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Urban life in the Sahara Desert

legacy through the lens of construction technologies

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Huge thanks to my father, who inspired me to study this field and become who I am.

I would also like to thank professor Francesca Frassoldati and Dr. Andrea Pollio for their extraordinary support in this thesis process.

This thesis would have been impossible without the support of the loveliest people in the world; the Siwians who consider me a member of their family. A special thanks to Sheikh Omar for his advice and encouragement.

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Introduction

In the last century, the world witnessed rapid development in many fields of life. Different inventions and innovations helped humanity to develop and to overcome many difficulties in life. Unfortunately, these changes also caused adverse effects on the tangible and the intangible heritage of different places across the world.

This research focuses on modern construction technologies and their effect on the architectural heritage in the oases of the Sahara Desert. These technologies facilitated their survival, prevented diseases, and improved economic life. Unfortunately, they have been applied with ignorance of the fragile ecosystem of the oases, which led to the disappearance of some of their tangible and intangible heritage.

The case study of this research is the oasis of Siwa, located in the western desert of Egypt. The rapid changes that occurred to the oasis in the last century, especially on its traditional architecture and on its urban fabric. The research explores the reasons for the disappearance of such architecture. The recent emergence of several projects trying to preserve its architectural legacy. This dissertation analyses these projects and charts their social and economic effects on the oasis.

The oasis of Siwa remained isolated for a long time; the only connection to the outer world was through trade caravans, which allowed the entry of few technologies of its time. After the Second World War, however, the oasis became easier to access and more open to the modern world with its technologies and innovations. New activities appeared in the oasis, which led to rapid changes in the oasis' lifestyle; older technologies were replaced with modern ones. Later on, Eco-lodge tourism also appeared, attracting tourists who are seeking a 'traditional life' vacation and an escape from busy modern life. This kind of tourism has helped the preservation and the rebirth of several traditions, especially in the architectural field, but it framed it within the tourism business.

In more recent years, the phenomenon of digital nomads has also risen globally, thanks to the faster means of transportation and easy access to the Internet. Different people from different cultures and backgrounds travel around the world looking for places with an exceptional environment in which to live and work for a period of time. Siwa has attracted these digital nomads who are dazzled by its splendor of culture and heritage. Unlike vacation tourists, digital nomads tend to stay for a longer time in the oasis, which allows them to establish a stronger connection with locals. This connection helped the Siwians to rediscover their heritage and traditions. In addition, current circumstances force Siwians to question how they can update the oasis to suit modern life, rather than neglect it or deal with it as folklore for the tourists to enjoy. My research maps the impact of this new trend on the Siwian culture and its architectural heritage and offers a conceptual proposal to preserve its architectural heritage and the life of its intangible heritage.

0.1 RESEARCH OBJECTIVES

_Studying the relationship between the population of the Sahara Desert and the vernacular architecture of oases cities like Siwa.

_Studying the radical changes in the architectural and urban context in the last century and the effect of new construction technologies on their heritage.

_Exploring some examples of revival of the traditional architecture through the involvement of the local community, and social and economic effects.

_Charting the impacts and opportunities of connecting digital nomads, remote workers, and locals with traditional architecture.

0.2 METHODOLOGY.

The methodology used in the thesis is articulated through three phases. The first phase is a bibliographic research based on data collection of references to get a better historical understanding of the relationship between oasis, people, and the architectural context. Also, more focused on academic references in several fields to understand the architectural type, the urban fabric, the social and economic life, and the environmental issues. The second phase is strongly connected to my memory and life experiences; the chosen oasis for the case study is where I spent most of my childhood. I witnessed the changes in the oasis in the last three decades. Through the years, the oasis starts to appear to me differently. Mainly for two reasons; first, the architectural work of my father in the oasis. He is practicing architecture until today in the oasis. He designed in the last 30 years several projects of eco-lodges and other public buildings. In addition, the restoration of the Shali fortress and its two mosques, and a third mosque that is next to the Oracle of Amun. The beginning of his journey in Siwa was to rediscover the Kershif architecture and its techniques. The second reason is the years I spent studying architecture, which allowed me to better perceive the architectural legacy of Siwa. These changes are discussed in the thesis from my perspective. The third phase is the observation phase, site visits, structured and unstructured interviews, field notes, and photographs on-site.

Myself while learning the traditional Siwian architecture

CHAPTER 1

The Sahara Desert

The Sahara Desert: It is this limitless dangerous sea of sand with hidden power. Or it is the theater for the fascinating Arabic romantic literature. For others, it is the house of the Camel, this calm strong animal that crosses the desert with the Bedouins and their tents. Others will relate it to the church and the great monks that escaped to it to protect and preserve their faith and beliefs and created these fascinating communities in their monasteries. For many, the Sahara is the place Santiago crossed chasing for his treasure and fell in love with Fatima. For me the Sahara is the memories of my childhood, sliding on the dunes and counting the stars in the first camp and the fear of getting lost. It is the place where you appreciate the silence and understands the power of nature.

1.1 Introduction of the Sahara Desert.

The Sahara Desert الصحـراء الكبـرى 'El-Saharaa El-Kobra, the greatest desert', located in the northern part of the African continent stretches from the Red Sea in the east and the Mediterranean in the north to the Atlantic Ocean in the west, it covers 9 million square kilometers almost 30% of the continent (Griffiths, 2016). It covers large parts of Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Sudan, Tunisia, and Egypt where the research will be focused.

The Sahara was not always a harsh dry desert, 10 000 years ago a transition of the so-called 'green Sahara' to what we know now of the Sahara occurred (Kröpelin, et al., 2008). This natural phenomenon occurs every 15 000 years thanks to the earth's orbital precession cycles (Zhang, et al., 2014). Even though it is one of the driest areas in the world, beneath this yellow carpet a group of aquifers is laying. Having one of the largest aquifers in the world, The Nubian Sandstone Aquifer (Scheumann & Herrfahrdt-Pähle, 2008). It covers an area over two million km2, including parts from Sudan, Chad, Libya, and Egypt (Fig. 1).

