

# RESULTS FROM THE BUILDING SURVEY OF THE AL-NAWAR HOUSE IN THE OLD TOWN OF JEDDAH WITHIN THE FRAME OF THE TRABASA WORKSHOP

Petra GRUBER<sup>ab</sup>, Mahmoud EISSA<sup>c</sup>  
Ulrike HERBIG<sup>b</sup>, Gudrun STYHLER-AYDIN<sup>b</sup>, Irmengard MAYER<sup>b</sup>, Caroline JÄGER-KLEIN<sup>b</sup>, Vittoria CAPRESI<sup>d</sup>, Bassem NEIFAR<sup>c</sup>, Walid KHIMIRI<sup>c</sup>, Maher AZIZI<sup>c</sup>, Abdullah KAMEL<sup>c</sup>

<sup>a</sup> transarch, Zentagasse 38/1, 1050 Vienna

<sup>b</sup> Vienna University of Technology VUT, Department for History of Architecture and Building Archaeology

<sup>c</sup> King Abdul Aziz University KAU, College of Environmental Design

<sup>d</sup> German University Cairo GUC

**Abstract:** The survey of the Al-Nawar house in the old town in Jeddah was carried out in October 2011 as part of the TRABASA project by a team of the Vienna University of Technology (VUT) in cooperation with the King Abdul Aziz University in Jeddah (KAU). The Al-Nawar house is a typical building representing the architectural heritage of Jeddah.

The methods for the survey included classical manual measuring, scanning of sections with a Total station and 3D laserscanning in order to record the building to the detail. The work was carried out in a workshop setting on site integrating 45 students of KAU.

In the paper a concise description of the house will be presented, together with results of the interpretation of the produced plan material. Hypotheses for different construction phases will be laid out based on findings in constructive issues, functional interrelations and the comparison of surface structures. The basic design principles guiding the development of the building will be identified. Using the Al-Nawar house as an example, the special construction of the Jeddah architecture and the challenges involved for building as well as restoration efforts will be discussed.

In addition to the technical information a functional analysis of the house based on spatial interpretation, personal records of the owner's family and the present state will be given.

**Keywords:** Urban heritage in the kingdom of Saudi-Arabia, building survey, building construction, building archaeology, documentation

## 1. Introduction

The survey of the Al-Nawar house in the old town in Jeddah was carried out in October 2011 as part of the TRABASA project by a team of the Vienna University of Technology (VUT) in cooperation with the King Abdul Aziz University in Jeddah (KAU). The building research of the Jeddah architecture is the main case study of the TRABASA project, delivering a role model for further work on the rich heritage of built environment in other regions of Saudi-Arabia. The Al-Nawar house is a typical building representing the architectural heritage of Jeddah.

The methods for the survey included classical manual measuring, scanning of sections with a Total station, 3D laserscanning and advanced digital imaging techniques in order to record the building to the detail. The work was carried out in a workshop setting on site integrating 45 students of KAU. The post-processing and interpretation of the records was carried out at the Vienna University of Technology during 2011/2012. For a

detailed description of the methodology see the paper "Integrated building survey for detailed recording of cultural heritage in Jeddah, Saudi-Arabia"<sup>1</sup>.

The Al-Nawar house was selected for the detailed recording and building research for several reasons: First of all, the house represents a typical example of residential buildings in Old Jeddah. The general layout seems characteristic for this kind of typology. Other reasons are very central location and easy access due to the support of the owner's family<sup>2</sup>. Furthermore, the condition of the house being not recently renovated, and abandoned but still in a state that allowed a quite safe entry was ideal for building research purposes, as insight into different stages of construction was possible. Apart from that, some very specific features enrich the architecture of the house: Painted wooden ceilings and rich wall decoration in the representative spaces of the house make it an important piece of the architectural heritage of Old Jeddah.



*Fig. 1 Al-Nawar house in Old Jeddah, North facade, street view.*

## **2. Description of the location of the house in the urban fabric of old Jeddah**

Old Jeddah is one of the Arab Islamic cities worthy of what remains in the memory of the nation. According to historians Old Jeddah existence dates back to more than 2.500 years ago, when it was only a little fishing settlement. Nowadays Old Jeddah contains an architectural richness of traditional buildings and culmination of styles, which epitomizes the city's long tradition, and the exciting route of its chequered history. However, it suffers from severe social problems and extreme environmental degradation, which dragged the area in an ever-downward spiral for long years.

Descriptions of Old Jeddah of historic visitors help to visualize the city of Jeddah before the destruction of the city wall in 1947.<sup>3</sup> The plan layout of Old Jeddah has the shape of an irregular hexagon. Entering the city was through city gates opening on each side.

