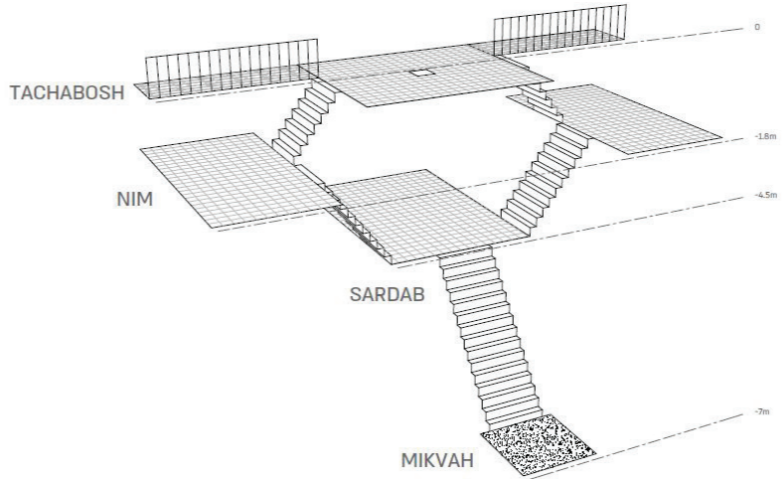


# 17. Sardab -4.5m

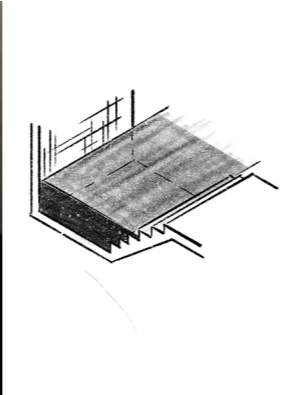
Sardab refers to the entire underground space used as a cooling place within the Baghdad-type house. As noted by Reuther, this term derives from the Persian sard-ab, which means cold water, and contrasts itself with Nim in that whereas Nim is partially under the surface, the Sardab is totally beneath the courtyard and gets light through openings at courtyard level (Reuther, 1910, p. 16).

and storage of fruits, meats, and vegetables during the hot season. Being connected to the Nim above it, Sardab was an integral part of the vertical summer area in the house: during winter it became storage, and during summer one of the coldest places in the house (Reuther, 1910, p. 19; Golany, 1994, p. 126).

In terms of its climatic behavior, the Sardab relied on depth, darkness, and thermal inertia. In that regard, being very near the surface and groundwater, it served the purpose of body cooling