The presence of water on the surface naturally or via man-made springs or wells irrigating a fertile land, creates a favorable condition for life to form providing habitats for animals and plants; these places are known as oases. The Sahara contains many oases; some are inhabited, some got abandoned through the history, looking at the Nile valley from a satellite view it might seem like a big oasis.

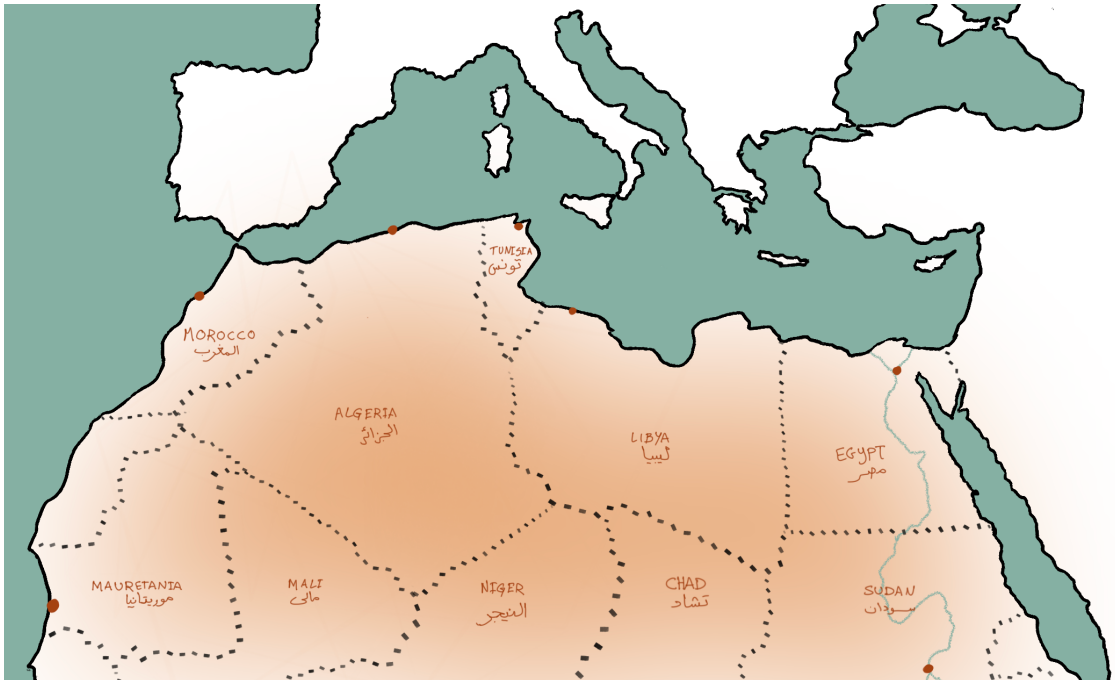


Fig. 1: Map of the Sahara desert. Done by Youssef Mekael

1.2 THE INHABITANTS

The Sahara has been populated for thousands of years, due to its desertification period the people moved to the Nile Valley and in the northern highlands where the presence of water. Others kept moving around the desert adopting what we know as 'nomadic' lifestyle, stationing in the oases for its water and plants. Many of the nomads found in these oases a holy gift in which they decided to give up their nomadic life and settle in these oases. The surrounding environment formed their habits and social activities leading to the creations of magnificent and unique cultures and civilizations across the Sahara (Longa´s, et al., 1999).

Nowadays the Sahara is inhabited by people of various origins; the research will focus on one specific ethnic group; The Amazigh which means 'The freemen' known to the world as 'Berbers', an ethnic group inhabited the Sahara for thousands of years, considered the original inhabitants of the area (Abdellah, 2018). They are spread all over the Sahara, subdivided into different groups and tribes. Throughout the history they developed many civilizations across the area and established connections with the neighboring civilizations.

Even though the Amazigh shares many of their cultures and traditions and similar language among the Sahara, they never experienced a unified political identity;

especially the oases communities as the coastal areas were conquered by many civilizations during history (Olivier, 2003). The oases functioned as independent states composed of one or several tribes, where the head of the tribes rule the oasis forming a sort of council composed of them or from the wise elder people of each tribe, in some cases the dominant tribe controls the oasis and apply its power on the other tribes (Fakhry, 1973).

As the Sahara may seems calm and silent, but it can be very dangerous place; not only because of its sandstorms that can wipe out a whole city or its savage animals; but the fight between the tribes that can turn into wars that last for years. The main priority for the oases was to provide safety for its inhabitants from the danger of the foreign attacks. Every community developed its own strategy for defense, a common strategy where the research is focusing was 'the fortified city' (Fig. 2). Using the available materials in the surrounding environment, each community developed its own unique architecture typology to build its fortress. A group of houses surrounded by a fence/wall composed of one or multiple doors, within the walls a source of water was a must beside a place to host the religious practices of the community and other typological building to host different activities depending on the community's traditions (Moussaoui, 2013). This typology is not typically only for the Amazigh, but many of the monks decided to adopt same strategy to build their monasteries to prevent the tribes' attacks.

Fig. 2: Fortress of El-Qara Oasis in the western Egyptian desert. Taken by Youssef Mekael, 2021

Within these walls the inhabitants shaped their cultures blending into the ecosystem of the oases, becoming a part of it, not a burden. They inherited their legacy to the later generations that upgraded it following the new trends of their era.

