Degree Project in Architecture
Second Cycle 30.0 hp

Entering the Hosh House
A Study of a Vanishing Baghdadi Dwelling Typology

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RESEARCH OF WRITTEN SOURCES

**Felix Langenegger**

- Born: 1876 in Germany
- Dead: 1947 in Germany
- Occupation: Architect
- Written source: *Die Baukunst des Iraq*, published 1911

- Received his architecture degree in Germany.
- Took part in numerous excavations in Babylon and Jericho.
- Lived long periods in the middle east and engaged in the social life of the area.
- Earned his doctorate with an essay on building culture in Iraq.

**Oscar Reuther**

- Born: 1880 in Hemer, Germany
- Dead: 1947 in Heidelberg, Germany
- Occupation: Architect, City planner, Archealogist

- Studied in Dresden where his interest for archaeology was initiated.
- Worked as an architect in Berlin where he got in touch with the university archaeology department.
- Worked with the excavation of Babylon in Iraq between 1905-1912, learning about the practice of archaeology.
- Went on to spend time in the middle east and India, working on excavation sites, studying Islamic architecture and serving in Syria during the first world war.
- In 1920 Reuther became a professor of history of architecture and principle of several universities in Germany until 1950.

**Sabah Al-Sa’di**

- Born: Baghdad, Iraq
- Occupation: Antique dealer, Hosh house enthusiast
- Information sources: Interview, Facebook posts

- Owns an antique shop in Baghdad.
- Documents traditional housing in Baghdad's historical districts.
- Publishes photos and videos of his documentation online.

**John Warren**

- Received his architecture degree in England.
- Set up his own office in Sussex after having travelled in Turkey and studied Ottoman architecture. Had offices in Brighton, London, Baghdad and Mumbai.
- He was engaged in the conservation of historical and vernacular buildings, often in the middle east.
- Made annual trips to desert regions of the middle east recording ancient churches and mosques.
- Held several architectural and conservation advisory roles.
- Lectured and supervised PhD students at several British universities.

**Ihsan Fehti**

- Born: 1951 in Kut, Iraq
- Occupation: Architect, City planner, Historian

- Lived in a traditional courtyard house in Baghdad as a child.
- Got his degree from the faculty of Urban and Regional planning at the Baghdad university in 1974.
- Did an inventory of traditional houses in the historical neighborhoods of Baghdad for his thesis.
- Has worked for the municipality of Baghdad.
- Advocates the preservation of traditional housing areas in Baghdad, arguing that the city is losing its identity.
- Discusses factors complicating the conservation of the Hosh house typology, naming corruption as one of the main issues.

**Shokrollah Mandoor**

- Author of *An Approach to Vernacular Architectural Patterns in Iran*
The ideal Hosh house has a square-shaped courtyard. Typically, houses are divided into two sections: the private sphere, known as “haram,” for women and close family, and the public area, called “dīwān-khānah,” for men and guests. Wealthier homes may have separate courtyards for each section. Usually, the dīwān-khānah is limited to the rooms closest to the entrance to maintain privacy. However, since the main rooms face the courtyard, complete seclusion is not possible.

To prevent a direct view into the courtyard, the entrance is often located at one end of the floor plan. The ground floor features the “talār,” an open-sided living room connected to the courtyard, and the “sirdāb,” a cool cellar that receives constant ventilation from the windcatchers on the roof. Additional rooms on the ground floor include the kitchen, lavatories, and storage areas.

The upper floor houses the principal rooms. In the ideal Hosh house, two ursī-rooms face each other along one axis, with smaller rooms arranged around them. The tārmah, an upper-floor gallery, is separated by windows and often includes smaller rooms. Although all rooms directly face the courtyard, their entry points are located on the sides, necessitating multiple small hallways.

The practicality of some specific elements and aspects of the layout can vary depending on the plot size and other constraints.

### The Ideal Layout

The layout of the Hosh house incorporates several specific elements and aspects of the layout.

### The Compromise

While the ideal Hosh house embodies various specific elements and aspects of the layout, it may not always be feasible to include all of them due to practical constraints. The floor plan must be adjusted to fit the available space and resources.

#### Key Features
- **Talār**: Open-sided living room connected to the courtyard.
- **Sirdāb**: Cool cellar with ventilation from windcatchers.
- **Tārmah**: Upper-floor gallery that separates the main rooms.
- **Ursī-rooms**: Principal rooms facing each other.
- **Storage rooms**: Located on all sides of the courtyard.
Subterranean cellars were a typical feature in affluent Jewish homes, usually with a deep well for ritual ablutions. If a deep cellar existed, it was considered the main one, while the shallower one was known as nīm-sirdāb, "half-cellar". However, the influx of rural migrants to cities has strained the sewage system, resulting in a significant rise in groundwater. As a result, deep cellars, already scarce, have been abandoned or filled, rendering them obsolete.

Courtyards commonly housed a variety of fruit trees, with date palms being the most prevalent. Apart from providing shade, date palms served as a valuable food source. During spring, a date man climbed the palm to pollinate it, returning in autumn to harvest the tree for the family while receiving a portion of its fruit as payment.

Upper-class houses often had multiple trees in the courtyard, along with a small botanical garden called "bokhchah" and a pool. These gardens omitted date palms, which were deemed trees for the masses, in favor of more desirable options like pomegranates, bitter oranges, and mulberries.

Larger cellars often feature a raised wooden platform called "takhtabosh", functioning like a balcony. This platform offers a comfortable area to escape the damp clay floors and enjoy the cool air. Beneath the takhtabosh, storage spaces offer a cool environment suitable for preserving fresh food and water.
HOSH SKETCHES DRAWN FROM MEMORY
House Al-Mashat elevation and floor plan

STUDIES EARLIER PLAN DRAWINGS BY REUTHER
House Pasha with two courtyards

STUDIES EARLIER PLAN DRAWINGS BY REUTHER
Ideal plan for a square courtyard

STUDIES EARLIER PLAN DRAWINGS BY REUTHER
Typical layout organization for upper floor gallery

STUDIES EARLIER PLAN DRAWINGS BY REUTHER
Typical relationship betweenadjacent rooms and the salon area

STUDIES EARLIER PLAN DRAWINGS BY REUTHER
Typical principles for entry to salon
Rooms are often multi-purpose spaces with little furniture, allowing for flexible usage during different times of the day and depending on the temperature and season.

An overhead opening onto the roof in the small kitchen courtyard allows for light to be let in and hot air to be let out.

The inner courtyard is an atrium which is open towards the sky. In the summer the atrium opening on the roof can be covered, providing shade to the space below. The courtyard is connected to every room in the house on the ground floor.

In the courtyard there is usually plants and trees growing, such as for example buckhorn trees, pomegranates, bitter oranges or a palm tree.

Mattresses and cushions are stored towards the walls of the room while activities where they are not needed are performed.

Since the usage of each room is flexible and subject to change, it is possible to store items such as bedding, clothes, or activity-specific equipment in one of the side rooms of the house.

The "talār" is an open living room with a pillared front. Depending on its orientation, it is either a summer or winter room.

The walls on the ground floor are quite thick, approximately 80 cm, and are made of air-dried mud bricks of different sizes, laid with clay as a binding agent. The centre of the wall is filled with crushed bricks, rocks, and clay. Finer burnt bricks are used for the interior walls, arranged in neat bonds, occasionally with varying patterns, and held together with plaster mortar.

The inside of the decorative niches is made out of plaster that is applied on top of the brick walls.

In the hot summer months, the inhabitants escape the heat by going down to the cellar. Hammocks for children to sleep in can be hung from hooks on the wall.

Mattresses and cushions are used to make one side of the room into a sleeping place.

The walls that serve as a protection indoors and outdoors. It is a partially open space located between the spaces on the first floor.

The outdoor living room serves as an entrance to a semi-outdoor area. It is a shaded multi-purpose space, covered, providing shade from penetrating sunlight from penetrating the home's inhabitants.

The walls on the first floor are substantially thicker than those on the ground floor. The thickness of these walls is needed as the amount of these walls can be significant, and they help in providing insulation against the weather. The thickness of these walls can be adjusted to control the air flow. The placement and size of these openings can be adjusted to allow air to move within the room.

In the cellar, there are several cupboards in the wall. A small table is taken as a seat arrangement for drinking tea or eating.

In the courtyard of a typical upper-class Hosh house, date syrup are date fruits, and various other fresh fruits and foods such as dates, figs, pears, and apricots are laid out for guests up to the social spaces on the first floor.

Quick transportation for narrow and steep, the entrance to facilitate quick transportation for guests close to the entrance to the house, positioned close to the narrow and steep entrance to facilitate quick transportation for guests up to the social spaces on the first floor.

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ILLUSTRATIONS AS Documentation

ILLUSTRATIONS AS Documentation
James Felix Jones. Memoirs. 1857

ILLUSTRATIONS AS Documentation
Reuther, Oscar. Baghdad. 1910

ILLUSTRATIONS AS Documentation
Selim, Lorna. Baghdad. 1957-1963

ILLUSTRATIONS AS Documentation
James Felix Jones. Memoirs. 1857
SATH

Etymology: Sath (سطح), rooftop terrace. From the root s-t-h, related to spreading out, unfolding and levelling. The rooftop plays a vital role in hosh life, serving multiple purposes such as house chores, children’s play area, and even a sleeping space during summer nights. It is a versatile space that caters to the entire family, providing a comfortable sleeping environment with cool breezes and aiding working parents in waking up on time with the morning sun.

THE COURTYARD HOUSE AS A CONCEPT

The concept of the courtyard house has a long and widespread history and examples are to be found from various areas of the world, especially in warmer climates. This tendency to create inward looking spaces is the opposite of a typical western house building on a principle of a house from which to see out and of opening the building up to the surrounding world outside.

Veiling or “sitr”

The design of the hosh house relates to the concept of “sitr”, meaning a covering or barrier that shelters and protects or restricts, from the root s-t-r, related to veiling. This is a principle of providing the family with privacy, which is central to the concept of the hosh house.