<sup>1</sup> Mayer, Irmengard; Styhler-Aydin, Gudrun et al.: Integrated building survey for detailed recording of cultural heritage in Jeddah, Saudi-Arabia, submitted to Second National Built Heritage Forum 2012.

<sup>2</sup> Sami Nawar, the representative of the Al-Nawar family, is at the same time head of the Jeddah Historical Preservation Department in the Municipality of Jeddah.

<sup>3</sup> see an extended history of Old Jeddah in Pesce, Angelo: Jiddah, Portrait of an Arabian City, 1974.

The buildings inside the city wall were closely packed without any particular ordering system, but the urban fabric of Old Jeddah was and is still distinguished for having urban spaces in the form of alleys and streets with piazzas towards their ends allowing extended vision, as well as their use for public activities. The streets were irregular in width and irresolute in direction, broadening from narrow alleys to tiny squares. The only large open space was a rectangular one near the customs building. Old Jeddah was small and confined and a truly pedestrian town. It was divided into several neighbourhoods, which have gained their specific names based on their geographical location within the city or for some famous events they have witnessed.

Old Jeddah houses, with its unique and original characteristics, were a true image and a real representation of the social culture of its people. The architectural style of the traditional houses of Old Jeddah shared many common features with that of other cities in the Hejaz Region. The local architecture of Old Jeddah strove to emphasize two basic features: simplicity and serenity. It is a homologous type of architecture, seeking aesthetics and beauty in simple but dynamic forms, in well balanced relationships of void to solid and in the use of simple geometry. Most of old Jeddah houses are raised up to six floors without courtyards because of the hot-humid weather.

The Al-Nawar house is located in the Southern central part of Old Jeddah, very close to the famous Naseef house, along two small side streets close to Barhat Ashur, a North-South axis through the old town. Robert Matthew surveyed and classified the historical buildings of Old Jeddah in three categories of historical importance. The Al-Nawar House was assigned to the third class. Figure 02 shows the Al-Nawar House (coded 471) within urban context of a group of historical buildings according to the Robert Matthew classification.<sup>4</sup>

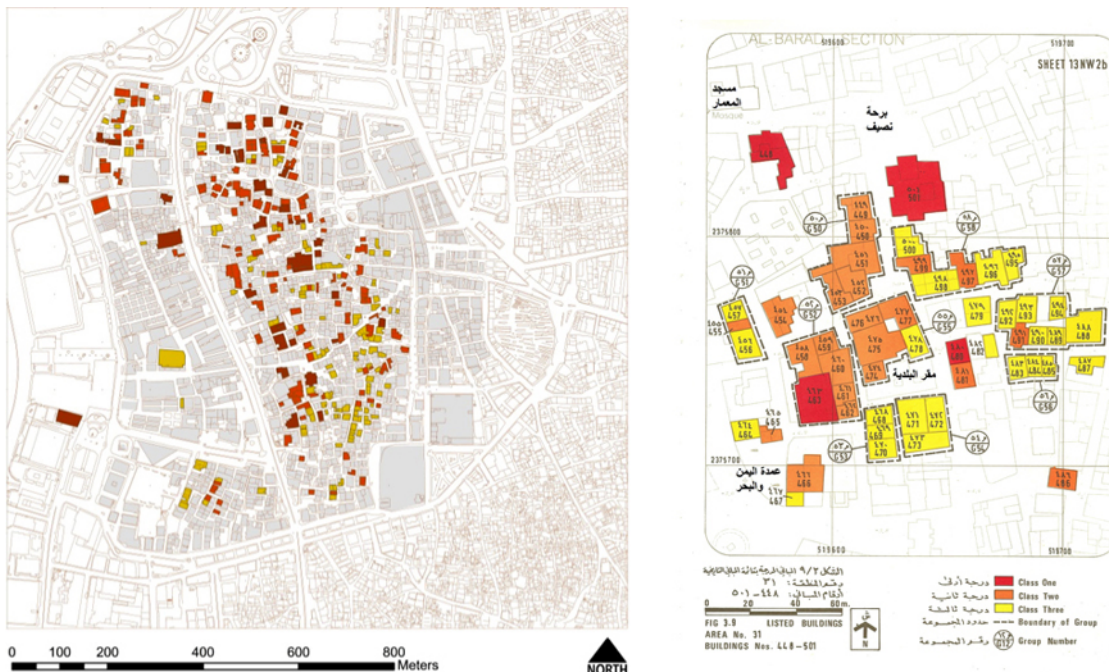


Fig. 2 Old Jeddah, map with Robert Matthew classification and detailed section with the Al-Nawar house nr.471.

### 3. History of the house with special reference to the Al-Nawar family

The point in time of the construction of the Al-Nawar house is unknown. According to oral information from Sami Nawar<sup>5</sup> the house has been in possession of the Al-Nawar family since five generations. It is not the

<sup>4</sup> Robert Matthew, Jeddah: Historic Area Study, Stage Two, Recommendation for the architectural design demonstration study, Jeddah, KSA, 1979.