Sardab is connected to the nim, and in jewish houses can lead to a mikvah

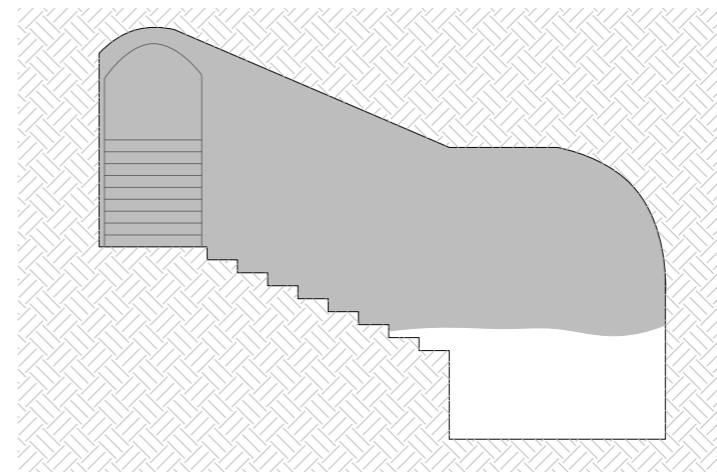


## 18. Mikvah / Beit al tabil -7m

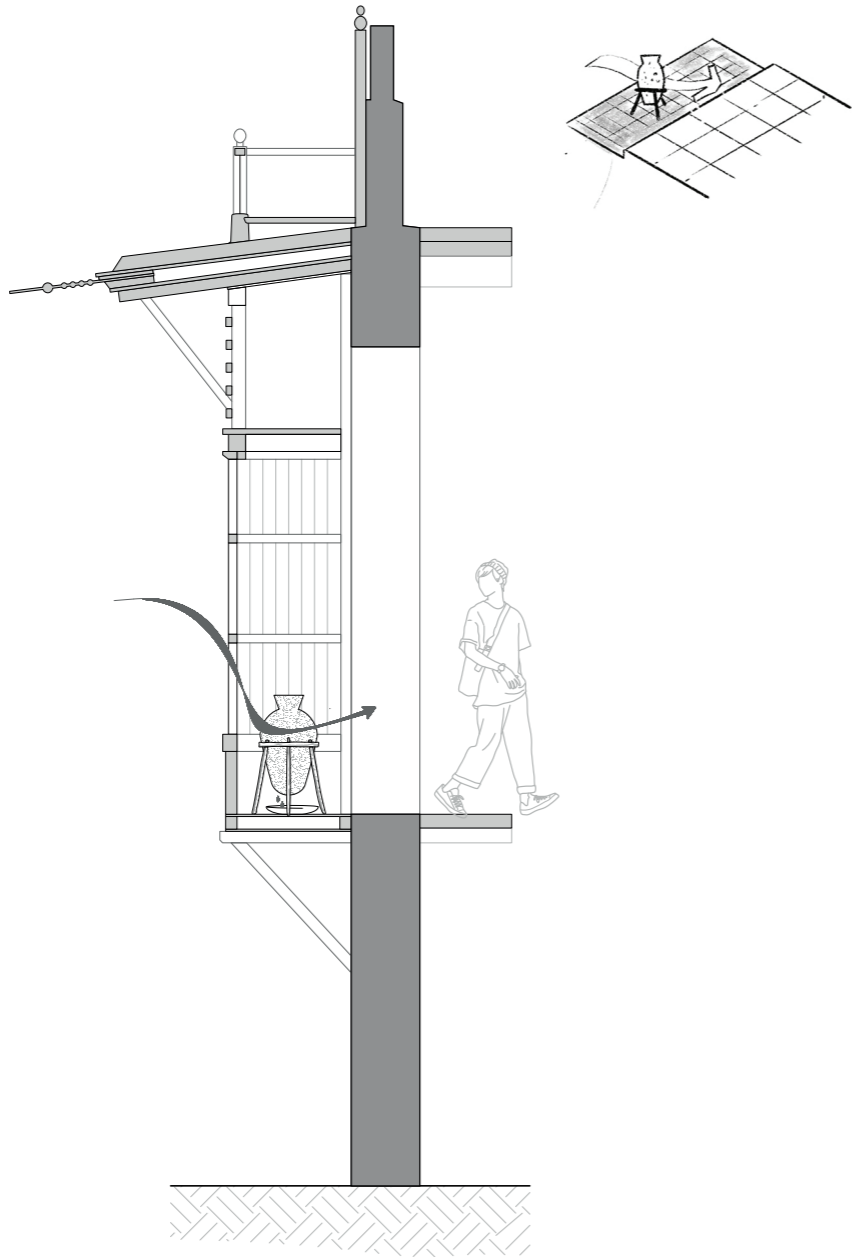
The Mikvah, or Bir al-Tabil, is the space that reaches the greatest depth within the vertical section of the traditional Baghdadi Jewish house. It is linked with the Sardab and leads downwards to the level of groundwater, which, in Baghdad, can be accessed after a few meters' descent below the level of the courtyard. According to Reuther, in Jewish houses, the Sardab is usually connected to a facility for washing called Bir Et Tebile, and the level of groundwater must be accessible by stairs (Reuther, 1910, p. 19).

the Nim, after the Sardab, and very near the coolness of the earth and its groundwater. While the Nim and the Sardab functioned on a general cooling purpose, the Mikvah provided an extra Jewish dimension to the whole subterranean complex.

As a climatic and ritual phenomenon, the Mikvah is the lowest point in the house: it comes after



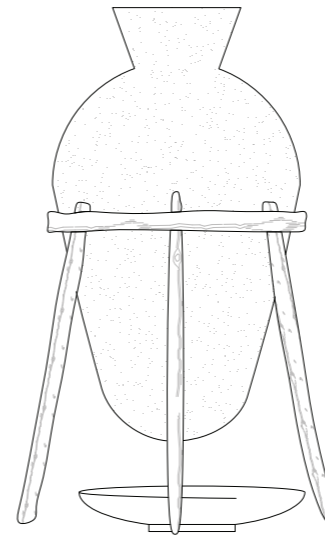
*Mikvah section*



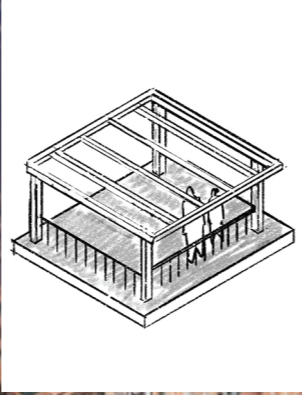
## 19. The Hab Sweating Vase

A Hab was an ancient vessel made from porous, unglazed ceramic clay that functioned by allowing water to slowly pass through its microscopic pores before being evaporated on the surface of the container (Golany, 1994). Through evaporation, heat from the vessel would be absorbed, and therefore, the water kept inside would cool. It is similar to the cooling method applied in contemporary times. The cooled water that had either dripped off or condensed on the surface could then be caught in a bowl and served as drinking water because it was the coldest water available (Niran, 2026).

The Hab would be situated in a well-ventilated shady location like balconies or windows within exterior walls, semi-subterranean rooms known as the *nīm* (Niran, 2026; Warren, 1982), and even at the openings of the building due to the airflow aiding the evaporation process (Golany, 1994). The practice was common in both private and public dwellings and was one of the passive cooling techniques employed in the Iraqi hot environment (Warren & Fethi, 1982, 1982; Niran, 2026).