URBAN FABRIC AS CLIMATE CONTROL

In the neighborhoods where one finds the hosh houses, like in many traditional dwelling areas in hot climates in the Middle East, the density of the built volumes is a direct response to the climatic conditions. Three sides being built in means less wall surface exposed to the heating radiation from the sun. They are also placed densely, leaving only narrow alleyways that are almost constantly in the shade from the surrounding buildings. A dense building schedule provides protected and shaded outdoor spaces and better insulated building structures.

Levels of openness

The house provides a hierarchy of spaces enclosed with a different amount of walls and with various levels of openness. The level of openness is directly connected with the temperature of the space, which space that is preferred by the inhabitants varies over the course of the day and the year.

Entirely open space: rooftop
Controlled open space: courtyard
Semi open space: outdoor living room
Indoor space: closed room
Highly protected space: cellar

Part of a cluster

The different areas of the hosh house are not isolated living spaces. Instead, each room is integrated with the surrounding spaces, forming the house as a whole. Similarly, a hosh house is traditionally part of a cluster of houses that constitute the neighborhood and are integrated into the urban fabric of the city.

The logic of climate control, ventilation systems, and the way of life in a hosh house makes little sense when the house is no longer part of a cluster. The hosh house functions as a fraction that is part of a larger whole, so the disappearance of one house complicates the continued existence of the remaining hosh houses.

Sabah says:

Our house is called hosh. That is, the house which has an open void within. And the rooms which are facing it. What do we find inside? There is a garden called a bugchah. In it, one may grow buckthorn trees, pomegranate, bitter oranges, or other common trees. Or a palm tree. Indeed, Iraq is known for its palm trees.
WINDCATCHER
THE CLIMATE REGULATING BĀDGĪR

BĀDGĪR
Etymology
Bādgīr (بادق, windcatcher) is a compound of bād “wind” + gir “catcher”

The Bādgīr windcatcher is a climate regulating system built into the wall of a hosh house. Its opening is situated on the roof and is directed towards the north east, in the direction from which cooler breezes arrive. The back of the windcatcher is closed, in order to avoid the wind storms that usually blow in from the south.

The way of the wind
The windcatcher opening directs the cooler air down through a shaft inside the thick clay brick wall, which is adjacent to the neighbour house. Since the wall is built in and avoids exposure to the sun it keeps a lower temperature. This environment further cools the air as it is being directed into this house through openings in the cellar. The openings are covered with wooden doors that can be more or less opened or closed in order to adjust the amount of air that is being let in. The cellar is connected with the courtyard, which is a non-covered space where temperatures are higher. The hot air in the courtyard is lighter than the cool air, convection causing the hot air to rise upwards away from the house, being replaced by the denser cool air coming in from the windcatcher system. But more than anything, the bādgīr supplies the inhabitants of the hosh house with a windy breeze as a heat relief.

VERTICAL MIGRATION
The roof is an important and well used space in the hosh house. It is an integral part of the vertical migration that characterizes life in the house where rooms seldom have a designated single usage. Instead inhabitants move throughout the day between floors and rooms with different orientation in relation to the sun in order to spend time in the space that at the moment is most comfortable temperature wise.

Usage of the roof
During the hot summer months inhabitants sleep on the open, slightly cooler roof. The roof collects heat from the sun during the daytime, and therefore radiates warmth during the night. This is welcomed by the inhabitants sleeping on the roof as temperatures can drop quite drastically once the sun sets. The roof is also used for its climatic benefits as a space for performing tasks throughout the day. Although being hot daytime, the roof is dry allowing for a comfortably cool working climate compared to the closed but more humid spaces of the house.

Origin
Although the ventilation system of the bādgīr originates from Iran it is being used differently than in Iraq. Houses commonly have one large bādgīr, often situated directly above the house summer room. The large windcatcher has openings facing two or more directions, this way wind from several directions can be harvested. The openings can be opened or closed depending on what direction the winds are blowing.

Adaptation
In contrast to the mighty tower-like bādgīrs in the Persian Gulf, the Iraqi bādgīrs are modest in size, but arranged in larger numbers.

Decline
The use of traditional windcatchers has declined in Iraq in favour of modern air conditioning systems, which is powered by electricity and puts the hosh house’s self sufficient ventilation system out of play. With the bādgīr in many cases losing its intended usage, there is no longer the same incentive to build this ancient architectural feature.

The Iraqi architect, and the Iraqi artist invented sirdāb with it. They developed a ventilation system which they call bādgīr. As for the bad air, this is how it changed. I assume similar systems exist in other countries, but for us because our weather is hot in the summer — people go down the shaft by going down to the sirdāb. And a child of Khadimiyyah will know these things. So, they go down to the sirdāb for the coolness. The temperature is lower than anywhere on its way down into the house.

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extract from Reuther’s text on the construction of brick vaults

UNDERSTANDING CONSTRUCTION

translation by Marcus Aerni

sketch model of vault geometry

BYGGNADSTEKNKEN

Eric Grole

UNDERSTANDING CONSTRUCTION

architectural model and vault geometry
KARBANDI DOMES

The ceiling of the cellars consists of flat domes supported by large spandrels through a technique originating in Iran called “karbandi.” This technique creates pendentives with a web of intersecting ribs.

Twelve (or sixteen) pointed arches are radially rotated around a midpoint, dividing a circle into twelve segments and creating a twelve-sided polygon in the center. A rectangle, with dimensions matching those of the room, is fitted through the nodules. Then, ribs outside this rectangle are trimmed off. The technique can yield various dome shapes. In some cases, instead of trimming off the spandrels, half-domes are inserted at the sides to extend the shape.

CLAY BRICKS

Brick and mud are the predominant materials. Older houses were usually built with unburned brick, making the cellars susceptible to water leakages from the ground water.

The prominence of clay brick craftsmanship shows itself in the sirdāb and as pediments above entrances, being the only noticeable façade adornment besides the šanāshīl.

Sabah says:

And the nājūr who carves the brick, he pulls it. He [engraves] them with verses. That is, on the façade of the house. He might write the date, for example “1320”. He might write “mashallah”. Basically, he writes on the house, or [makes] floral art. Desque.

CELLAR
THE VAULTED BRICK SIRDĀB

Etymology: Sirdāb (historical) - (today) demi-basement. From Persian sirdāb “ancient underground halls, cooled by passing water from aqueducts”, a compound of sird “cold” + âb “water”.

CONSTRUCTION

The ribs are constructed on the ground from plaster and reed vaults, with the help of templates and mounted in the roof when dry. The rib vault is finished before the rest of the dome is constructed. Mud brick and reed is put on top of the vault ribs and the concave side of the vault is covered with pre cut brick, creating the brick vault appearance.

Vault geometries

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Door pediments 1:20
LATTICEWORK AND ORIEL WINDOWS
THE ORNAMENTED URSĪ AND SHANĀSHĪL

**Ursī**

**Etymology:** Ursī (اُروُسی), main lounge with a wall of sash windows, adorned with latticework. From Persian orsi “sash window with stained glass”.

The main room for entertaining guests is the “ursī”. It takes its name from the Persian word for sash windows, which has become synonymous with this room type as it always has a wall with intricately decorated sash windows facing the courtyard. Although the ursī is situated along the open gallery, it’s only accessible to enter from the short sides.

**Construction**

The older versions of the cantilevered wooden window are supported by wooden beams that are inserted in-between the floor beams of the upper floor of the hosh house. Using a lighter material such as wood is beneficial since the construction rests on the first floor which consists out of dried mud brick. A later way of constructing the mounting of the Shanāshīl is by using a jack arch structure of iron and wood beams.

**Sash windows, arranged chronologically from 1880-1940**

**Wooden Lattices**

The sash windows of the ursī offer a wide range of expressions, from simple square grid lattices to intricate geometries with stars and floral patterns. These tessellations, found throughout Iraq houses, are frequently based on two different polygons arranged in repeating grids, forming the foundation for further complexity.

**Constantly Evolving**

Sash windows have undergone rapid evolution. In the 19th century, lattices with stacked spheres gained popularity, but the skill required to create them was soon lost. When the British arrived in Iraq, European styles and Art Deco influenced the designs.

**Islamic Tradition of Tessellation**

The Islamic world shares a fondness for complex geometric patterns and floral arabesque since religious beliefs prohibit the depiction of humans and animals. This aesthetic preference prevails across various regions influenced by Islamic culture.

Sabah says:
The carpenter works with the wood more than a stonemason. So, a stonemason works with the ground floor for, let us say six months. On the other hand, the carpenter works for one and half years, because of the Shanāshīl, and the dalags upstairs.

The essence of the ursī is the wooden room. These [carpentry] skills have left us, and so has the artistic spirit, and the carpenters. They were working without [certificates]. There were no academies to graduate from. All the carpenters that were working, they learned by doing.
GENERATING 3D SPACE THROUGH VIDEO frames extracted from Sabah’s video
GENERATING 3D SPACE THROUGH VIDEO point cloud of facade
GENERATING 3D SPACE THROUGH VIDEO point cloud of courtyard
GENERATING 3D SPACE THROUGH VIDEO point cloud of outdoors livingroom
MUQARNAS

Etymology: Muqarnas (مقرنص), type of corbel used for decoration. Passive participle of qarnīs (قرنيص) of disputed origin, thought to be from Greek korōnís, “curved”.

This three-dimensional puzzle is a vaulting system of bored shapes, frequently likened to honeycombs or stalactites. Found in many forms across the Islamic world, from simple and functional to strikingly elaborate, it serves to seamlessly blend wall and ceiling.

The Iraqi muqarnas can be painted, adorned with stuccoes, or even occasionally embellished with mirrors, and is found above entrances, on cornices, alcoves known as īwān, and column capitals. A hallmark of upper-class early houses, this feature is a rare use of plaster by Baghdadi craftsmen.

1. The plan projection of the muqarnas is carved into a plaster board reinforced with reed inlays, which are exposed to form the lower boards, each corresponding to a row of the muqarnas. These are then glued to the wall.

2. Pieces of brick are placed along the outlines of each board to form a vertical framework.

3. Lastly, plaster is applied to the framework with a trowel, creating prismatic surfaces.

Geometry of the dalag muqarnas

1. A leaf-shaped surface, with its upper bent outwards to project a triangular plan, is rotated around an octagonal shaft.

2. Following the outline of the lower surface, a second level of “bent leaves” are extruded upwards, this time slightly folded vertically.