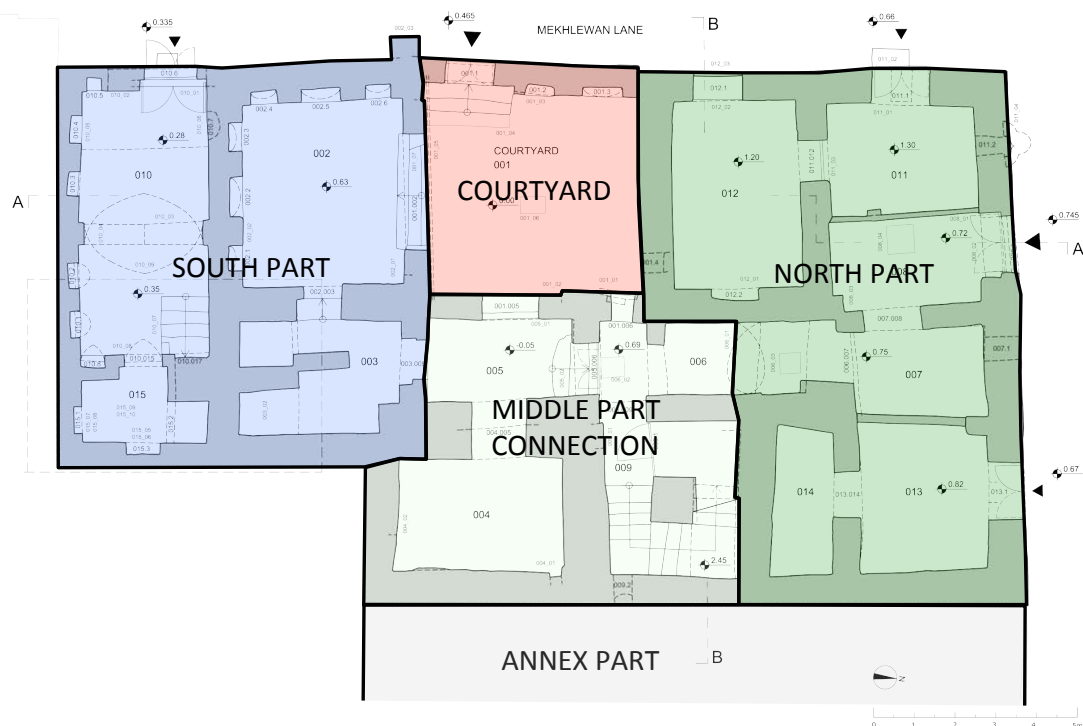
<sup>5</sup> interview with Sami Nawar by the VUT team in October 2011.

original Al-Nawar family house but was bought by his grandfather's uncle Sheikh Mohammed Nawar around the turn of the 19th to the 20th century. Two deeds exist for the house, one even from Ottoman time. As far as Sami Nawar, who was born and grew up in the house can remember, the house consisted of three storeys and was inhabited by the extended Al-Nawar family. Up to 50 people have lived in the house at the same time. Parts of the house, especially on the ground floor, were rented out. A more detailed insight into functions and use will be given later.

The building has undergone several changes and alternations. Especially the southern staircase was changed at least in two different phases. Also, some rooms were divided while others were added toward the upper floors.<sup>6</sup> The adjacent building facing Barhat Ashur was rented out only some years ago. The point in time when the family finally abandoned the house cannot be specified.

#### 4. Building parts and spaces

The house takes the Northwest edge of a rectangular block that is confined by two small side streets and a larger street running North-South. The lot size is about 290m<sup>2</sup> with side lengths of 23,5x13,5m, which is a medium size estate in the old town. To the South there is neighbouring building with three storeys (G+2). The adjacent building to the East is only two storeys high (G+1) and is rented out for shops, workshops and storage, reportedly by the same owner. The adjacent house was not integrated in the survey. The Al-Nawar building is nowadays mainly three storeys high (G+2), but could have been one storey higher in former times. It consists of two main parts (North and South wing) and a connecting staircase together with annex rooms, all arranged around a central courtyard. The courtyard lies to the West and is separated from the small Mekhlewan lane only by a 3m high wall. It is roughly a square with 5m side length.



MAIN PARTS OF THE BUILDING, LEVEL 0

Fig. 3 Ground floor plan of the Al-Nawar house with main parts marked.

<sup>6</sup> oral information by Sami Nawar, July 2012.

The North wing houses storage and entrance spaces on the ground floor and two apartments on each upper floor with some smaller anterior spaces connecting to the staircase. The South wing contains more representative rooms: A large iwan with a painted wooden ceiling, a storage space on the ground floor and two other larger decorated rooms on the first and second floor. Also here smaller rooms attach to the main staircase, and to another narrow staircase in the Southeast.