1.3 CHANGES THROUGH THE HISTORY

Before the invention of the airplanes and the trucks, The Sahara was full of the busy routes for merchants selling goods and slaves from Sub-Saharan Africa to the middle east and Europe, also after the spreading of Islam in Africa these routes worked as the Hajj route, the annual Islamic pilgrimage to Mecca. The Oases worked as stations for the caravans crossing the Sahara (Fig. 3). As these merchants were traveling around the world visiting different countries and civilizations, the oases were not only a place to sleep while their long trip, but a place to exchange what they have not only

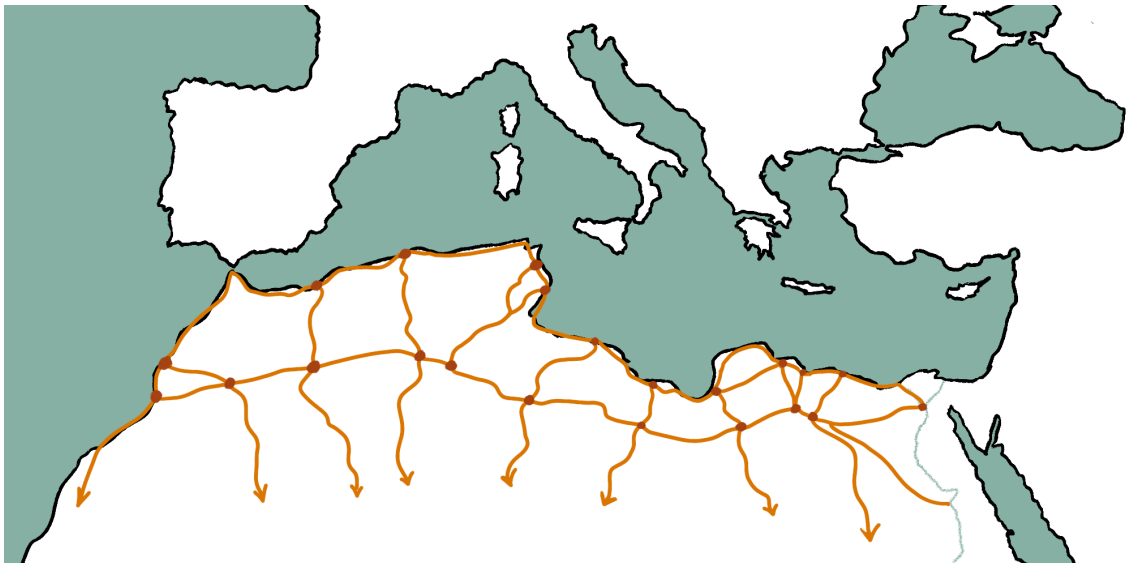


Fig. 3: The merchants routes across the Sahara Desert. Done by Youssef Mekael

the goods but also knowledge from what they have seen in the different countries. These caravans allowed the entry of new technologies and innovations to the oases. The inhabitants have always found harmony to allow these new entries to blend in with the fragile ecosystem for the development of their culture and civilization.

1.4 THE NEW ENTRIES

In the last century, due to political changes in the area and the rapid evolution in technologies that the world has witnessed, a new wave of technologies and inventions enters the oases. These entries did not respect the relationship between the inhabitants and environment, they changed in inhabitants' habits and social activities, which created a defect in the ecosystem that kept the oases alive for

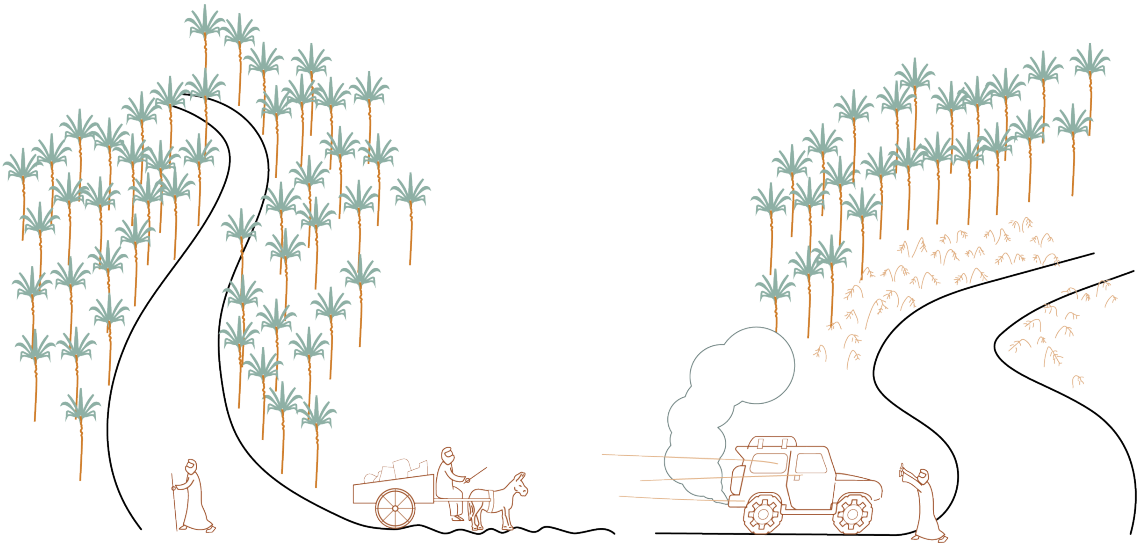


Fig. 4: The indirect impact of the new means of transportations on the environment. Done by Youssef Mekael

centuries. These changes led to some technical issues and problems for the environment and inhabitants' life. The accumulation of these problems requires the intervention of the central government. Which can't always solve it due to the high cost or the lack of energy and technicalities.

After I displayed a short introduction to the history of the Saharan communities, how they devolved their legacy and how because of some changes in their habits they start loose parts of their heritage. In The following chapters I will discuss the journey of the oasis of Siwa in Egypt; how the Siwians formed a unique heritage in their oasis crowned by a fascinating architecture. I will demonstrate how their architectural legacy despaired a short period of time, and how it got revived.