3. This process is repeated, with each level being gradually modified for the final level to fit a square frame.

DALAG

Etymology: Dalag (دلك), wooden pillar. Probably from Ottoman Turkish direk: “column; prop; support”.

The wooden muqarnas capital is an integral part of the wood framework that goes into the finished high house and is an almost unique to Iraqi architecture. While the shaft is typically unadorned, reserved for occasional floral carvings at its peak, the capital comes in countless designs from the humble to opulent and extravagant. The natural wooden finish is often left as is, only at times enrobéd entirely in a single hue such as yellow or green.

These columns are not big on bases—a most of them rest on a few stones. The shaft docks onto a 0.4 × 0.4 meters footing, going 1.0 to 1.5 meters deep into the ground. Upper-floor columns stand either directly on popular architraves or on short mulberry wood slits or palm architraves due to the palms poor resistance to perpendicular pressure. The crowning capital might look like it is holding everything up, but the upper-floor beams are actually resting on the column shaft that extends through it.

Sculpted fragments

The capital contains many vertical rods which line the octagonal shaft and are held together by a square frame atop. Each rod is carefully cut at the bottom end to produce the characteristic stacked semi-domes of muqarnases.

WOOD TYPES

Poplar wood: Euphrates Poplar is the go-to for urban settings because it is the only strong native wood around. Often transported on the Tigrs from the northern parts of the country.

Date palm wood: Disappointingly high price point, used for constructional elements such as beams due to its local availability. Date palm wood has poor load-bearing capacity and is mostly found in old rural houses.

Mulberry wood: Valuable and only used in small quantities for the benefit of its durability. Wealthier households may splurge on such imported Indian wood.

Sabah says:

The Baghdadi dalag is, with regards to detailing, spectacular. It differs from the one in Basra, and the one in Najaf. Every dalag is special. The pieces of wood are all small, and nails, and such details... The dalag by itself shows aesthetic value and engineering, which the Iraqi carpenter contrived. Nowadays, no one is learning how they used to construct the dalag. [The knowledge] will disappear. That is that.
Etymology and Translations

Architectural elements

‘araqchīn (عرقجن), elaborately ornamented flat dome in the sirdāb, made from brickwork. Named after a traditional skullcap, worn by Muslim men. From Persian *araqčin* with the same meaning.

anbār (أنبار), storeroom on the ground floor.

bādgīr (بادقیر), windcatcher. From Persian *bādgir*, a compound of *bād* “wind” + *gir* “catcher”.

dalag (ذلك), wooden pillar. Probably from Ottoman Turkish *direk* “column; prop; support”.

ganjīnah (كنجينة), raised food storage. From Persian *ganjine* “treasury; depository”.

muqarnaṣ (مقرنص) type of corbel used for decoration in Islamic and Persian architecture. Passive participle of *qarnīṣ* (قرنیص) of disputed origin, thought to be from Greek *korōnis*, “curved”.

shanāshīl (شناسیل), wooden oriel. From Persian *šāh-nešin* “alcove with cushions”, a compound of *šāh* “king” + *nešin* “sitting”.

Living spaces

bokchah (بكجة) small garden in the ḥōsh. From Persian *bāğče* “small garden”, diminutive of *bāğ* “garden”. Maybe through Ottoman Turkish.

dīwān-khānah (ديوانخانة), designated space in the house for male guests. From Ottoman Turkish, a compound of *divān* “council; bureau;
council chamber where a court is held” + ħâne “place; house”, ultimately from Persian with similar meaning.

ḥaram (حرم), designated space in the house for women and children. From the root h-r-m, related to prohibition, sacralization or excommunication.

ḥōsh (حوش), courtyard; (colloquially) home. From the root h-w-sh, related to enclosing.

īwān (إيوان), rectangular portico or hall, to one side completely open and often vaulted. From Persian eyvân with the same meaning.

kabishkān or kafshkān (کبشکان or کفشکان), small mezzanine between the upper floor and roof. From Persian kafsh ”shoe”; originally, it referred to the hallway underneath the kabishkan where shoes were taken off.

khalāʿ (خلاء) emptiness; void; privy; seclusion; (euphemism) latrine. From the root kh-l-w, related to emptiness and void.

mābayn (مابین), entrance hallway connecting the dīwān-khānah and the ḥaram. A compound of mā “that which” + bayn “between”.

marāfiq al-ṣaḥḥiyah (مرافق الصحة), sanitation utilities.

mirzāb (مورزاب), roof gutter. Tool noun from the root r-z-b, related to sticking or clinging onto.

nīm-sirdāb (نیم سرداب) or nīm (نیم), semi-basement. Today often simply called sirdāb “cellar”. From Persian, a compound of nim “half” + sirdāb.

saṭḥ (سطح), roof terrace. From the root s-t-h, related to spreading out, unfolding and leveling.
sirdāb (سردار), (historical) underground cellar; (today) semi-basement. From Persian sardâb “ancient underground halls, cooled by passing water from aqueducts”, a compound of sard “cold” + āb “water”.

takhtabōsh (تختبوش), wooden platform in the nīm. From Ottoman Turkish, a compound of taht “raised structure; throne” + boş “empty; useless”, cf. Turkish tahtaboş “balcony”.

ṭalār (طلار), colonnaded lounge open towards the ḥōsh. From Persian tâlār “hall, salon”, ultimately from Proto-Indo-European trab- “dwelling, room”, whence Swedish torp.

ṭārmah (طارة), upper-floor gallery, encircling the ḥōsh; veranda. From Ottoman Turkish tarim “low-roofed cabin; roofed structure”.

ursī (أرسي), main lounge with a wall of sash windows, adorned with latticework. From Persian orsi “sash window with stained glass”.

gubbah (كبة), room.

ōdah (أودة), room. From Ottoman Turkish oda ”room”,

Materials

bāryah (بارية), reed mat made of papyrus canes.
safṣāf (صفصاف), willow.

shaylmān (شيلمان), or shīlmān, steel girders. Unknown origin.
kāshī (كاشي) Iraqi terrazzo tiles.

The four historic districts Baghdad

Al-A‘zamiyyah (العظمية)
Al-Ruṣāfa (الرصافة), historic centre within the old city walls.

Al-Karkh (الكرخ)

Al-Kāẓimiyyah (الكاظمية) one of the more conserved areas, a pilgrimage site for Shiites.

Social terminology

adab (أدب) courtesy; civility; decency. From the root ’-d-b, related to education and manner.

mastūrah (مستورة), passive participle of the verb satara (ستر) “to cover; to protect; to veil”. From the root s-t-r, related to veiling.

sitr (ستر), covering or barrier that shelters and protects or restricts. From the root s-t-r, related to veiling.

Verbs

malṭ (ملط), to plaster, to mortar. Derived from milāṭ (ملاط) “binding agent; mortar”, from Aramaic mlāṭā “mortar”.

labkh (لبخ), to slap; to plaster, to mortar.

darbūnah (دربونة), narrow street, lined with shanāshīl.
INTERVIEW WITH SABAH AL-SA‘DI

by

Karin Allvin & Jimmy Ibrahim
THE INTERVIEWEE

Sabah Al-Sa'di is a passionate antique dealer in Baghdad with a strong interest in Iraqi architecture. He regularly shares his findings on his Facebook page and has given lectures on traditional architecture at Al-Mustansariyyah University and the Baghdad Museum alongside architecture historian Ihsan Fethi. Despite lacking an academic background in architecture, his knowledge is, together with his extensive photo and video archive, invaluable. We interviewed him via FaceTime while he worked in his store, after being introduced by Jimmy's uncle.

SS: Sabah Al-Sa’di, interviewee

JI: Jimmy Ibrahim, interviewer

AH: Amer Hussein, translator a.k.a. dad
FIRST QUESTION

**AH:** Why are you interested in old houses?

**SS:** Sure. Iraq—concerning the heritage, and the civilisation—we were the world’s first writers, with the cuneiform script. We endowed humanity with everything you see in civilisation; it all began on Iraqi soil. The wheel, the code of law, the cuneiform script. It all comes from Iraq. Even astronomy and cosmology. [That is when] man taught mankind about civilisation. It is true that, currently, we benefit from foreign technology. However, the “beginnings” are mainly from Iraq. We are the oldest civilisation. even older than the ancient Egyptians. [Inaudible.] Certainly, we are attached to our history, and thereby we love the ancient. The link between the past and the present is [maintained] when we inquire the past.

Iraq, by the way, differs in its climate and landscape from other countries. If you see the buildings in Turkey, they differ from those in Iraq. Because the nature of the ground in Turkey is rocky. Rocks and stones. But we, our land is alluvial and muddy. We build with mud bricks. Because we do not have… especially in Central [Iraq], and in the South. I am talking about the Centre and
the South. That is, excluding the Northern region of Iraq. So, when it comes to Turkey, they build with rocks, [at least] in the past. It was accessible to them. Therefore, our civilisation differs. Mud buildings always run the risk of deteriorating. That is, if there is no conservation. Why? Because we build with bricks made of mud. You know mud? And gypsum\(^1\) with quicklime\(^2\).

And we have another essential substance, which Iraqis have been using—and the Sumerians\(^3\), too—which is tar\(^4\). And so did the Europeans and other warm countries around the Mediterranean, or around the Indian Ocean. There are correspondences between them, the Sumerians and Zanzibar. Well anyway, anyway… Or Oman, or Bahrain which was called Dilmun in the past. They were all trading for Iraqi tar, which springs from Hit, and in Mosul from Qayyarah. They used it for marine coatings. What I am telling you is not about present-day, rather about thousands of years ago.

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\(^1\) \textit{juşş.}

\(^2\) \textit{nūrah.}

\(^3\) Sumer is one the cradles of civilization of the world, known for inventing the earliest writing system.

\(^4\) \textit{qīr.}
years ago. In their correspondences, in those times—that is, in the Sumerian writings—they were asking for Iraqi tar. Since [inaudible] characteristics and advantages…

[AH interrupts and says he wants to ask the next question.]

SECOND QUESTION

AH: If there were any positive aspects of the old Iraqi houses, then what were these aspects in your opinion?