The floor levels between North and South wing do not correspond, but roughly reach the same height again at the 4th floor, that consists mainly of flat roof terraces and two small rooms beside the main staircase.

The proportions of the main rooms are well designed. They are laid out in a rectangular way with length to width being around 3:2, and the heights of the spaces roughly corresponding to the widths. The more representative spaces have larger room heights. In the design of wall niches, separations and openings tripartition predominates, so that there are central opposing to side elements. Only the four North rooms are treated differently in the North facade.

In general the rooms in the house have many openings for light and ventilation. Doors and windows usually also have overhead openings that enhance room condition by also interconnecting the spaces internally and thus allowing airflow through the whole depth of the house.

The main rooms have roshans or large window openings. Most of the roshans are not original. At an unknown point in time they seem to have been replaced by more simple structures than the very refined woodwork that can still be found in other houses in Jeddah. It is interesting that only the rooms of the South wing have large openings to the courtyard, and the North wing rooms are more open to the streets.

On the upper levels of the building the central courtyard extends as a narrow niche towards the East. This open space is used for connecting to the main staircase nowadays, but could be interpreted as a small wind catcher niche. Large versions of those niches can be seen in other traditional Jeddah houses.



*Fig. 4 Wide-angle view inside the courtyard, with the North wing to the left and the South wing with the iwan to the right, and the middle part with the wind catcher niche and roshans.*

## **5. Entrance situations**

The main entrance of the house in the Al-Nawar time used to be from the North, requiring three turns in small aisles to reach the main staircase. Nowadays and maybe also in the original state of the house, the main entrance is from the West through the courtyard (001), but the North entrance can still be used.

The shop and storage spaces to the West and North (013/014, 011/012) have all separate entrances and are not connected to the rest of the house. To the Southwest, there is another entrance that allows access to all main parts of the building. The original large wooden doors show the importance of this access. The wooden panels have been shifted to the inside of the room (010) and metal doors replaced the outermost layer, so that the appearance from outside today is similar to the other entrances. Another door to the North (today in room 011) was closed. This is clearly visible in the stone door hood in the North facade.

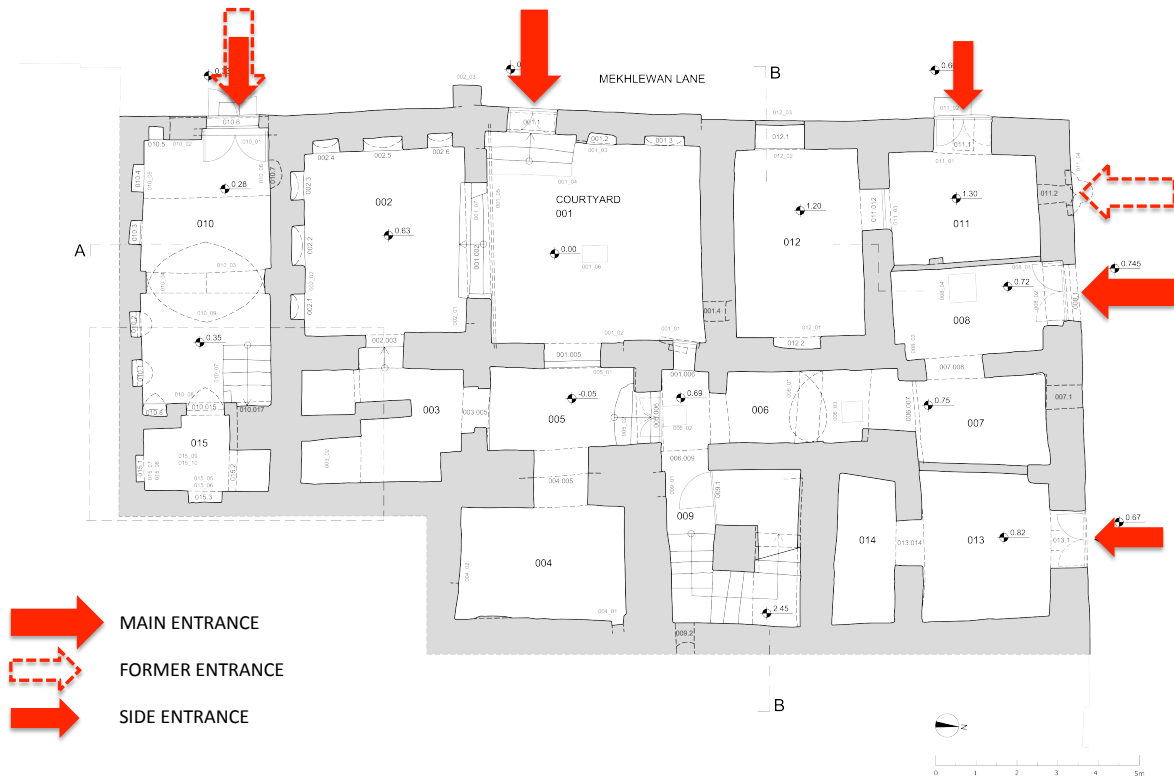


Fig. 5 Ground floor plan of the Al-Nawar house with entrances marked.



left: Fig. 6 Entrance in the South, Mekhewan lane with the old wooden doors shifted to the inside.  
 right: Fig. 7 Closed entrance on the North facade, the stone door hood being still visible.