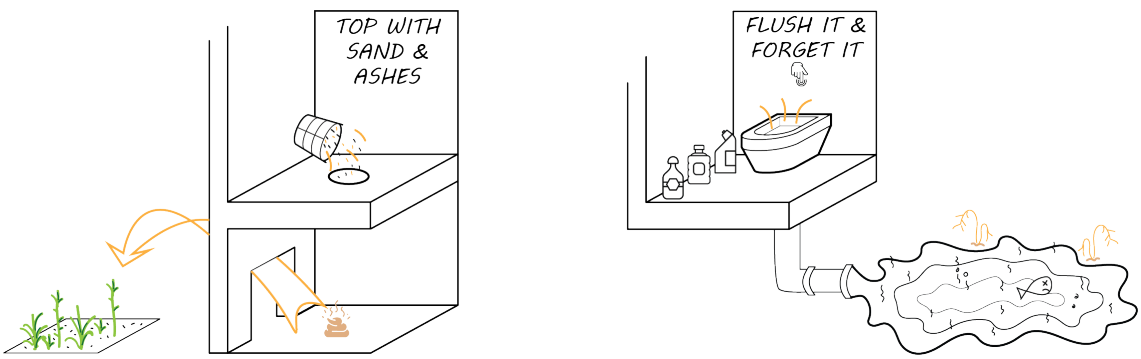


Fig. 5: The indirect impact of the new sanitation systems on the environment. Done by Youssef Mekael

The Oasis of Siwa


5
1
2 Km
Aghurmi

CHAPTER 2

Siwa Oasis

2.1 OVERVIEW

Siwa is one of the five main oases in the western Egyptian desert. As the different Egyptian oases share many similarities, Siwa remains a special one, with its unique habits, traditions, history, and architecture (Fakhry, 1973). The oasis is home to the largest number of Amazighs in Egypt, who developed a unique and isolated desert culture and a language called Siwi, which is considered an Amazigh dialect. The Arabic language is common as a second language as it is the official language in the schools (Waked, 1956).

The Siwa Oasis (واحـة سـيوة, Wahet Siwah) is an urban oasis located between the Qattara Depression and the Great Sand Sea in the Egyptian Western Desert, 50 km east of the Libyan border, and approximately 300 km south of the Mediterranean coast. (From 29°10′ to 29°16′N Latitude and 25°27′ to 25°35′E Longitude). The depression is approximately 50 km in length, varying from 2 to 20 km in width, and encompasses about 1000 km2. Siwa Oasis extends between 0 and 18 m below sea level and displays numerous landforms including salt lakes, salt marshes as well as cultivated lands and orchards (El-Saied, El-Ghamry, Khafagi, Powell, & Bedair, 2015). Siwa Oasis is one of Egypt's most isolated settlements with about 31,000 people (CAPMAS, 2019).

The municipality of Siwa is composed of several urban communities; the research will focus on the Shali fortress and the surrounding area, as it is considered by the locals the core of the oasis for its historical and cultural value.

2.2 THE EARLY HISTORY OF SIWA.

The oasis inherited rich archaeological sites dating back from the prehistoric era to the 26th ancient Egyptian dynasty (663-525 CE). The period to which the construction of the temple of Amun dates back, one of the most famous oracle temples in the ancient Mediterranean civilizations. Herodotus mentioned the oasis in his fourth book under the name of Ammonians. In which he described a temple of Jupiter 'the temple of Amun' and 'the Fountain of the Sun' (Herodotus, 2013), a spring that still exists nowadays and is known locally as the spring of Cleopatra, as the locals believe that the queen Cleopatra had taken a bath in it during her pilgrimage to the oracle's temple (Fig. 6). The temple reached its peak of fame after the visit of Alexander the Great to be crowned son to the god of Amun (Fakhry, 1973). The rest of the temple is still standing on the hill of Aghurmi. The oasis has been famous as well as a trade center on the commerce route connecting west of Africa to the ancient world (Fakhry, 1973). The fame of the oasis began to decline after the spread of Christianity and the abandonment of Amun's religion. However, Siwa remained a station on the commerce route and the Hajj route; annual Islamic pilgrimage to Mecca; especially after the spread of Islam in Africa. Different settlers inhabited Siwa for short terms or permanently, living in tents or light-structure houses built out of

reeds in the area around Amun's temple. The settlers lived in danger, and they went through a decline and depopulation phase, because of the continuous incursions of Arabs and Berber Bedouins (Waked, 1956).

Fig. 6: The temple of Amun. Taken by Youssef Mekael, 2021

2.3 SHALI AND THE 40 MEN

According to the Siwian manuscript; a book recording all the events that happen to Siwa since the construction of Shali; during the 12th century, the oasis reached its maximum decline after many destructive attacks from the Arabic and Berber nomadic tribes, the forty men who remained; man as a head of a family; chose a high rocky hill to build a fortified city (Fig. 7); they named it Shali, which means city in the local language. The forty men built the fortress with one door, and one mosque attached to the fortress from outside, next to the door, in the year 600 Hijri 'the Islamic lunar calendar' 1103 CE (Waked, 1956).

The forty men belonged to seven families, which were later divided into the eleven tribes that still live in Siwa nowadays. As fights started to arise between the families, the tribes' heads decided to establish a governing body to rule the town. They named it 'Magles El-Ajwad' (Council of the best) - later changed to 'Magles El-Okalaa' (Council of the wise); and established a place for their meeting next to the door behind the mosque, a meeting site composed of several 'Mastaba' benches. The council's mission was to not only investigate civil issues and adjudicate cases, but they established laws and rules to organize life in the Oasis. These rules not only have facilitated the people's lives but also have shaped the urban fabric of the city (Waked, 1956).

The council fixed the location of some of the facilities in the city with regulations and timetables divided among the families depending on each service, the water wells,

the olive press, the 'Masateh' (a place to dry and store the dates), and others (Waked, 1956).

The streets in the city were designed to be very narrow (Fig. 7), allowing a maximum of two people to pass. In case of invasion, it was hard for the invaders to walk in a group, and they could not attack through the windows. Also, every street had to split at the end into two streets, creating the shape of a letter "Y" that gave this organic pattern to the urban fabric of the city. In 1923, Sir Belgrave described this fabric as an enormous anthill or a beehive (Belgrave, 1923). The main reason for this pattern was to convert the city into a big maze, forcing strangers (invaders, thieves, etc...) to get lost inside (Waked, 1956). Moreover, the climatic need is the reason for the absence of urban empty spaces, such as squares, replaced by streets and covered areas called 'Khos' (Fig. 9). It is common to see 'Mastaba', a bench attached to the house for a small gathering to drink tea (Shehab, 2009).