SS: The Iraqi architecture—because the Iraqi climate is so hot… You know our weather differs from yours. Your weather is cold. Your dad knows [this] that we… the Iraqi architect, and the Iraqi artist invented sarāḍīb⁵. With it, they developed a ventilation system which they call bādgīr. As for the bad air, this is how it changes. I assume similar systems exist in other countries, but for us—because our weather is hot in the summer—people escaped the heat by going down to the sirdāb. And a child of Kazimiyah

⁵ Plural of sirdāb “cellar”.
will know these things. So, they go down to the sirdāb for the coolness. The temperature is lower than above, inside the ḥōsh.

The design of the Oriental house—or the Iraqi one in this case—our house is called ḥōsh. That is, the ḥōsh which has an open void within. And the rooms which are facing it. What do we find inside? There is a garden called a bukhchah. In [Ottoman] Turkish, they call it a bağçe, so colloquially we call it a bokchah⁶. In the bokchah, one may grow buckthorn trees, pomegranates, bitter oranges, or other common trees.

[AH chimes in and says, “or a palm tree”.

Or a palm tree. Indeed, Iraq is known for its palm trees.

You know the Arabs have their background in an honour [culture]. The clothing, and so-and-so. The woman did not go out in the past. The man went out to do the groceries. So oftentimes  

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⁶ Sabah implies here that bukhchah is the MSA form, while bokchah is Baghdadi Arabic. However, his pronunciation of the supposedly Turkish loanword reveals that Iraqis actually borrowed it from Persian, which is the etymological origin for this word.
the woman would find herself inside the house. [The men] made sure that no one saw her. They would build the house as to ensure the family was veiled\(^7\). The veil\(^8\) means the *sitr*\(^9\). You [Swedes] do not have this word. What does veil mean? It means *sitr*. And where is it? It is on the high roof. It veils the woman, and especially the family, [when] in summertime, they sleep on the rooftop. In the past, the families slept on the roof.

**AH:** Yes, we were all sleeping on the roof.

**SS:** Regarding the veil of the building, it is called a *sitr*. That is, the high veil with the enclosure which is internal and the veil which is external.

[AH interrupts to, unsuccessfully, explain *sitr* to me in Swedish.]

\(^7\) *Mastūrah*, from the root s-t-r, related to veiling.

\(^8\) *Sitārah*, ”veil; curtain”, from the root s-t-r, related to veiling.

\(^9\) *Sitr*, ”covering or barrier that shelters and protects or restricts”, from the root s-t-r, related to veiling.
When you enter the *mijāz*\(^{10}\), you know, in an Oriental house… The *mijāz* is made long, and there is also the veil. Why? [When] entering the *mijāz*, or knocking the door, then if the door were open, there would not be any issue. Because there is a veil inside the *mijāz*; it veils against the one entering the house.

The door knockers, there are two [of them]. For whom? One for the women, and one for the men. The men’s door knocker is big, and the women’s door knocker is a little… smaller. Also, there is sometimes a door knocker—of course, this is not common—but in some houses [a door knocker] is lowered for the children. You see? So, a door knocker for men, a door knocker for women, and a lowered one for children.

The Iraqi carpenter created artwork. He worked with houses more than the mason, who knocks\(^{11}\) the bricks. And the *nājūr*\(^{12}\) who carves the brick, he pulls it. He [engraves] them with verses. That

\(^{10}\) *Mijāz* “Hallway”.

\(^{11}\) To knock bricks in Iraqi Arabic means to lay bricks, so called because the mason uses a sledgehammer to fix the bricks onto the mortar.

\(^{12}\) “Kiln”, according to AH. However, that does not make sense in this context.
is, on the façade of the house. He might write the date, for example “1302”\textsuperscript{13}. He might write “mashallah”\textsuperscript{14}. Basically, he writes on the house, or [makes] floral arabesque. Indeed, the floral arabesque, if there is a wood carpenter. Or a mason might do it in plaster. If you see the old Baghdad houses, [the arabesque] is either moulded in gypsum, or the carpenter includes it in the door ornament.

This carpenter works with the house more than a stonemason. So, a stonemason works with the ground floor for, let us say six months. On the other hand, the carpenter works for one and half years, because of the \textit{shanāshīl}, and the \textit{dalagāt} upstairs. They call it \textit{dalagāt} and not \textit{deneg}, the old \textit{dalag}. The Baghdadi \textit{dalag} is, with regards to detailing, spectacular. It differs from the one in Basra, and the one in Najaf. Every \textit{dalag} is special. The pieces of wood are all small, and nails, and such details… The \textit{dalag} by itself shows aesthetic value and engineering, which the Iraqi

\textsuperscript{13} 1302 AH (in the year of Hijra) corresponds to 1884 in the Common Era.

\textsuperscript{14} Literally “what God has willed”, used as an expression for gratitude or blessing.
carpenter contrived. Nowadays, no one is learning how they used to construct the dalag. [The knowledge] will disappear. That is that.

We have talked about entering through the hallway, and after that comes the diyu-khānah\(^{15}\). The diyu-khānah is the space for guests. Meaning that he receives his guests in it. As for the lavatories, before your parents’ [time], we used to call them adab-khānah\(^{16}\). Khān means place. Later, they called it khalā’\(^{17}\). Where men or women give in to their needs. Then, with modern development and such, we started calling it marāfiq al-ṣāḥḥiyyah\(^{18}\), or ṣiḥnah\(^{19}\). Understood?

[Unrelated conversation proceeds]

\(^{15}\) Also known as dīwān-khānah, from Ottoman Turkish divān-ḥâne (divān “council; bureau; council chamber where a court is held”, from Persian divān with similar meaning; ḩâne “place; house”, from Persian xâne “house”).

\(^{16}\) Adab “courtesy; civility; decency”.

\(^{17}\) Khalā’ “emptiness; void; privy; seclusion”, here a euphemism for latrine.

\(^{18}\) Marāfiq al-ṣāḥḥiyyah, roughly “sanitation utilities”.

\(^{19}\) Ṣiḥnah, unclear origin. Can mean “yard; courtyard”.
THIRD QUESTION

**AH:** We have talked about the good things now, but what was not so good that could have been done differently, or that could have been improved?

**SS:** [Because of] the nature of Iraq, there are no other buildings materials than [the ones mentioned earlier]. Later, the brick manufacturers started learning. In the thirties, and the twenties, the Belgians brought us the *shaylmān*. With modernization and development, the Iraqis started using the Belgian *shaylmān*. Indeed, it entered the Iraqi industry when the railway came. Through the railway, cargos arrived from Europe. And so, the *shaylmān* came to us. They started using it around the 1920s, when the cities grew.

Despite this, we still have old houses, and I assume you mean that these have weaknesses, but they do not. They do not have any weaknesses, because houses in the past were made of palm logs. You know, they call Iraq “the land of darkness”, because of the

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*Shaylmān* “steel girders”. Also *shīlmān*. 
abundance of date palms. They used the palm trunks for roofing. And also ṣafṣāf\textsuperscript{21}. This is a tree species. I do not know if you have these in Sweden, or what you would call them.

\textbf{JI:} [In Swedish] We will have to look it up later.

\textbf{AH:} He says we will look it up later.

\textbf{SS:} Look it up. Roofs were made of palm logs, or ṣafṣāf, before we had the \textit{shaylmān}. On top of these, they put \textit{bāryah}\textsuperscript{22}, made from papyrus canes. The \textit{bāryah} is similar to a carpet, or a prayer mat, but woven with reeds instead. They put it on top of the [tree logs], and then cover it with sand. And on top of the sand, they do something called \textit{malṭ}\textsuperscript{23}. It is an old word. You know how we today say \textit{labkh}\textsuperscript{24}? In the past, they said \textit{malṭ}. They plaster [the

\textsuperscript{21} Ṣafṣāf “willow”. Likely referring to the Euphrates poplar, and not the similarly named Safsaf willow, which is unsuitable for building.

\textsuperscript{22} Bāryah “reed mat made of papyrus canes”.

\textsuperscript{23} Malṭ “to plaster with mud or mortar”.

\textsuperscript{24} Labkh “to slap”, evidently also “to plaster” in Baghdadi Arabic.
roof] to make it even, so that the water runs forward to the *marzīb*²⁵. The *marzīb* empties the water onto the street.

These houses are cool in the summer, and warm in the winter, meaning that [the temperature] is not constant. However, the developed and modernized [society] compels you to, for example, own a certain car, like “model fifty”. Certainly, your model [two?]²⁶ takes you from Baghdad to Basra, and from Baghdad to Mosul. But sure, the speed is slower, it lacks air conditioner, and so forth. [Greets a customer.] Therefore, the desire exists. The thought of [model fifty] exists. It is the same car, but upgraded with higher speed, air conditioner, and more specs. But this house does not have any weaknesses. Today, we have houses in Kāẓimiyyah built in the [old] way, and they are long-lived, having stood for two to three hundred years. Our house, next to the other. [Greets a customer.] It has no problems.

²⁵ *Marzīb* “gutter”.
²⁶ 14:51
**AH:** It means that there are no weaknesses, there is nothing bad. [In Swedish] There are no weaknesses.

**SS:** In one case, the problem of old houses is when you caulk with fillings. For any old house, you must care for its roof. Because look: recently we had a downpour or two, and we lost some old houses. The neglected roofs did not hold off the seeping [rainwater]. The roof is layered, and the gaps between one layer and the next must be dealt with. Before the use of cement, they caulked the gaps between the layers with plaster. And the water leaked through and continued towards the marzīb. Later, when they started treating it with cement, [inaudible]\(^{27}\) the old [roof], they left it. Who leaves it? Where is the water supposed to go? It will gush out down the walls. As you know, with all the mud, the moisture damages the house. So, the most important thing with traditional houses is to care for their roofs. If the roof is treated in an engineered and correct manner, the house may grow hundreds, even thousands, of years old.