## 6. Staircases

The building can be accessed vertically via two staircases. Both are located to the East at the separation to the lower neighbouring building and allow independent access to the different parts of the house. The staircase more to the North is the main staircase of the house and connects mainly the North wing with the middle part. The construction is classical and can be found in many architectural typologies throughout Saudi-Arabia. Three to four flights of steps and landings are arranged in an almost square space around a large central column. The staircase construction consists of short wooden beams spanning between the central column and the strong outer walls. Above the wooden substructure, layers of mortar and concrete shape the steps.

Similar to the main rooms, also the main staircase is on the upper floors well lit and ventilated due to openings to the East and West. From the split-levels of the landings, different heights of floor levels of the attached rooms can be accessed. On the fourth floor, the staircase extends to one more landing, which hints to the existence of an additional floor - or at least the access to another roof level - in former times.



left: Fig. 8 Main staircase, between first floor landings, view of the main pillar and flights of steps. To the right (East) there was a door to the annex building.

centre: Fig. 9 Traces of another staircase in room 003 behind the iwan on the ground floor.

right: Fig. 10 Southern staircase on the first floor, view to the Northeast. The pilaster was part of the outer wall of the core part of the house.

The Southern staircase is very different: small, narrow and dark it is perched to the backside of the most southern axis of the house, with some very small and split level storage spaces and niches. It seems to be an internal pathway, providing service more than proper access. As can be shown by the construction of the surrounding spaces, this staircase was introduced in a later stage of building, and has undergone different phases of adaptation as well as destruction. Traces of fire on ground floor and second floor hint to a reconstruction phase that followed the initial introduction of this access. According to oral information of Sami Nawar, changes to the staircase were carried out as late as in the 1960s.<sup>7</sup>

On the upper floors, the situation of the South staircase becomes more and more chaotic: on the second floor even three different flights of stairs compete for space. But in spite of the confined space the southern staircase also reaches the flat roof of the fourth floor, nowadays sheltered by a makeshift hut on the south-eastern edge of the terrace. The later addition of room 310 may have led to the introduction of both flights of stairs on third floor as a last phase of adaptation.

<sup>7</sup> oral information by Sami Nawar, July 2012.



STAIRCASES, LEVEL 2

Fig. 11 Second floor plan of the Al-Nawar house with staircases marked in red.

## 7. Special rooms

### North wing

The ordering system of the North part of the Al-Nawar is quite obvious, at least on the upper floors. Level one and level three (level two does not exist in the North part as it was introduced to cover the height differences to the South part) each contain two independent apartment units to the East and to the West with larger living rooms and small anterooms, kitchens and bathrooms. The different landings of the main staircase ingeniously provide access to the apartments, and the split-levels are accommodated for with series of steps in the open vestibule of the West part. The rooms adjacent to the staircase on the other side belong to the West apartment in terms of function. Only the rooms on the second floor are added to the South part. The rooms of the West apartments on the first and third floor are typical for the residential architecture of Jeddah. The wall design is tripartite, with niches, windows and internal connection doors, and overhead lights and ventilation openings. The rooms open mainly to the West and North, the street sides. On the first floor, the wall niches and overhead lights show typical decorated stone heads. Only the North facade shows another design than the tripartite structure. The openings are very large and were in former times furnished with roshans.





Fig. 12 Room 101 on the first floor in the Northwest, with wall openings and niches.

### South wing

The South wing of the Al-Nawar house consists of some very representative spaces with outstanding architectural features. On the ground floor an iwan (002) with elaborate two-storey wall decoration opens to the courtyard, the floor elevated about 0,6m above courtyard level.

Initially, the opening consisted of a pointed arch spanning over the whole length of around 4,6m. A buttress outside the house on Mekhlewan lane acts against the horizontal thrust of the former arch. Presumably due to structural reasons the arch was later closed and two wall pilasters were added carrying a new horizontal lintel. The shape of the arch is visible in the fine plaster decoration of the courtyard facade, and the stone bases of the arch can be seen inside.



left: Fig. 13 West wall of the iwan on the ground floor, with two storey wall decoration and ventilation openings on top of the niches.

right: Fig. 14 Opening between courtyard and iwan, former arch closed but still visible in the facade design. Cracks in the wall locate the later introduced pilaster carrying the lintel.