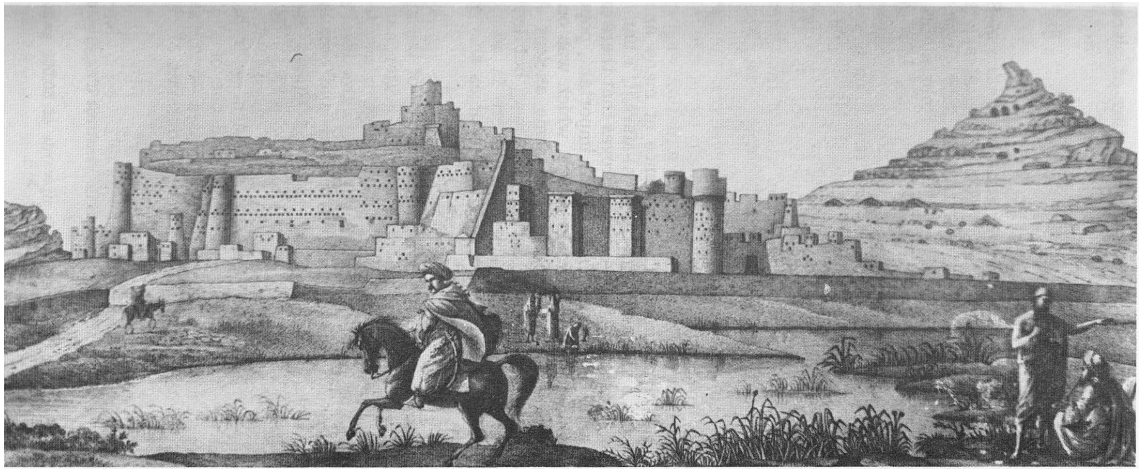


Fig. 7: Sahli fortress, Heinrich Carl von Minutoli resting on the island of Siwa. Jean Victor Louis Faure 1820

While the forty men built the city with only one door: 'El-Baben Shal' - the city's door - (Fig. 10), a hundred years later, the council decided to open a second door named 'EL-Bab Atrar' -the new door-, as a secret door to flee the city in the case of a threat. Later, a third door was opened for women after some families complained to the council about their women's privacy.

They named it 'Bab Sour Kdouma, Kdouma's door' after the owner of the house where they opened the door. These are the three doors of Shali that remained until the abandonment of the city in 1826 (Fakhry, 1973).

Unlike how cities usually grow, expanding from a nucleus to outside, Shali grew differently. Abdel El Latif, who visited the city in 1936 for the first time, described the houses as composed of several floors and he was surprised that the rooms are tiny and cannot fit more than one person inside in some cases. When he asked his guide

Fig. 8: Narrow Street inside the fortress. Taken by Youssef Mekael, 2021

Fig. 9: Khos. Taken by Youssef Mekael, 2021

how people lived in these tombs, he was told that when the forty men originally built the city, the houses were bigger. As the council's rules were strict, nobody was allowed to build outside the city's wall, fearful of possible attacks. Only the 'Zaggala' - a group of celibate young men who worked mainly in agriculture - were allowed to live outside the city until they reached the age of forty years old, when they married and moved inside the city walls (Fakhry, 1973). The families had to find a place for their children to live and to marry. The houses were expanding upward by adding new floors up to seven stories in some houses and the rooms were divided into smaller rooms to have enough space to sleep at night, "*It is somewhat similar to St. Michael's Mount*" Sir Belgrave described in 1923 (Belgrave, 1923).

Fig. 10: El-Baben Shal. Taken by Youssef Mekael, 2021

2.4 AGHURMI

It is worth mentioning that one tribe "El-Hadadin" decided to leave Shali for lack of space and build its fortress-city on the same hill where the temple of Amun was located. Known as Aghurmi nowadays, and similarly to Shali, it was a fortified city with one door and one mosque, and no one was allowed to build outside the city's wall. Unlike Shali, Aghurmi is built with yellow stones (Waked, 1956).

Fig. 11: Houses in Aghurmil. Taken by Youssef Mekael, 2021

Shali is an excellent example of functional architecture. The fortress's main purpose is to protect the inhabitants from foreign attacks but within the fortress's wall an evident example of how the Siwians habits and their social practices had shaped the urban fabric of the city through community dialogue. The compact aggregation of the volumes reduced the surface exposed to sunlight within this building-city "Edificio-città" (Picone, 2009), helping them challenge the harsh desert climate and adapting their lives to suit the environment with solutions from the surrounding environment, allowing the city to integrate into the oasis ecosystem.

Fig. 12: Arial view for the fortress of Aghurmi. Drone footage by Nader Makram

2.5 THE KERSHIF

The technology needed for such a building process is very simple, and strongly connected to local materials, expressing the relationship between local inhabitants and the environment. The resource limitation led to the establishment of several rules and customs on their usage, which helped to protect the ecosystem of the oasis. This limitation allowed the builder to be innovative and creative in solving some technical issues.

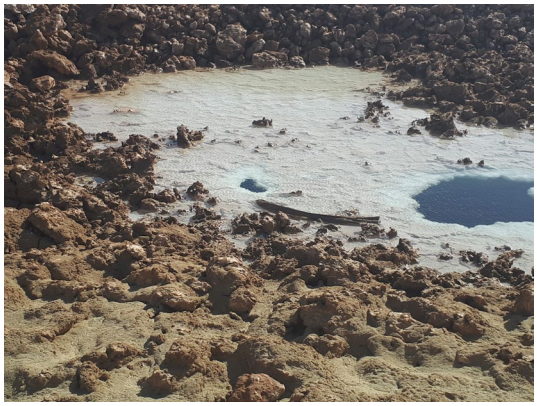


Fig. 13: The salt crust that surrounds the salty lake. Taken by Youssef Mekael, 2021

Fig. 14: Kershif stones. Taken by Youssef Mekael, 2021

The fortress was built using Kershif blocks (Fig. 14), locally known as "Arigh", an unusual material made of 'Sodium chloride' salt crystals with impurities of silt and sand. The blocks of irregular shape were sourced from the salt crust that surrounds the salty lake, without any attempt of regularization. They were then cut into smaller blocks and utilized in the masonry with a salt-rich mud mortar obtained from 'Tafla' silt. During the drying process of this particular kind of mortar, a strong adherencec and bond was created between the blocks and the mortar due to the crystallization of the salt within the mortar itself, giving rise to a sort of monolithic conglomerate (Rovero, Tonietti, Fratini, & Rescic, 2009).

