

Oasis Settlement Structures / Oman

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The Sultanate of Oman occupies the largest part of the south-east of the Arab Peninsula. Nature determined a tri-partition of the country into the north, a desert area south of it and the south. The north is dominated by the Oman Mountains, the Jabal Hajar. North of Muscat a large coastal plain, the Batina, separates these mountains from the coast. The north is the heart of the country. Almost 90% of Oman's population lives here. It is divided into the coastal zone of differing width, the mountain area and the arid interior. Starting in very early times, men were forced to develop methods and means to master the nature and to create a unique Omani civilization.

The mountains catch the humid air of the coastal plains which lead to rain over the winter. Nowhere in the mountains and in the interior the rains are that strong, that they would allow dry farming. Men can only settle near wadis or springs or they have to create artificial springs like the old Persian qanat or falaj technology. This means: topography, climate and natural as well as human resources and historical factors determine the traditional settlement pattern and architecture of Northern Oman's oases civilization. The northern part of the Hajar mountains, the Jabal Akhtar, the "green" mountain, rises up to an altitude of about 3000 m. The contrast of natural living conditions in the different zones of the mountains created oasis settlements of different structures. Different types of irrigation were developed over thousands of years. The diversity and unity of Omani oasis settlements, can be presented in a transect which starts at the north eastern foot of the Jabal Akhtar, the Wadi Bani Awf, cuts the mountains between Balad Seet and Misfat al-'Abriyin and ends at al-Hamra in the Dakhiliya, the "interior" (fig.1).

Balad Seet

Balad Seet is the largest village of the Wadi Bani Awf region located at an altitude between 950 and 1020 metres above sea-level. Already during the iron Age (1100 BC-650 AD) two settlements existed in this ecological favourable location, and in the early Islamic period (650-1055 AD) a settlement is likewise attested.

The settlement nucleus of stone buildings is situated on the western slope of a hill and is towered by an ancient fortification. The village is neither walled nor protected by fortified gates. It is mainly the geographical and topographic location, which acted as natural means of protection in the past. This position is not only preferred for strategic considerations also climatic aspects and the disposal of the cultivable terrain for agriculture were determining factors, and high walled walls protect the artificial accumulated fertile soil from erosion.

Seven aflag (water canals) bring water from sources in the mountains to the terraced fields and palm gardens. The main falaj (al-Falaj al-Kabir), with water running all the time, is coming from five sources in the south-east of the settlement. The old cemetery and the washing and bathing facilities for women and men are located by this falaj. Near the entrance of the traditional village this falaj passes the main mosque and distributes its water into the western palm gardens and fields of Balad Seet. The falag al-Miban brings water from one source in the south-west to the western parts of the palm gardens. The other aflag in the South-east and

water basins are supplementing this complex irrigation system. The rotation of the water (dawran) is fixed for each falaj. The documents concerning the water distribution and the contracts, to buy and to sell water rights, are in the responsibility of the document writer, who is living in the village (fig.2).

The traditional infrastructure system of the canals and the old footpath connections dominates the settlement as the modern infrastructure does today. In former times, the old network of paths branched off into the wadis to the south-east and south-west at the southern end of the village. A very old path with the called "Persian steps" led directly across the mountain ridge to Misfat al-'Abriyin and al-Hamra. Until 1982 there was no possibility to reach the village by car. In the course of modernisation and wheel transport, most of these old connections fell into oblivion, and until the year 2000, Balad Seet was connected by a four-wheel-road with the Muscat-Rustaq highway.

The main development of the village is directed along the new street in the south outside the old village entrance. Once, the communal space, constituted by mosques, meeting halls (sabla), religious schools and falaj related installations, was located at the entrance of the village. This zone, between the built up areas the palm gardens, is the most frequented by the inhabitants. The social life is located here around the sabla and the main mosque. Here, the men meet regularly after the prayer to discuss, and guests are received here. Today this area is located between the village and the new parts. It is distinct by new reinforced concrete buildings with public use like the school, the house of the wali, some little shops, the phone booth and the taxi stop.