The iwan is double in height and roofed with an extraordinary painted wooden ceiling. The walls of the iwan are structured and decorated in two storeys with niches and openings in the upper part, which are accentuated by fine wooden latticed windows providing view and ventilation.

To the South, there is another large entrance space (010) that is separated by a pointed arch. From here, the second staircase leads up to a series of small aisles and vestibules. The layout of the room adjacent to the air space of the iwan has again a tripartite layout: the front third facing West is elevated with a floor about 0,45m higher and is accentuated by an internal wooden archway. This part is also furnished with a large roshan, protecting the entrance on the ground floor below. The same room 110 is visually connected to the iwan by a large wooden lattice window. The separation wall to room 111 seems to be a later introduction, it stems maybe from the same time as the staircase in the current form. Above the iwan on the second floor, there are the most beautiful spaces of the house that seemed to have the function of a salon. A wooden archway and a height difference of about 0,4m again separate room 205 and 206. They are roughly the same size, but the room to the West has a large opening to the attached terrace and two large roshans to Mekhlewan lane and the courtyard. In addition to that, the walls of both rooms are structured with niches and wooden cupboard doors and decorated in fine plaster artwork with inlays of dark glass pieces.



*Fig. 15 Room 205 and 206 separated by a wooden wall and height difference.*



*Fig. 16 South wall of room 205, the design hints to different building phases and alterations.*

Both wooden ceilings are exquisitely painted, with room 206 having a chandelier-like decorative element in the centre and small mirror pieces accentuating the painting. The adjacent small room 204 is also decorated and furnished with a roshan facing the courtyard. Through another small room the main staircase can be accessed. Only on this floor exists a connection between the South wing and the main staircase to the other parts of the building.



*Fig. 17 left: Detail of the painted wooden ceiling.*



*Fig. 18 right: Wall decoration with plaster relief, original colour paint and dark glass pieces.*

The later added room 310 above the terrace is organised in the same way as the other spaces below - a wooden separation together with a height difference splits the room in two parts. Two windows connected this room visually with the second floor room 205. The steep and narrow staircase leading up to 310 is hidden in one of the niches.

On the fourth floor, which existed in a state of deconstruction at the time the records were taken, the remains of one room (403) belonging to the South wing could be identified by the decoration found on a wall piece.

## **8. Materials and technology**

The houses in Old Jeddah are built of coral limestone and wood. The coral limestone is usually brought from the seashore or Alarbaeen pond located to the north of historic Jeddah, and used for the construction of high load-bearing walls and foundations. Wood is used for structural support, roofing, windows, doors and the famous roshans and mashrabiyyas. It was brought from Wadi Fatma to the East, Khulais to the North or Aljunfuda to the South. Higher quality wood was also brought by sea from Indonesia and India. Pesce<sup>8</sup>, Greenlaw<sup>9</sup> and Bokhary<sup>10</sup> have already described the traditional Jeddah building technology. The Al-Nawar house represents the classical building construction with mainly coral stone masonry, used in large blocks and reinforced by horizontal layers of wooden beams at a distance between 80-120cm, depending on the specific situation of wall openings. Recently concrete and metal were introduced for restoration and reinforcement measures. In some parts of the house electricity and water supply together with sanitary equipment was added. The introduction of modern building materials and infrastructure destroys the integrity of the old structure: Differences in mechanical characteristics pose problems, and the integration of water and electricity supply is not carried out professionally, bringing further damage to the building.



*left: Fig. 19 North facade of the building, with characteristic wooden layers and large openings. A part of the wall is a recent reconstruction. Air-conditioning, water and electricity supply is added from outside.  
right: Fig. 20 Pilaster in the Northwest of the South part, leaning into the courtyard.*

## **9. Specific constructive issues and state of preservation**

The Al-Nawar house shows a specific floor construction that is not described for the Jeddah architecture yet. The separation between the iwan and the second floor in the South part is a double floor system. Above the painted wooden ceiling of the iwan another wooden construction provides the floor for room 206. The inaccessible space is only 0,8m high and has ventilation openings to the West. Another opening to the South was closed when the most southern building part was added. This double floor system was created on purpose and does not represent a later addition, as can be proved by the unplastered walls in the narrow in between space. Reasons for this system may be the protection of the painted wooden ceiling of the iwan on one hand and issues of cooling by ventilation and air space on the other. The usual separation of living

<sup>8</sup> Pesce, A.: Jeddah: Portrait of a City, London 1976

<sup>9</sup> Greenlaw, Jean-Pierre: The Coral Buildings of Suakin, 1995 (1st ed. 1976)

<sup>10</sup> Bokhari, Abdulla Yahia: JEDDAH: A Study in Urban Formation, Ph.D. Thesis, Graduate Faculty of the University of Pennsylvania, USA, 1978

space by differentiation in height implies the use of double floor systems, but in the other rooms of the house the main construction of the ceilings follows the height difference of the floors.