\(^{27}\) 16:19
We have Ṭāq Kasrā—although it is actually Persian, or Sasanian, and not an Arab monument. It has the oldest still-standing arch in the world, and it is located in Iraq. A small part of it is left. And what material is it made from? It is burned brick, gypsum and tar. They have treated its arch, above the building materials, with gypsum, so that water escapes towards the sides. Even before the wake of Islam, and before al-Qādisiyyah, it was used in the palace of the Shirvanshahs and in the palace of Kasrā, in al-Madā’in near Salman Pak. So, we do not have any

28 Ruins of a Persian palace from the third to sixth century, also known as the Arch of Ctesiphon, located 35 km south of modern-day Baghdad.
29 The last Iranian Empire before the Muslim conquest of Persia in the seventh to eighth century.
30 Historical Sasanian city, and scene for the Battle of al-Qādisiyyah—the first decisive victory in the early Muslim conquests in Iraq.
31 Fifth-century palace built by the rulers of Shirvan—a Persian vassal state, known as a focal point for art and culture, and described by UNESCO as "one of the pearls of Azerbaijan's architecture".
32 Archeological site meaning “the cities”, alluding to the ancient capitals of Parthian Ctesiphon—the site of Ṭāq Kusrā—and the Greek Seleucia, which merged into a metropolis under the Sasanian Empire.
33 Modern-day city near the archeological site of al-Madā’in.
difficulties with mud buildings. They are not built like what they have in Turkey, or in Europe: with stone. No, it is built with local materials from Iraq.

[...]

FOURTH QUESTION

**AH:** This is a very important question. The old Iraqi building mimics the lifestyle of the past. These old houses would provide people with what they needed. Now, in present-day, [our lives] have changed, and so have our demands. What must change for these [houses] to stay in fashion? What do they lack that calls for a change? [Talking to JI] Is that right?

**SS:** Does he mean what materials that they still use…?

**AH:** No. He is saying that in the past, people had to, for example, build ventilation systems, or a *sirdāb*, they had to make certain rooms out of wood, or cover windows with camelthorn to cool the incoming air. So today, what things would we substitute, or not keep, while still conserving the Baghdadi house, say if wanted to build one today?
SS: This is difficult. Of course, you could build something like the Fortress of al-Ukhaydir\textsuperscript{34} today. And I can see that your son has a high level of education, [inaudible] do not speak Arabic. So, we can build similarly to the Fortress of al-Ukhaydir in the deserts outside of Karbala, which the Finnish architect who built the Conference Palace\textsuperscript{35} in Iraq, in 1982… A Finnish company and a Finnish architect built it, aided by a public consultation with Iraqi architects. And the inspiration for this building was the Fortress of al-Ukhaydir. [Inspired] by its curvatures, the elevations, the voids and the domes, he built a [new] Fortress of al-Ukhaydir.

But even though it is possible to build a similar building, [you can still make it] without the ventilation techniques, without the cooling techniques, and with electricity. Just as you wish. We could [also] build it identical to the fortress, with the same local materials. They are still here. But can you revert a modern civilisation to an ancient one? The ancient man was used to, for

\textsuperscript{34} An Abbasid fortress from the eighth century, located 50 km south of Karbala, Iraq.

\textsuperscript{35} Baghdad Conference Palace was designed by Heikki and Kaija Siren and completed in 1982.
example, having their camels entering the house and sleeping inside, and so on, while the caravans were visiting and leaving. Today, in a developed society, is it thinkable to carry around a lantern, or to light an oil lamp? This is unthinkable. Did I understand his question?

**AH**: No, or almost, but you did not answer it precisely. So, for example, in the past, one had to use a lantern. And nowadays we have light bulbs. If we built the same house, we would not use a lantern, but rather a light bulb…

**JI**: [In Swedish] Well, that was not actually the question. Rather, for example, we have the *ursi*. Is there any need for this kind of room nowadays, or do we need something else? Let us say, bedrooms for the children, and so on.

**AH**: He says that in the past you had to have an *ursi*, which is the big room that was mostly used by the guests. But today, every child needs his own bedroom…

**JI**: [In Swedish] I am not really talking about bedrooms specifically.
**AH:** Ok, so the bedrooms are not a necessity. But [the house owner] *might* set up a bedroom for his child. So, could we substitute a normal room for the *ursi*?

**SS:** You know, this question is very good. The essence of the *ursi* is the wooden room. These [carpentry] skills have left us, and so has the artistic spirit, and the carpenters. They were working without [certificates]. There were no academies to graduate from. All the carpenters that were working, they learned by doing. We have Iḥsān Fatḥī, an architect whom I am sure that he knows of…

**AH:** All his literature is in fact by Iḥsān Fatḥī. He actually tried to reach him; he lives in Ireland now. No, sorry. Was it Wales?

**SS:** Yes, Fatḥī and I had a lecture together on the Baghdadi house. He was talking about a building along Hayfa Street. And these buildings on Hayfa street are [inaudible]. And their inspirations, an Islamic [inaudible], are touched by Qaḥṭān ‘Awnī, Iḥsān Fatḥī
and other Iraqi architects. Surely, when I speak to you, I am only a hobbyist.

[AH starts praising SS’s knowledge, who in return offers to tour us through the archaeological sites of Iraq, and then proceeds to tell us an interesting anecdote about the eighth-century princess Zubaydah and her aqueducts through the desert.]

**FIFTH QUESTION**

**AH:** How should we care for the old houses, and conserve them? Are there architects, or carpenters who know how to replicate its architecture? And, whose responsibility is it? Is it the state, an organization, a foundation, ordinary people, or the house owners? Of course, in his own opinion, he wants to hold the government liable for…

**JI:** No, please. Let him answer.

**SS:** If there are organizational efforts, or volunteers, then these [houses] are in fact archaeological areas, and they need documentation. You know, all archaeological sites belong to the state. We cannot just walk into Salman Pak and Ṭāq Kasrā and
tell everyone to leave because we are going to excavate there now. There are no such things. These are state efforts. The state is responsible for archaeological sites. The raw materials are there, the will is there, and now we have young people, like you, with knowledge and prospects. Even [among] adults and old people. There are people in Iraq with prospects. Look, there is a lot of crap in Iraq, [the state] has not taken its opportunities or claimed its right. [Iraqis] have not taken what is rightfully theirs as to create jobs. There are many seniors from our parish who come to me in the museum, or I see them on al-Mutanabbi. They have skills, and they can work and rebuild.

First of all, we have gypsum, which is found in the western region of Iraq. Just to clarify the situation. And there are the finest types of gypsum in the world. It was used as a binding material for thousands of years before we had cement. No one knew of cement back then. They used to work with gypsum, or a material called

37 Street in Baghdad, known for its bookstores and a centre for the literacy community.
ṣārūj\textsuperscript{38}. It is a mixture of quicklime and gypsum. This mixture is stronger than cement. So, the gypsum is from an area called Al-Garmah, which is close to Fallūjah\textsuperscript{39}. There we have gypsum mines. We also have a sand called Khyber sand. The Khyber region was in Parthian territory around the time of the Romans. This is a moist sand that was used extensively in the Iraqi “cement”. So, they sourced the gypsum from Al-Garmah and then the sand, and the bricks, or rather the clay, is widely available, and we have it in in every region here. Thus, all the raw materials are available. However, [the exploitation of these] is a state matter. Look, I have seen in Dubai, and the Sultanate of Oman, that they repurposed a building, as you preferred, as a museum with

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{38} Ṣārūj “lime plaster”
\item \textsuperscript{39} A major city, 65 km west of Baghdad.
\end{enumerate}
\end{footnotesize}
Rising masonry/ Masonry construction work (p. 60)

The enclosing walls are strong, usually stronger than the dead load, usage load and building height would require. The thickness of the wall should block the sun's rays, so that the rooms do not heat up so quickly. It should also provide protection against enemy bullets, but in many cases its excessive thickness is probably due to the poor quality of the material with which stable walls of small width is not possible to build.

The smaller dividing walls are as weak as possible and often consist only of vertically placed bricks or plaster straw about 6 cm thick; or they are strongly built and are then completely interspersed with niches for wall cupboards. The domestic life of the Oriental is based on a patriarchal foundation. Most activities take place in a common room or in the courtyard in full view of everyone. No one has any reason to build soundproof walls in their house. Even musical instruments are so quiet that their sound is almost absorbed by every thin wall. It seems as if the memory of the tents of the old nomadic times with their thin partitions
made of goat's hair felt, as they are still to be found among the Bedouins today, influences the design of the thin partition walls in the dwellings that have become stone and solid. They prevent sight rather than sound. Connecting doors in partition walls between adjoining living rooms are something unusual and hardly ever occur.

Alterations to the masonry made of clay mortar and bricks can hardly be made without destroying the whole, especially as there is usually a lack of bracing material. As upper part of walls and on the same storey, roll courses are often arranged. Metal is rarely used to cover the top of free walls. One helps oneself by applying a strong pack of clay or concrete masonry in clay, which is renewed as needed. In this clay pack one also puts dry, thorny desert herbs into this clay pack for the reasons already mentioned above.

(Fig. 66 flgd).

An important component is the attic-like partition walls, which separates the flat roof terraces of the houses from each other. They are intended to prevent the neighbour from looking over. Even though in Iräq the roof terrace is not reserved for women alone, as it is in North Africa, for example, a good part of domestic life takes place on it, and in summer people are also used to sleeping on the roof. Therefore these end walls are often 2 m high (Fig. 67 a, b, c, d). However, if they only serve the purpose of a balustrade, they are hardly knee-high. The master builder knows how to make them look different by all kinds of construction,
varying arrangement of the bond and interruption of the masonry to at
the same time beautifully ornament and decorate the buildings. He builds
them both in "shaft and shield", the shields of bricks on the high edge
between thicker shafts, as well as in the form of transparent balustrades
(Fig. 68 a, b, c, d). On detached buildings in the flat countryside and on
the houses of certain towns, these end walls are crowned by crenellations
or they have embrasures (skrymslen) and lugs (klackar). The battlements
have a fortificatory meaning, especially in the first-mentioned buildings,
but in many cases they are only ornamental. A similarity with the
battlements of ancient Babylonian fortifications is sometimes not to be
seen (Fig. 69 a-h).