This means topography, climate, natural and human resources as well as technical know how, historical factors and social patterns of the society determine the traditional settlement pattern and the architecture of Northern Oman's oases civilisation. The different building structure presents the changing social structure of Balad Set which is contributed by three different tribes: the al-Zuhli'iyin, the al-Mayahhi'iyin and the al-'Abriyin.

The structure of the older part of Balad Seet is determined by the topography of the site and the massively built stone houses. The building structure is concentrated towards the castle. The houses have a defensive appearance with few openings in the street facing facades of the ground floor and entrances with solid wooden doors. The street network is characterized by an irregular system of narrow alleys running approximately north-south with intersecting stepped alleys leading to the higher parts of the village. The simple stable buildings around the castle, which are closely connected with the rock, and the corals in front of them resemble in forms and far back into the past when the separation between private property and communal property had not been as distinct as in later times. The typical mixture of round forms built out of large, round stones for shelters as well as corals and square forms built out of smaller, often flat stones for living space can be found in many inhabited as well as abandoned settlements in the Wadi Bani Awf.

In contrast to the simple buildings near the castle, compact defensive agglomerations of two and more floor levels as well as cubic form are found in the North-western part of the old settlement. Here the question arises whether this type of architecture was influenced by the urban clay buildings of al-Hamra. In the period of 'Abriyin dominance the political and

economical power of the 'Abriyin of al-Hamra extended far beyond Balad Seet in the 18th and 19th centuries (fig.3).

In more recent times, this dense and complex settlement structure with the closed type of building with open stairwells, which also served as ventilation shafts, disappeared. In the North of the old nucleus of the village, new, larger building complexes, which follow the topographical preconditions, came into being. The simple and loose terraced arrangement of the individual rooms around open courtyards including ledges and caves resembles somehow earlier forms of building. The question is whether this way of settling could be connected with more recently immigrated Shawawis

Political power in pre-modern Oman was predominantly of tribal and territorial nature. Any important tribe would try to consolidate its political power through colonization and extension of tribal territory. Since the 17th century the 'Abriyin tribe are in control of the largest part of the Western Jabal Akhdar. Smaller and weaker tribes on the other hand would have tried to protect and maintain what they had by affiliating themselves to powerful tribes. The Abriyin own settlement land, fortifications, agricultural and pasture land and water-rights either directly or through their affiliated tribes and have the revenues from the *bait a-mal* (communal property) from the entire area. In the mid-17th century the old town of al-Hamra was founded by the Abriyin and they extended their power to Balad Seet.

Al- Hamra

This location provides the settlement with a natural protection which is supplemented by a number of watchtowers surrounding the settlement and the core of the oasis. In the North, the houses are built on rocky ground. South of the built up area the palm plantation and the fields are located. The whole town well known for its beautiful vernacular architecture. The settlement forms a strip on a more or less east-west axis at the foot of the mountain, following the construction of the falaj. This falaj which is led to al-Hamra from the west determined the structure of the settlement into its very detail. The settlement, the palm-gardens in the West, the grain and vegetable fields in the East, the layout of the parcels of land are all depend on the irrigation system. The historical city was built along a rocky slope next to the gardens in order to save cultivable ground. The valley is used for agriculture, but once the soil is apparently not good enough, fertile soil has to be imported and to be protected. The defensive character of the oasis is determined by the artificial depression of the palmgardens and the surrounding settlement structure and the defensive towers. The whole oasis is surrounded by watch and defence towers. These towers serve for defence and communication. In order to secure communication between the towers, they are built in a distance of maximum 500 m far from each other (fig.4).