As can be observed in many other houses in Old Jeddah, also in the Al-Nawar house the wall pilasters leading vertically over the full height of the building are comparably small. This is due to the large window and roshan openings and the number of niches. Obviously the decay of the coral stone together with lack of sufficiently stable foundations has led to large deformations in the building and deviations from the vertical axis. For example the West facade in the North part and the main staircase wall is leaning to the East with about four degrees deviation from vertical. Over the height of the building this is equivalent to a deviation of about 0,8m. The South wing as a whole is leaning for about two degrees to the North. Especially the Northwest wall pilaster is leaning into the courtyard with an overhang of about 0,6m.

The structural integrity of some parts of the Al-Nawar house is not at all guaranteed. Damage and large deflection of the floors in many rooms exceed a safe use of space. The introduction of water for installation and water damage from leaking roofs has brought further deterioration to wooden construction parts.

Restoration measures that are being carried out take place on a local level, replacing parts of the walls and ceilings and securing dangerous parts. Still the overall condition of the house is very bad and it urgently needs a complete refurbishment based on a master plan for the whole of the building.



*Fig. 21 Section through the building. Notice the double floor system between the iwan and room 206, and the whole South part leaning into the courtyard.*

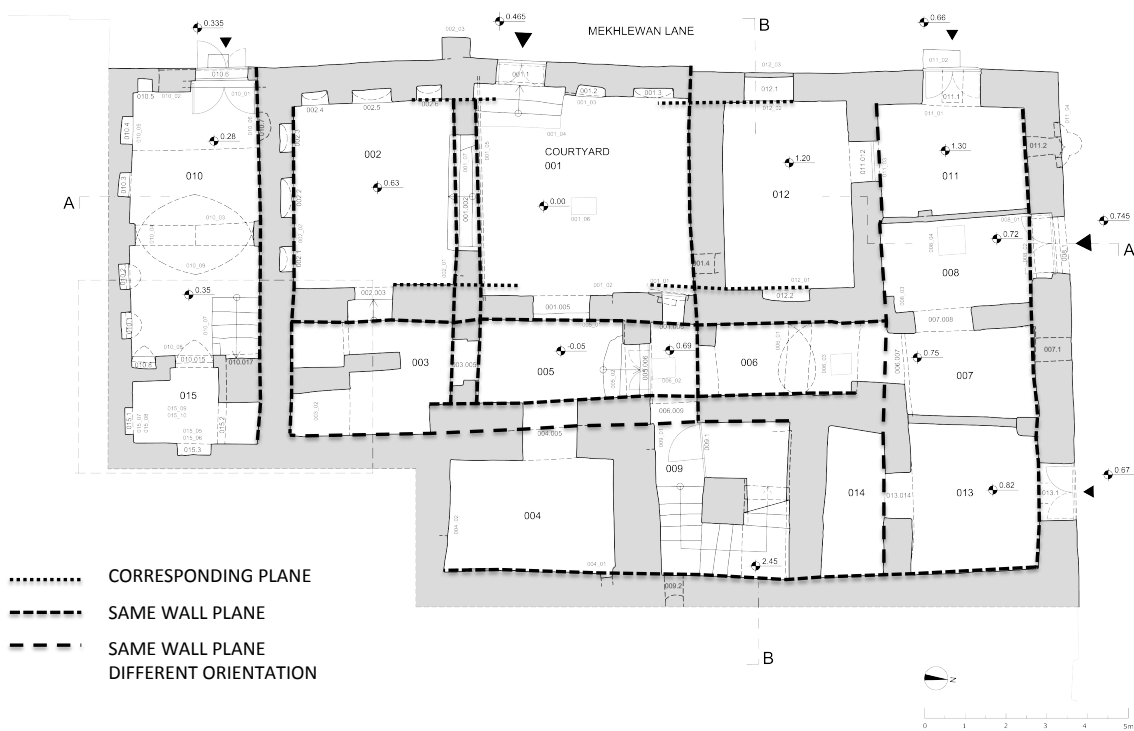
## 10. Functions and connectivity of space

According to oral information of Sami Nawar, the use of the building followed the classical way of Jeddah architecture. The ground floor contained mainly functions like storage and business, and the upper floors were used as living areas. The representative function of the iwan was already lost during that time - this part of the ground floor was a storage space, including the courtyard, which was roofed by that time. The independent apartment units were inhabited by Sami Nawar's extended family. The larger rooms were living spaces, with some of them having additional wooden separation walls for a more private use of space. In summer, the terrace on the fourth floor was used for sleeping, with space allocated to the core families. The East and South apartments were later rented out.