Fig. 15: The salty lake. Taken by Youssef Mekael, 2021

The construction of the wall proceeds rhythmically like a dance directed by the 'Meaalem', the construction master. The building process requires the work of three people, the Meaalem and two assistants, one responsible for the Kershif blocks and one for the mortar (Picone, 2009) (Fig. 16). The building structures are realized through the assemblage of different wall elements until completing the masonry boxes. A leading role is played by palm trunks which constitute the supporting structure of the floor in form of beams and flooring (Fig. 17). Olive wood is commonly used for lintels, stairs, and roof structures of narrow spaces, such as corridors (Rovero, Tonietti, Fratini, & Rescic, 2009).

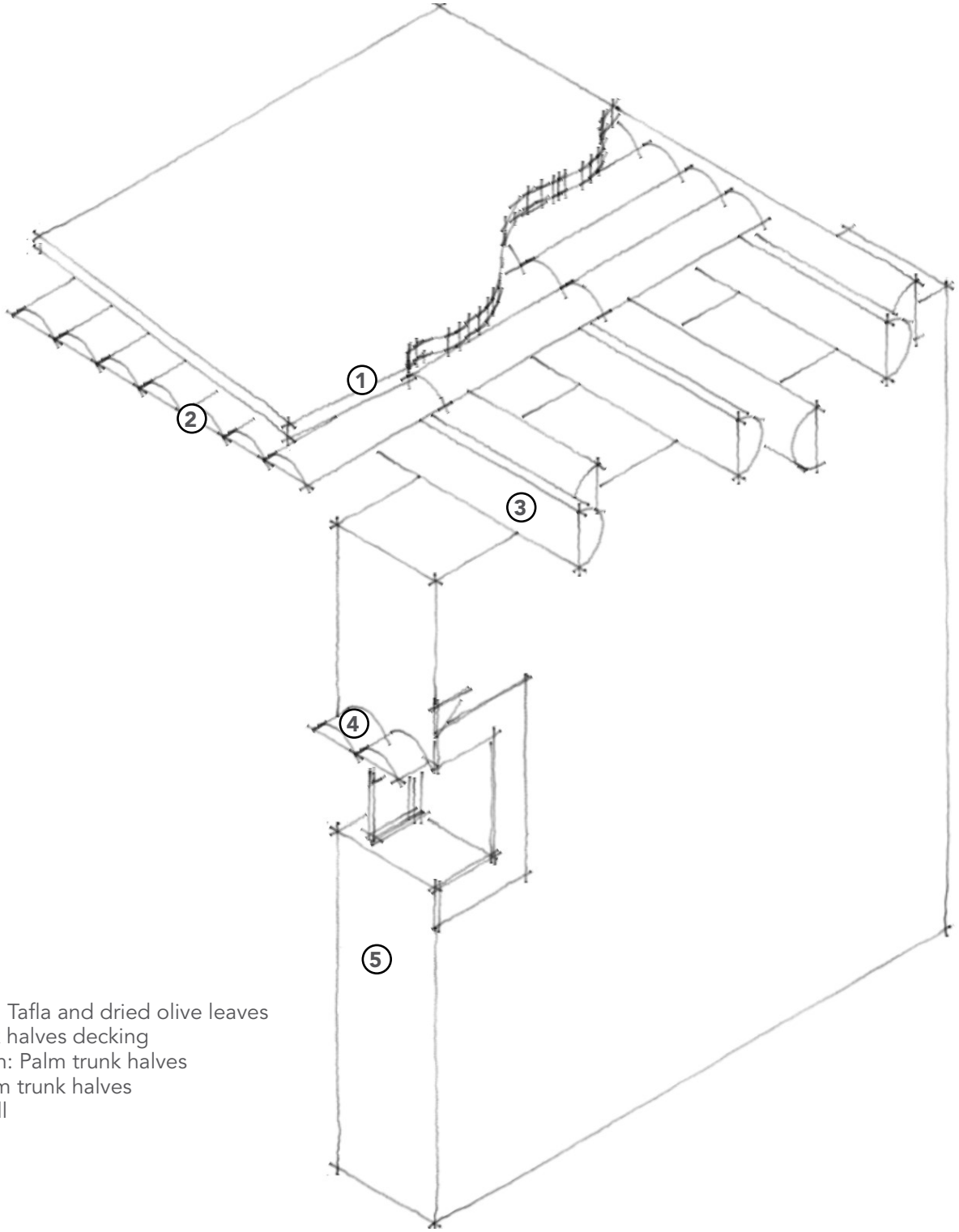
Fig. 16: During the construction of a wall. Taken by Emad Farid

Palm trees are usually cut from October to December after the harvest season, which is at the same time the lowest-probable season for insect infestations to the trunks. To further prevent the palm trunks from insects or any parasites, the trunks are buried in salt next to the salty lakes for several weeks and then left to sundry. The roof layer is composed of silt (Tafla) mixed with olive leaves to prevent any cracks from the blazing sun and to increase its waterproofness (Fig. 19). The construction technology is based on the “No Waste” concept. The palm tree, for instance, after it has been cut the leaves are removed and used to erect fences for the gardens or used in the manufacturing of furniture or other life-essentials. The fruit stack is used to build different tools needed in the construction process or for daily life in general. The sheath is removed from the trunk before being buried in the salt for different usages, for example, the making of ropes.

Fig. 17: Ceiling structure. Taken by Youssef Mekael, 2021

Fig. 18: *Construction of the decking. Taken by Emad Farid*

Fig. 19: *Finishing layer of the roof. Taken by Emad Farid*



1. Roof layer: Tafla and dried olive leaves
2. Palm trunk halves decking
3. Main beam: Palm trunk halves
4. Lintel: palm trunk halves
5. Kershif wall

Fig. 20: Detail diagram of the Kershif architecture. Done by Youssef Mekael

This type of construction has endowed Siwa with a unique vernacular architecture legacy. In addition, it was the reason for an intangible heritage connected to it. The construction of a new building was a part of the social activities. Hamza, the oldest Meaalem in Siwa and the master who has protected the kerchief's secrets and delivered them to the new generation of builders. He talks about his childhood memories, the construction process was called 'Fazaa'; the closest translation is frenzy, hysteria, or rush; not just the whole family but all the street is participating, everyone who is mastering a craft participates, from cutting the Kershif blocks, preparing the palms, building furniture, to preparing food and tea.