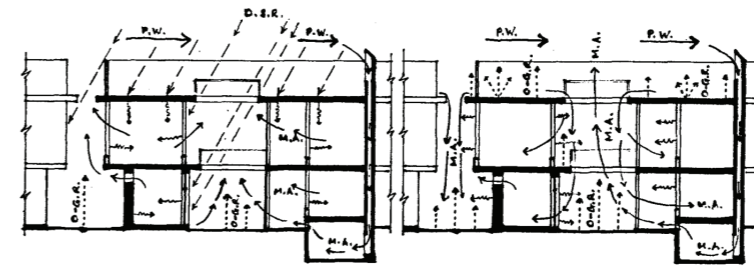
The hab, CAD drawing



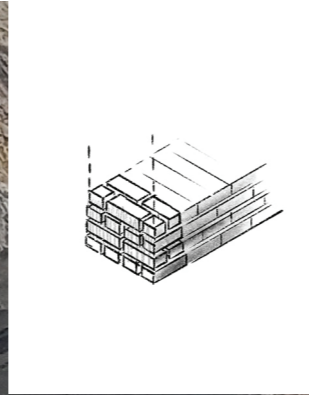
## 20. Daily and Seasonal Separation

A regular Baghdadi home followed a pattern for residence, which is due to the weather conditions of Iraq (Golany, 1994). As the summer approached, there were changes in the locations where the family lived depending on the rise in temperatures during the day. In the early mornings and late in the evenings, they stayed in the interior courtyard of the house since the weather would cool down rapidly once it was cloudless. However, in the afternoons, the weather temperatures would be at their highest, and this made them relocate to cooler places like the underground nims and sardab (Al-Azzawi, 1994; Reuther, 1910). In the evenings, they would move to the top floor since it cooled earlier than the other locations, and on some occasions, they even used it for sleeping at night.

During winter months, the pattern of usage was the opposite, since nims and sardab were not used much and sometimes served as storage areas, whereas life was centered at the top floors and areas that had direct access to solar light. The courtyard was used in daytime, and the roof served the purpose when sunlight was available in order to warm people. In spring months, there was a possibility to flood the underground parts, which reduced their usability significantly. Hence, through such flexibility, the house allowed for adapting living practices according to seasonal changes of climate (Golany 1994; langenegger 1911).

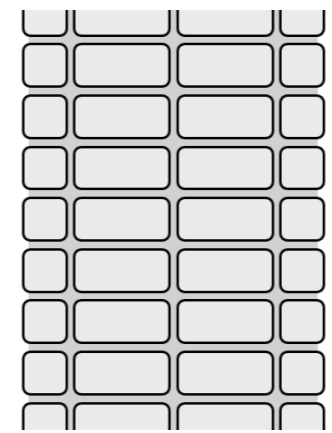


Al-Azzawi (1996) shows that the Baghdadi courtyard house regulates heat through solar gain, radiative cooling, and air movement via the Badgir and Nim / Sardab adapting between day and night cycles.

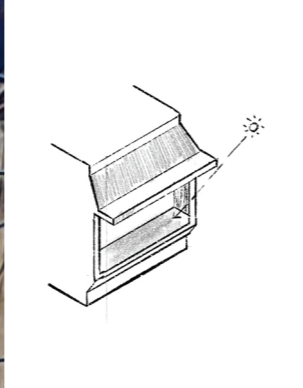


## 21. High thermal energy

Thick walls and areas that are below ground level use the thermal storage quality of the earth and building material to ensure stability in indoor temperatures and thereby help maintain cooler conditions even in hot weather conditions (Golany, 1994).



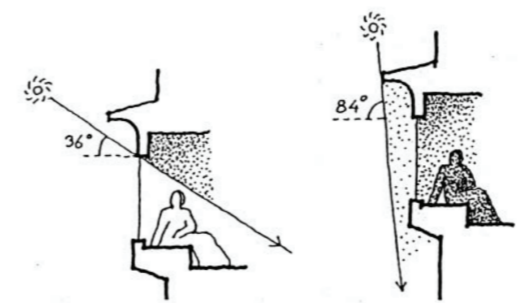
a section of a wall of a Baghdadi house, thick with a big thermal resistance



## 22. Sun Tunnel Openings

Sun tunnel openings are the deep, shaded openings of the Jewish Baghdadi building, designed to filter most light and heat in order to gain enough to light a room and ventilate it. windows that are set back, covered through layers of arches, balconies, wooden screens (Reuther, 1910, pp. 6, 37, 113).

These openings function by delaying and reducing. Langanger claims that a small protrusions can cast sharp shadows under a scorching Iraqi sun, showing how small typological facade depth can have a strong climate effect (1911, p. 62). Therefore, the opening becomes a short shaded passageway for the light.



South-looking alcove at noon in winter and summer (Ragette, 2011).

The Great Synagogue in Baghdad The windows in the rooms recede into the central space. Designed by Professor of Architecture David Cassuto

## *From Patterns to Design*

The different patterns dominate different scales and different needs, they work together and in relation to each other.

With the help of the analysis, it is possible to describe and understand how architecture organized Jewish life in Baghdad, how the courtyards became a daily living space that cools, regulates the private and public, and constitutes a gathering space at once.

Each of these patterns was built over centuries and contained certain knowledge in response to processes. The next step is to evaluate those processes, examine their relevance, and understand how these tools can contribute to them today in 2026.

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