**CHAPTER 2 (P. 128)**

**Roof coverings (p. 128)**

It is easy to write about the different types of roofing. The conditions to
provide protection against heavy rain or even snow, or to keep out the
cold, are no more given for the roof of the Iraqi stone houses than for the
thin roofs of the hair felt tents, as for the thin roofs of the hair felt tents
or the cane mat-covered zren (zrefen). The climate of the country is so
dry that to think that the most important purpose of the roof is to protect
the buildings from dampness from above, is illusory. The roof has the
other purpose of providing protection from the sun, and in addition the
horizontal roof surface formed as a terrace, is a traffic area; a place
intended for staying in the evening hours and for setting up the beds in
the rainless, oppressive months of May to September. This roof terrace forms a kind of storey in itself with side walls but without a ceiling. In accordance with its purpose, which is to provide permanent accommodation for the occupants of the house, there are many lavatories at the top, so that no one has to go down into the courtyard to take care of their needs.

The roofing materials consist of bricks, clay, straw, wood, reeds and mats. As sun roofs for the hot season, canvas tarpaulins are often pulled over entire courtyards.

Roofs with a pitch are so rare that one may well say that the flat roof is the norm for the upper end of the buildings of the Iraq, and one can wander far from the Iraq in all directions of the wind rose before one finds the first tile-covered roofs with a pitch in larger numbers: To the north, as far as the Taurus, nor in towns like wan are houses other than flat-roofed rare. To the west Lebanon and the Red Sea, only on the coasts and in the rainy mountains are the roofs sloped. Towards the south, the Persian Gulf is still and even in Muscat and the whole of Arabia, there are no steep roofs. To the east, in Persia and further on, such roofing of the houses will become general.

The brick material which I found especially on the buildings in Lebanon and Antilibanon, in Hermon, Arnanus and the Taurus, as well as in the mountains of Palestine, were almost always in the shape of a pan and depicted either a nun and a monk or an undulating pan. In many
cases the roofing was dry and did not contain any mortar. Sometimes the
tiled roof was covered with a clay layer about 15-20 cm high. was
applied. In Iraq, too, pan tiles, half of which are embedded in clay, are
used to drain the roof edge, half embedded in clay (Fig. 171 a).

In Iraq, the roof is a slab roof. (Fig. 172 a, c.) Mats or hammocks are laid
on the upper mats or hurdles of branches and twigs are spread over the
top layer of beams. of the insertion. On the flexible and fibrous squared
timbres of the flag trunks or the often crooked, always unshod lumber of
poplars, it would be difficult to fit a slab shoe. On top of the mat, a 3---
15 cm layer of sand or clay, or clay with a layer of sand on top, into which
the bricks are laid, usually 0.15 x 0.15 x 0.04 m or 0.20 x 0.20 x 0.04 m
in size, laid flat as a slab covering and laid flat and grouted with gypsum
mortar. The square slabs are laid either parallel to the parapet ends or
diagonally. With the latter type a frieze does not always run around.

Buildings whose roofs are not used, e.g. the long trains of the bazaar
buildings (suk), are given an upper frieze. (suk), have an upper finish
consisting of a series of hanging dome cupolas, which cover the square
compartments of the I ,annex spaces in the manner already mentioned
above. In many cases, a more or less carefully executed brick slab
covering is also found, or, in the case of lower-value installations, an
approximately 15-2.5 cm thick layer of chopped straw is applied directly
to the pipe mats or the hurdles (Fig. 171 b-d). The ends of such coverings
are, as far as they are not covered by the attics, cleanly chamfered (Fig.
171c), more rarely boarded up (Fig. 171 e) or plastered, but more often
made of tiles, between which the heads of the roof beams are embedded (Fig. 171 h, d). This layer of roof beams consists either of closely spaced poplar logs, which support the mats, or of quartered palm logs, of which there are usually three per metre of room length. To protect against the winter precipitation, branches and bushes of certain thorny shrubs mentioned above are temporarily piled up or immediately integrated into the top layer of the loam. They are supposed to break the pernicious \vucht of the short Iraqi downpours and thus protect the rather changeable mud roof from sinking too quickly. On many roofs there is a stone roller to solidify the mud after rains.

In a few cases I observed, for example on the roofs of some of the clock towers at the larger (Meshhed Hussein, Karbala), and on cantilevered sunshade roofs in the courtyards of the sanctuaries like private houses, a plaster or mud screed on wooden sheathing.

Roofs made of metal, or rather with metal cladding, were observed the canopies over the exits of the minarets of larger mosques and on the charming canopies of their clock towers. They turned out to be wooden constructions metal (copper, lead, gold plate) (Fig. 173).

Above the bazaar streets of the smaller towns, a kind of pitched roof constructed as a sunshade (Fig. 174 a). It consists of palm wood beams or poplar wood beams, leaning against each other, nailed or tied together, and covered with a longitudinal brace in the form of a few thin pieces of sawn timber. These gable roofs of highly perishable construction are
covered with mats and shrubbery in such a way that only small air and light holes remain. - Above a coffee house near Ahmed il Kahja in Baghdad and in a few other places, I even observed a gable roof of the above type, which was equipped with a clay cover. The triangular faces of its gable walls were bricked up with those tubular bricks and allowed the smoky air to escape without allowing the sunshine to enter (Fig. 17-4b).

Pipe mats on bent palm leaf ribs or over a simple wooden construction can be found in the wooden construction can be found in the movable buildings of the more mobile inhabitants of the country (Fig. 17-4c).

In Babylonia, the art of wickerwork has been practised since ancient times, and on the buildings of Nebuchadnezzar's buildings, both in the imprint (Kasr) and in the original (clay wall of Babil) patterns have been left behind. Although these mats, brought to us in this way, have a different use, namely as inlays in full masonry, there is no doubt that the ancient Babylonians also made their mats in the manner discussed above, namely as sunshades for roofs and as floor coverings. Some of the wickerwork patterns most commonly used today are shown below (Fig. 17-5 a-f).

The roofs made of black goat's hair felt, which represent the tents of the free-sweeping Arabs (Orban, Beduan), are not considered in this paper. As a safeguard against prying eyes and protection against the sudden
gale-force winds of summer, the bedsteads on the roof, which are sometimes built up like bricks, are often placed near the high attics with their draught tubes. At Jenbel Sinjar (Wurdije), I observed curved protective walls of mud and masonry, about 1 m high, on the roof terraces of the houses, to protect each bed site. Their backs curved towards the direction from which the regular and main attacks of the weather came. The night camps were then set up in the lee of the hollow sides (Fig. 176). The drainage devices of the roofs are not treated with much care, but they rarely have to serve. It is usually thought to be enough to give the terrace floor a little fall or to make a few hollows on one side. The water that collects behind the parapet at the foot of the slope or in the hollows during rain showers is drained off directly through the parapet masonry to the outside with the help of drainage spouts. The drainage nozzles are wooden gutters open at the top or closed tubes made of tinplate and copper (Fig. 177). As drainage for the steps of the tambour and the stepped corners of hanging dome buildings, I observed at the mosque of Abd ul Kadir in Baghdad open gutters drawn into the vertical masonry wall at the edges, which led the splashing water from step to step, to finally let it flow out from the lowest into drainage spouts. Metal gutters and closed waste pipes are quite rare. Generally, the water jet is directed directly from the roof onto the yard and street, just as all kinds of rubbish are thrown onto the street without further ado. The floor of these streets in the cities, as it is mostly still without paving, becomes virtually groundless during rainy periods. But in those happy lands no business is yet so hurried that it cannot bear the delay during the duration of a few
rainy days. The inhabitants of Iraq shun the rain like cats, and as soon as it begins to rain, they hurry to find a sheltering roof, which they do not leave until the downpour is over. No one is in danger of falling under one of the many eaves so easily and without need. If, however, the flat roof itself cannot withstand the amount of water in the event of a rainfall, which is after all rare, and if it becomes permeable, then clay pots are simply moved under the affected areas to catch the drops. Once the weather has passed, the existence of the damage is immediately forgotten until it becomes apparent again during the next spring or even the one after that and again necessitates the measure of placing clay pots underneath. But no one decides to repair the damage so easily.

**CHAPTER 3 (p. 134)**

**Timber construction (p. 134)**

In one of the building inscriptions, as they are found with the stylus engraved in the foreheads of the bricks in Babylon, the king Nebuchadnezzar reports that he had cedars cut on Lebanon, in order to bring them to Babylon, and to use them here with the building of the castle. What kind of use this was, whether for the roof or for the storey beams, he leaves us in the dark.

I am convinced that the roofs of the houses and castles of ancient Babylon did not have an essentially different shape than those of today's buildings.
Living habits and climate have not changed so much in the country since that time that a flat roof would not have been as practicable then as it is now. One thing is certain: that the species of wood found in the country did not grow to sufficient strength and length to provide a timber with which to span the wide halls of those castles, and that it was therefore necessary to import beams of sufficient cross-sectional size and length dimension.

As in those days, carpenters and joiners in Babylonia are dependent on using almost exclusively imported wood. However, the existing timber only allows wide rooms to be spanned flat with layers of beams with the help of joist constructions, because they are usually, if not too short, then at least too weak. Larger halls can only be spanned freely with the help of brick dome structures. Any more significant wooden constructions, be they for roofs, towers or spurs, are nowhere to be found in the Laude. Therefore, there is little to report on this chapter dealing with room constructions.

The domestic woods that can be used are approximately the following:

1. The palm wood; the trunk of the date palm (Phoenix dactylifera; nachal) does not actually consist of wood, but is the derbfibrous elongated rhizome, which is gradually formed by the new growth of upper leaves and the death of lower ones. This woody rootstock is tough and flexible. It reaches a height up to 10-15 m and a thickness up to 0.50 m (rare). Its load-bearing capacity is low. If it is loaded evenly, it bends
very soon; if it is loaded unevenly, it breaks apart easily, especially when
dried out. Since it would not occur to anyone to cut down a palm tree
solely for the sake of timber, and since it is virtually frowned upon as
barbarism and is only customary in the fiercest feuds to cut down date
trees, only the trunks that break down due to old age or are felled by wind
and weather provide the timber. They are often perforated by the rides of
a finger-long and thick white larva, whose metamorphosis has remained
unknown to me. But I think it is a beetle larva of Rhynchophorus, the
palm borer. The constructions from the always cracked and warped palm
wood usually make an impression that inspires little confidence.
However, given the low loads they have to withstand, they are perfectly
adequate for use in residential buildings.