Fig. 21: The 'Fazaa', group of Siwians carrying a palm. Taken by Silva White, 1898.

2.6 THE EXPANSION AND BOBASH'S LAWS

Fig. 22: The Fortress of Shali and the houses around it. Taken by Light Car Patrols 1916-19

Siwa remained an independent state until 1826, when the Ottoman governor Mohamed Ali decided to add the western desert under his sovereignty. After the occupation, the fear of the Bedouins' attacks started to decrease. Life started to appear safe thanks to the presence of a central government with an army to protect the country's border (Fakhry, 1973).

The council (Magles Elagwad) saw that it was time to expand the city. For the first time, Siwians were allowed to build their houses outside the fortress's wall. To prevent any chaos or randomness, the council set some rules for the expansion, which we can consider planning regulations. Mousa Bobash, head of the council, was a wise man who visited Cairo several times. Bobash set rules for the expansion, inspired by what he had seen in Cairo. He wanted to assure better air quality and a decent amount of natural light inside the new houses. He defined specific dimensions for the streets and a hypothetical concept for the house's composition.

"20 cubits for the main roads, 12 cubits for secondary ones, and 8 cubits for lleys. The house must be composed of a minimum of two stories where the livable area is on the upper floors and the ground floor is only for the storage and animals with no windows to avoid the soil's humidity" (Fakhry, 1973, p. 41).

Due to a conflict that happened between two families, the tribes were divided into western tribes and eastern tribes according to their location in the fortress (Waked, 1956). During the expansion, the western tribes decided to expand next to a hill west of the fortress known today as the western Shali, while the

eastern tribes expanded around the fortress and later east of the fortress. After the expansion an urban transformation led the residential typology to evolve, with more spaces available, and a more regular planimetry (Shehab, 2009).

Each house consists of two or three stories and an accessible roof. Usually, on the ground floor there are the 'Makhzen' storage rooms, and a walled room to collect the excrements accessible only from the outside. After the second world war, the number of guests who visited Siwa increased, to protect the privacy of the house a guest room with a separate entrance and toilet called 'Marboua' was added, which can be also found on the first floor in some cases. Upstairs, a foyer 'Stah Neams' leading to sleeping rooms placed on the northern part, the winter room 'Etgharfit Nshitee' a living room used only by the family during the winter as it is facing south. The kitchen contains the burner and the oven "Etabint", the roof in the kitchen is half-open to allow the smoke to escape. In addition, the kitchen leads to the lavatory, a small room with a hole on the floor linked to the walled room located on the ground floor; it allows the collection of dry excrements to use as a fertilizer in cultivations.

The rooms are lit by little square windows. Each window has four divisions with a shutter to each division; these shutters are kept open in summertime. The windows are very low, a few feet above the level of the floor, which allows easy access to the people sitting on the ground.

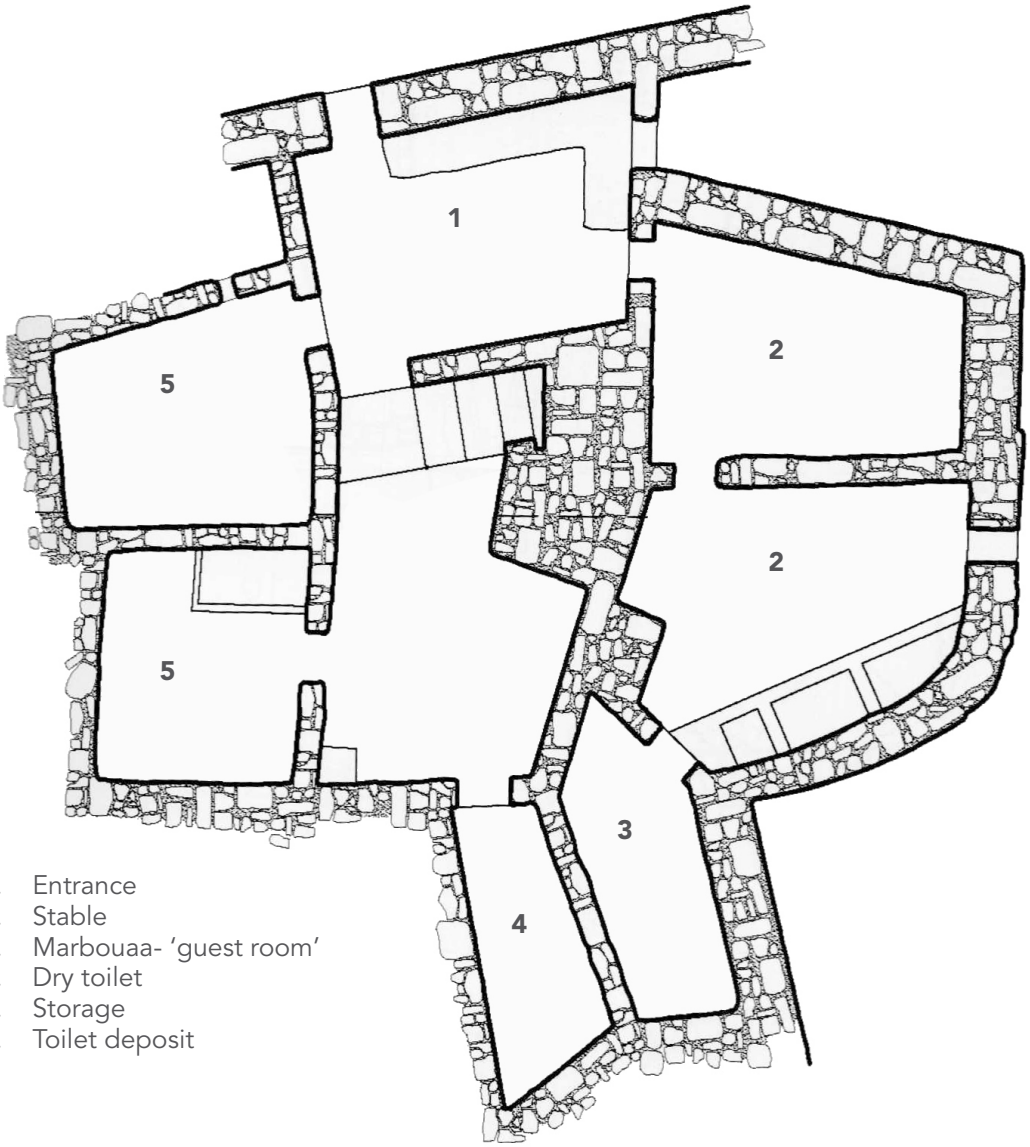
The ceilings are made of palm trunks covered with rushes and a layer of mud. At the end of the trunks, if they are too long, they project outside the walls and serve as pegs on which to hang bundles of bones to avert the 'Evil Eye' (i.e... bad luck or evil curses). The mud floor is covered with palm matting or occasional wool carpet.