Al-Hamra has grown in several, still visible phases. The oldest buildings are in the centre of the town between the al-Naab gate in the east and the al-Mighri gate in the west. The Bait al-Saffa and the houses around it are considered to be the oldest houses. In the second period the houses covered the area between the Arish al-Sidra gate in the east and the al-'Ali gate in the west. To the East the souk is located outside the city gate and it is said to be one hundred and thirty years old. It was built up in a third phase. The covered complex contained some forty-eight shops and was constructed also in mud-brick on stone foundations. The passageways had three openings into the city and two to the outside. West of the al-'Ali gate the built up

area was extended to the north. In the last period East of the al-Ghuj mosque buildings were added to the North-east, and in the western part the settlement expanded to the north-west up to the point where the falaj divided into its two branches (Fig 5).

As much as the layout of the gardens and fields, the settlement structure was determined by the falaj. The houses, which are laid out in rows separated by narrow lanes, are oriented to the south, which reduces solar gain in summer and catches the breeze from the valley, which draws cool air from the mountains through the rows of houses. The bigger houses tend to be near the bottom of the slope, along the main street and the falaj. The position of the mosque and the souq, of the washing and bathing facilities and of richer and poorer houses depended on the availability and the division of drinking, washing and waste water. Along the falaj was the main road which served as the city's main axis, with some of the oldest houses. The alleys which lead to the main road are all interconnected. The street grid shows an approximately orthogonal pattern. Cul de sacs are only observed within larger building blocks. In the middle of the settlement an almost straight street leads through the built up area. This street marks the edge of the old settlement nucleus.

The analysis of the house-forms revealed that houses in al-Hamra have only small or no courtyards at all. They present a compact house type with an interior stair case and ventilation shafts in adaptation to the area's extreme summer temperatures for which even the classical courtyard house is inadequate. The mud-brick houses are vertically organized, with the dark, lower floor used for storage purposes, the upper floors for living purposes, and the roof terrace substituting the missing courtyard. On the constructive level, the building serves its different functions: the defensive, up to 80 cm thick walls of the ground floor are tapering towards the upper floors and give way to an almost fragile structure with numerous windows and niches, and the parapets of the roof terrace.

The houses are of thick mud-brick-walls on stone foundations and few windows at the ground floor level. At the first floor the rooms have the two level window, with an opening at floor level and a smaller window above it to provide better control of air movement. The living rooms are decorated with painted wooden ceilings. Drain spouts channel the rainwater from the roof level into the street and from there into the palm gardens.

The housing complexes in Balad Seet are constructed out of stone and mud mortar. But as in Al-Hamra the internal spatial rooms (ghuraf) are used differently according to the changing seasons. Normally the ground floor has a stable with ventilation openings for the family's milk cow and smaller animals (dars) as well as several rooms for food and fodder storage. For storing the dates, a dark room (margal) with a special grooved platform is used. The main living and sleeping rooms are on the upper floor. The "suffa" is an enclosed living space, and the "dahriz" is located between the suffa and the rooms opening out of the arsha. The rooms in the first floor have larger windows and ventilation openings (misba). The sizes of the rooms are limited by the length of the palm trunks and tend to be a maximum of three metres.. The slope of the roofs, and special channels carry water off to the waterspouts and gargoyles. The interior wall niches (rawzana) are used for storage. Wooden poles are fixed horizontally into the walls for use as clothes hangers.

The geography, the climatic conditions, the existing resources and the historical context of the different regions determine the settlement structures and its functions, the typology of the houses as well as the building constructions in stone or mud. But the

unity for all this diversity is the traditional social society , which expresses itself in the settlement structures and functions and in the architecture. The arising settlements formed significant structures based on the water supply systems and until today the areas of today's urbanisation processes are in zones of fertile arable. This cultural heritage has to be protected, because the population growth, the expansion of the city, their consumption of resources and their environmental consequences have become important aspects of city development. The objective of a really sustainable evolution are of first priority for the future development of the oasis settlements in Oman and we can learn from thepast. .