The accessibility of the house via two independent, but not at all comparable staircases is interesting and suggest the partitioning of the house into a men's and a women's part. The specific situation of the iwan, being overlooked by another living space on the first floor is a further argument for this interpretation. The connection between the North and the South wing does only exist on the second floor through room 202/203 (and theoretically through room 105/106, 307 and 402). According to information by Sami Nawar, the analysis of the wall planes and constructive issues, this part of the house was an open light shaft that was closed in a later building phase. So initially North and South wing of the house were not connected internally. The decoration that is only found in the South part backs this interpretation, but the many adaptations that the building has undergone only allows the formulation of hypotheses.

### 11. Hypothesis of building phases

The hypothesis of different building phases is laid out based on the analysis of the plan material and construction details. The correspondence of wall systems is the major argument for the proposal, but also the floor heights, wall design, internal functional connections and issues of access and decoration. The three phases that are depicted only sum up the main changes that have occurred. Countless small adaptations cannot be described in detail here. The points in time, when the changes were carried out are not defined; some can roughly be allocated based on the owner's information.



WALL SYSTEMS

Fig. 22 Analysis of the walls on the ground floor.

- The original state of the house consisted of a core part around the open courtyard and the assumed staircase in room 003 behind the iwan (Phase I). Both the North wing upper floors including a new staircase, and the most southern part were added later (Phase II). The later addition of the southern part is visible in the layout of the ground floor plan - the wall facing south is designed as an external wall. Also the room heights suggest a later addition of the whole part. For the North wing, the main argument for different phases is the walls showing the same wall plane but different orientation

(jumping walls without proper edge connections). If the North part had been built in one single phase, the walls would run through in the same plane. Other hints are different floor heights on the ground floor and the deviating design of the North facade.

- The South staircase in the current form was introduced later, and for sure after the construction of the most southern axis. The South staircase had at least three independent phases of adaptation and was finally changed to the current state when room 310 was added.
- The rooms in the South wing belonged together and were at least renovated in one go, according to the decoration that can be found everywhere from 1st to 4th floor. Decoration suggests the existence of further rooms on the fourth floor in the South wing.
- The small light shaft to the East was closed later, on all floor levels (Phase III). Double walls along the rooms provide a base for the wooden beams of the ceilings. Only after the closure of this light shaft a connection between North and South wing was established.
- Additional rooms on the fourth floor and maybe even another floor level may have been removed due to problems with construction.



### BUILDING PHASES I-III

Fig. 23 Hypothesis of main building phases.

Throughout the building, smaller adaptations can be found in almost every room. Especially the ground floor was changed according to the specific requirements of the time.

- The large openings on the ground floor (arch between iwan and courtyard and the door to the main staircase) were made smaller due to problems with construction.
- The entrance from the North might have been changed to another axis.
- Partial covering of the courtyard had already been deconstructed at the time of the recording.
- Some doors and windows were closed on the ground floor and first floor, some doors and walls were changed in the South and middle part and in the small rooms in the North wing.

- The annex to the main courtyard, the wind catcher niche, was partly closed for adaptations of the apartments and connection to the main staircase (Phase III).
- The internal connections to the adjacent building (especially windows and doors from the main staircase) were closed recently.

## **12. Current state and perspectives**

The Kingdom of Saudi Arabia is trying to preserve and rehabilitate some of the traditional and heritage of Old Jeddah. Many efforts are being made for the rehabilitation of the historic Jeddah and the preservation of the remainder of the content of urban heritage.

All restoration efforts are characterised by conflicting interests of heritage conservation on one hand and long-term structural stability on the other, concerning especially material use and application of modern technology. For buildings of this kind basic restoration and continuous maintenance measures are necessary. Adaptation to respective needs of the inhabitants was considered normal and should be discussed when applying heritage laws. As the buildings in Al-Balad are on the verge of being lost the documentary work should be intensified and published widely to attract interest and concern.

Developments on the scale of the city are characterised by a dynamic economic interests that increased property value, so that the motivation of private owners to restore their houses needs another incentive that could be delivered maybe by the city government. Measures to adapt the old town to the current situation are urgently needed, concerning boundary conditions like accessibility, traffic, parking and infrastructure.

Intentions and efforts to conserve historic Jeddah are stated clearly but even a partial comparison of the conditions over few years<sup>11</sup> shows a rapid loss of buildings, so that countermeasures have to be taken very fast in order to succeed.

## **Thanks and acknowledgements**

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## **Figures**

Figure 02: Municipality of Jeddah, Robert Matthews Masterplan

all other Figures: Vienna University of Technology

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<sup>11</sup> from the first visit of the VUT team in 2008 to the fieldwork in 2011.