2. The wood of the Euphrates poplar (Populus euphratica, variety of
populus tremula), which grows in small forests along the Euphrates
River, is strong and solid, but it has the disadvantage that it often grows
crooked and cannot be used for building purposes other than for ceilings
and supporting structures in subordinate rooms and as scaffolding wood.

3. The mulberry trees (Morus nigra and alba; túth), which are planted
around the water hoists everywhere along the rivers to protect them from
the sun's rays and which often reach an enormous height and thickness,
are hardly used as timber. Because of the shade provided by their wide
tops, which is desirable for working, they are never cut down until they
become hollow and rot in old age.
4. The wood of the tamarisk (Tamarix Pallasii; tarfâ) is so crooked and weak that it can be used only as a hurdle or fascine to hold mud on roofs, or free, to walls of light huts.

5. The slender and straight trunks of various poplar species (Populus alba and nigra?) are cut from the area around Mosul or in the forests of the Kurdish mountains and floated down the Tigris. The wood is dense and of great buckling strength, so it can be used equally well for beams and columns. Due to its density, it is very heavy and sinks when lying in the water for a long time. The wooden rafts are therefore always given the necessary buoyancy by a base of inflated sheepskins. Such a raft is called kelek today and was known in the same form already in the ancient Babylonian times. Since the thickness of the poplar trunks rarely exceeds 0.30-0.40 m for a length of 6-8 m, the trunks must be braced by beams above larger spaces.

Furthermore, board wood is imported from India, because only narrow boards can be cut from the trunks of those slender poplars.

Lemon wood from Syria, sandalwood and ebony from India, and rosewood or jasmine and walnut from Persia are luxury woods used by woodcarvers and carpenters.

The materials available to the carpenter of Iraq are therefore limited in type and quantity. As a result, his artistry remained at a low level; for it
could only be modest. Timber constructions are avoided as expensive as possible and limited.

**Constructions from logs (p. 140)**

These constructions are almost always made of sawn timber, squared timber or logs. In the manner of our beams, the timbers are hewn only in the case of more outstanding constructions, or where they appear externally; thus, above all, in the ornate houses of the rich city dwellers. - The poplar trunks, which are always almost circular in cross-section, are always stripped of their bark before rafting and are planed or chamfered somewhat. The bent and curved logs are laid in such a way that their curvatures lie as far as possible in a horizontal plane above underlaid beams.

The palm trunks, if they have a larger cross-section, are split longitudinally into 2, 3 or 4 beams and mostly show wahn edges or even have the cross-section of a quarter-circle sector with two hewn sides and one round, raw side. In many cases, especially for joist layers, they are shuttered at right angles and appear as regular beams, especially on ceilings that remain visible from below without boarding.

The use of the ceiling structures by larger loads is insignificant. Almost all heavy furniture and even the stoves are completely absent. The cupboards, as described above, are mostly wall cupboards, the furniture is low and light: larger gatherings of people (wedding, dirge, religious
festivals, prayer exercises) usually do not take place in the closed room, but in the courtyard.

The wood dries out quickly and thoroughly and is always full of longitudinal cracks.

a. The joints are not very diverse, given the low level of carpentry and the low value of the material. The Iraqis have in common with the peoples of Islam the endeavor to avoid difficult wood joints. They like to avoid them by nailing and attaching iron and brass bands (Fig. 178 a, c). The lengthening of dwarf timbers is usually achieved by a simple straight or sloping blade, especially over beams or on walls. Elsewhere, the simple leafing and hammering are known. As an extension of columns, I observed grafting by means of a shoe of iron or copper (Fig. 178 b). Mortise and tenon joints are used only sparingly. Anyway, they only mean a weakening for the fibrous palm wood, which has little strength, without increasing the durability of the structure. Supporting and load-bearing constructions, reading in headbands, stiffeners and cleats, are known (Fig. 178 d).

b. Half-timbered walls are mainly found in the bay windows of houses (schenaschil), which are made of other materials only in rare exceptions. The cantilever beams embedded in the masonry usually have a slight upward direction, so they do not project horizontally, but at an angle (Fig. 189). They are supported by shorter cantilever beams and also by prefabricated brackets and usually tie directly into the masonry. Rarely,
they are interlocked with a sill that is flush with the outside of the wall. The sill is supported on these cantilevered beams without being interlocked with them. The stems are placed on the sill. They are often placed at the same distance from each other, thus forming a single window wall; the sills are stiffened and supported by sill and lintel beams. Oblique struts are very rare, as is the St. Andrew's cross. The filling of the compartments under the sill and over the lintel is done by bricks, clay, rubble stone, plaster or boarding in vertical, diagonal or horizontal direction. The projection is rarely more than 1 m (Figs. 42, 43, 75, 76, 179 a, b).
The frequently held view that the developed types of dwelling house originated from farmhouse forms is not universally valid. Both the ancient Orient and the West offer notable exceptions in the hilani and megaron, both of which developed from fortress gates.

On the other hand, one can generally attribute a particularly conservative character to the farmhouse and may assume that if the farmhouse and the townhouse have the same basic forms, these have been preserved in the more original state in the case of the farmhouse. For this reason, a brief introductory consideration of the types of farmhouses found in Iraq should precede the present treatise on the construction of dwellings in Iraq. The Iraqi farmhouses, as far as they are not tents or reed huts, fall into two clearly differentiated groups according to their plan.

The first, more primitive group is characterised by the juxtaposition of single-cell, rectangular room elements or huts around a courtyard. The simplest case, the single-hut house, is shown in Fig. 1. Even under these most modest conditions, a partition is made by a half-height partition wall
of reed mats. In houses with several huts, these are more or less loosely connected. As a rule, they are placed with their longitudinal axis parallel to the corresponding courtyard side, rarely they are perpendicular to it, as Fig. 2 shows. The entrances are preferably on the narrow side, which is of course only possible if there is a space between the individual rooms, otherwise the doors have to be on the broad side, but then they are often placed directly at the corners. Connecting the rooms to each other with doors is generally avoided. The aforementioned space between two huts is often covered over to form a hall-like anteroom, but halls are also laid out as independent rooms and connected to neighbouring rooms (Fig. 5). The fact that the individual rooms are regarded as "independent structures" is also evident from their designation, whereas in the closed plan forms of the other group of ground plan types, the individual rooms are designated "oda" or "kubba" (- room). A separation of "haram" and "selamlik" only occurs in the courtyards of wealthy farmers; the latter (mutif) is then usually a separate building from the other huts, which is often made accessible through a specially constructed gate in the courtyard wall - bab el mutif - while on the other side of the courtyard the bab el haram serves for the traffic of the family members (Figs. 3 and 5). The second group of farmhouses, in contrast to the first, shows a number of rooms joined together to form a solid whole, a house proper. The individual rooms are not connected to each other by the courtyard, but by a common vestibule - "tarmah" - open to the courtyard, around which they are grouped in a U-shape.
In its simplest form, this tarmah house is as shown in Fig. 6. Three rooms
are situated around the double-columned vestibule: a central room
transversely behind it and two wing rooms symmetrically on both sides
with their longitudinal axes perpendicular to the tarmah and central room.
All three rooms are usually only accessible from the tarmah and are not
connected to each other by doors. In this simplest case of the tarmah
house, the entrance to the middle room is in the middle, and there is a
window on each side symmetrically, if there are any at all. By omitting
one or both wing rooms, this system is often mutilated, but the central
room is then usually doubled, so that two rooms lie transversely next to
each other behind the common vestibule (Fig. 7). In this case, however,
the tarmah almost always has a protruding wall piece on both sides of the
pillar or column position, and the outer architectural impression remains:
the opening between closed wall surfaces. The space between these
antennal walls and the rooms is often separated from the tarmah by a belt
arch as a "liwan". It is rare that this space is formed as a lockable room.
Even less frequently is a similar arrangement effected by transverse
division of the wing room (Fig. 12). If a liwan is also inserted between
the two rear rooms, a ground plan is obtained which requires a large
width, especially if the number of rear rooms is increased (Fig. 8). This
arrangement is found above all in larger rural houses, especially in manor
houses. If the rear room is omitted (Fig. 9), the system again approaches
the former more primitive group of farmhouses, the simple juxtaposition
comes into its own again.
The main difference between this class of ground plans and the more primitive group is therefore, as already mentioned, not in the use of pillars or columns, but in the fixed connection of the rooms to form a house, in contrast to the loose arrangement of originally individual huts around the courtyard. As a manor house, it is situated on one side of the courtyard, usually the southern side, while the service rooms, fellows' dwellings, stables and storerooms are loosely attached in the primitive manner (Figs. 9 to 14). The entrance to the courtyard is placed as far as possible so that it does not interfere with the actual dwelling house, i.e. to the side of it or on another side of the courtyard. Fig. 11 shows the rare case in rural houses where the courtyard entrance had to be moved into the house. The above-mentioned aspects apply to the construction of the mutif; it is usually built as a single room, rarely one of the rooms of the tarmah house is used for this purpose (Fig. 14).

The manor houses deserve special mention; they usually include a whole village where the fellah families are settled who cultivate the landlord's fields. The actual manor with the manor house, the "kasr" or "konak", the yard for stables and granaries and the village are separated from each other, but surrounded by a common wall. The manor house is situated in a privileged position at the entrance gate of the whole complex, sometimes the entrance to the village leads through the manor house. Fig. 15 shows a manor house that lies to the side of the village gate; the stately gate building has an upper storey and here is the lord of the manor's house, accessible from the courtyard by a staircase.
I. THE GROUND PLAN OF THE URBAN DWELLING HOUSE (P. 5)

The form of the dwelling-house discussed in the introduction, which will be briefly called the tarmah house, is also the core of the layout for the urban dwelling-house. However, while the farmhouse is usually able to expand widely, the limited conditions force the urban dwelling house here, as everywhere else in the world, to develop in a vertical sense, the house becoming two or more storeys high.

In urban dwellings, the tarmah pattern is mainly used for the upper floors, while the ground floor is usually converted into a cellar, which will be discussed below. The tarmah house form is then often only vestigial or disappears completely, but the original simple scheme also shows further developed forms on the upper floors.

The shapes of the rooms (p. 5)

The Oriental's need for living space is expressed in a different way than that of the European. We demand bedrooms, dining rooms, living rooms, etc. in a house, depending on the activity of living we want to carry out in it, and determine the purpose of the room once and for all by its position in the ground plan and its furnishing. These points of view are not so decisive for the Oriental, especially for the Arab and the Turk, former nomads. He divides his house into two parts, the "diwankhanah" or "selamlik" for guests and the "haram" for the family. The individual
rooms, however, are preferably differentiated according to whether it is pleasant to stay in them in summer or winter, in the morning, at noon or in the evening; one thus moves from the cellar to the roof depending on the time of year or day. Thus, there is no such thing as a "bedroom" and no such thing as a "dining room". In winter, people sleep in the same rooms where they live during the day, but in summer they sleep on the roof terrace. The Oriental does not know the common meals that unite the family of the European at certain hours, and which the Anglo-Saxon marks outwardly as a daily celebration. The master of the house eats alone with his sons and male relatives and is often served by his ladies if the meal takes place in the haram. If he has guests at the table, he in turn has to wait with the meal until all the guests are satiated. He serves particularly honoured guests personally. In many houses today, one finds European furniture, tables and chairs, but the meal is usually served on the large tinned copper bowl that replaces the dining table. This platter - "senije" - is placed on a low stool and the diners sit on the carpet around it and serve themselves with their right hand without using cutlery. Given the easy transportability of the dining table, it is obvious that the dining room can be moved even more easily according to need than the bedroom. So here, too, nomadism is evident.

**Oda.** The "oda" or "kubba" corresponds most closely to our "room"; it has lockable doors and windows, the latter are often small and, if they face the street, are either mounted high on the wall or closely barred. They are also arranged in two rows one above the other. Often they are
missing altogether, the meagre lighting of the room then only takes place through the door, more often there is also a small skylight above the door. The Oda is mainly intended for the cooler seasons.

Ursi. The "ursi" is a room, one side of which is dissolved into a sliding window. The Persian term for this sliding window has come to mean the room type. Generally, the word "ursi" is applied to large rooms whose window wall faces the tarmah, more rarely to the small "kabishkan" (hanging floor) and the "shanashil" (bay) rooms (see below), which also usually have ursi sliding windows. Finally, the term is also used for a type of room that has a row of glazed double doors in place of the large sliding window. This latter type is especially common in Kadhimayn and Karbala.

In the normal ursi, the sliding window is located on the broad side of the room facing the tarmah and usually occupies the entire width, so that the access doors have to be placed on the narrow sides of the room. In another form, pieces of wall are left on both sides of the window to accommodate the doors. This type is more common in Karbala.

ursis with two-sided windows are also sometimes found, but this arrangement is rare in older houses.

Like the oda, the ursi is a room for the cooler seasons, although it is often a rather uncomfortable place to stay on cold winter days, as the windows do not close properly.
It may be mentioned here that an ursi type of room is common in the Chinese house.

**shanashil.** In character, "shanashil" comes closest to ursi. In fact, the term "shanashil" is used only to describe the oriels that project towards the street and, like the ursi, also open through sliding windows. All rooms facing the street can have a shanashil, most frequently the oda, to which the name shanashil is then transferred. The fact that a shanashil projects from the street as an oriel is, it seems, an absolute requirement, but not the only decisive characteristic. The whole of the upper storey can project towards the street without a room being given the designation shanashil; for this, the whole bay window must be broken up into windows. The folk etymological explanation for "shanashil" is shah-neschin (= seat of the king). The designations ursi and shanashil seem to be confused insofar as the latter is probably also called ursi, but never the other way round, unless there is an actual amalgamation of both types of room, as in Figure 24.

**talar.** "talar" (in Baghdad also "tarar") is a room enclosed on three sides by walls and opening onto the tarmah or courtyard with a pillared front. The talar is a full-fledged living room, generally entered through the pillared front. The talars of the upper floor are often 3-4 steps higher than the present tarma-, they are therefore not directly accessible from it and are sometimes closed against it by a railing. Then the doors have to be placed in the side walls of the talar. Like the ursi, the longitudinal axis of
the talar is parallel to the tarmah. Lower talars are often given an inner support.

**liwan.** Like the talar, the "liwan or if an" (the names are not sharply distinguished, but "liwan" is the more commonly heard) opens with a whole side towards the tarmah or courtyard, but without a supporting position. Some builders apply the name liwan only to those rooms that open in an arch; if the opening is closed in a straight lintel, it is also called a talar. A characteristic feature of the liwan is that its longitudinal axis is perpendicular to the tarma; it is therefore applied to the central room in narrow plots of land when this would have become a talar under other circumstances.

talar and liwan are summer or winter rooms, depending on their orientation. If they face north, they provide shady, airy halls in summer; if they open to the south, one enjoys the winter midday sun in them, protected from the north wind.

In newer houses, one room is used both as a liwan and as an ursi. In winter, the opening is closed with a window, which is removed in summer. The entrance to this pseudo-uris is in the middle of this window wall.

Both liwans and talars are often used to bring light into the rooms behind or to the side of them, and their walls are pierced by windows which, however, are either above eye level or are barred and sometimes
colourfully glazed so that it is not possible to see into the neighbouring room. So here again the effort to close off each room.

**iwanchah.** For the juxtaposition of the types of rooms discussed, it must be stated as a strictly observed rule, especially in the Baghdad House, that they must always be directly accessible from the tarmah. In the case of rooms such as the ursi or the raised talar, which do not have their entrance in the front of the tarmah, one helps oneself by inserting insulating corridors (iwanchah, meslak) between them and the neighbouring rooms, thus making their entrance doors directly accessible from the tarmah. With the preference for symmetrical plan formations, these iwanchah are usually inserted on either side of an ursi or talar.

**Kabishkan.** The iwanchahs are usually divided halfway up by a beam ceiling and the mezzanine above, accessed by a staircase in the back wall of the iwanchahs, is fitted with sliding or lattice windows to the tarmah. Such a hanging-floor-like mezzanine is called a "kabishkan". The explanation of the term kabishkan, often heard in Baghdad, interprets it as a place to put on shoes (from the Persian kefsch = shoe) and probably actually refers to the iwanchah itself, where one puts off one's shoes before entering the carpeted living rooms. In a figurative sense, the term is used for the mezzanine, which is the only one called kabishkan in Baghdad. The kabishkans are thus almost inseparable companions of the ursi, they flank it on both sides and are very effective elements for the architectural enlivenment of the courtyard façade. They also often play a role for the street front of the house, as they are often given projecting
bays. If ursis or talars are the festive rooms of the house, the kabishkans also open onto them through sliding windows to allow the haram members to participate in the festivities unobserved.

I have not been able to ascertain that the kabishkans are used as lodges for singers etc., as similar facilities are in the Arab-Egyptian or Syrian house. They serve as bedrooms for younger family members or servants, often also as storage rooms for household goods of all kinds.

In smaller houses, by the way, other rooms are also divided into two mezzanines, sometimes entire wings of adjoining rooms, but these are exceptional cases.

Forms of the tarmah scheme (p 8)

If we apply the spatial forms just discussed to the scheme of the tarmah house, the oda is the given form for the wing spaces. The ursi form does not appear in Iraq for the wing rooms, even if the tarmah house is free-standing. In the Persian house proper, however, it seems to be used especially for the wing rooms. In urban dwellings, it is usually not possible, as the free front of the wing rooms in the free-standing tarmah house does not face the courtyard. For the same reason, the liwan or talar form is inappropriate for the wing rooms, but these are preferably given shanashils if they face the street.

For the middle room, as can easily be seen, all forms are applicable. In smaller houses, whose cramped conditions do not permit the luxury of a
summer-only room like the talar, it is usually an ursi. The scheme then takes the form shown in Fig. 16; it is the same if the middle room is a talar higher than the tarmah, i.e. not directly accessible from it (Fig. 17). If the liwan shape is applied to the central space, the iwanchahs become superfluous, as the liwan is always entered directly by the tarmah. Since the liwan also requires less width than the talar, small odas can take the place of the iwanchahs (Fig. 18). Thus, two more independent living rooms are obtained with the same plot width. If these interspersed rooms are to become ursis again, the iwanchahs must be inserted again. The resulting scheme (Fig. 19) requires a large width and is therefore only to be found in palatial houses or in narrow and very deep plots built on one side. Instead of this solution, which wastes a lot of space for two relatively small ursis, which are not really usable as representation rooms, the scheme shown in Fig. 20 is sometimes used: The wing spaces are suppressed, replaced by the antennal wall pieces, similar to the example shown in Figs. 7 and 8.

The variations of the tarmah scheme discussed above show no fundamental differences from the forms found in the farmhouse. However, in the case of the town house, limited expansion possibilities usually force deeper mutilations and transformations. The full development of the simple standard scheme with a transverse central room and wing rooms on both sides requires a plot width of at least 16 metres. If iwanchahs are inserted, the required minimum width is increased by 4 to 5 m. Thus, the total width is 20 m. If this width is not
available, one wing room can be suppressed; in order to obtain the sufficient number of living rooms, rooms are added to the other wing room, so that the residential building takes up two courtyard sides in a T-shape. The tarmah sometimes follows this bend, but often it must be omitted from the side wing, as otherwise the courtyard space would be too cramped. The connection to the upper rooms of the side wing is then achieved by a corridor, "mamsha", projecting towards the courtyard like a balcony (Fig. 21).

Another way of arranging the normal three living rooms on a smaller width is to place the middle room with its longitudinal axis perpendicular to the tarmah and parallel to the wing rooms. The tarmah is placed in front of the common front of all three rooms, so it goes across the whole width of the plot. This arrangement is very common in smaller houses. The middle room is either, like the wing rooms, an oda (fig. 22), in which case its entrance door is in the middle of the tarmah front as in those, or a liwan. If the actual ursi form is to be used in place of the above-mentioned pseudo-ursi, which is common in newer houses, a special arrangement becomes necessary. Since, as is well known, no door can be fitted in the sliding window wall, at least one of the two wing rooms must recede behind the alignment of the central room in order to create an independent entrance possibility from the tarmah and, with the preference for symmetrical plan formation, this is usually carried out on both sides (fig. 23), the tarmah again receives the liwan-like protrusions, the iwanchahs, into which the doors of the rooms open, the ursi has its
symmetrically located entrance doors, above the iwanchahs lie kabishkans.

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