During the hot summer nights, people sleep on their houses' flat roofs, which are surrounded by low walls to ensure privacy. The whole family lies on the roof during the night and covers only their faces, believing that the moonlight can cause madness (Aboubakr Ismaeil, 2021).

The significant thickness of the walls makes the houses cool in summer and warm in winter when the cold wind sweeps down from the high desert plateau (Battesti, 2006).

In the following figures display a survey of a typical house after the expansion done by Adelina Picone in her book "*La casa araba d'Egitto: costruire con il clima dal vernacolo ai maestri".*

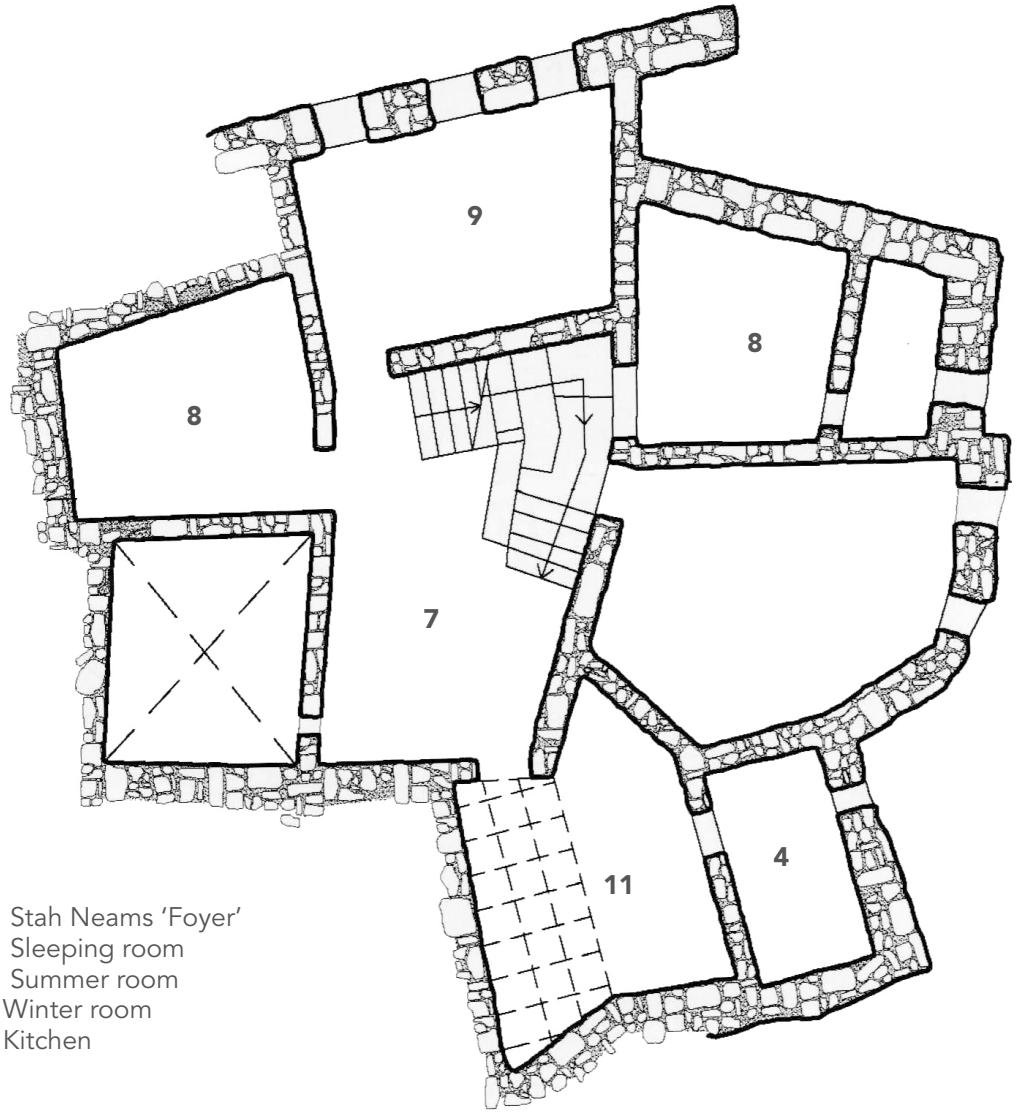
Fig. 23: *Typical house outside the Fortress. Taken by Battesti, 2006*



1. Entrance
2. Stable
3. Marbouaa- 'guest room'
4. Dry toilet
5. Storage
6. Toilet deposit

Fig. 24: *Ground Floor plan*

0 0.5 1 2 m



7. Stah Neams 'Foyer'
8. Sleeping room
9. Summer room
10. Winter room
11. Kitchen

Fig. 25: First Floor plan

0 0.5 1 2 m

2.7 THE ABANDONMENT OF SHALI

As the oasis expanded outside the wall, Shali started its abandonment; few people refused to leave their homes, especially the elders (Fakhry, 1973). During this period, the fortress was not only abandoned but a sort of a warehouse for construction materials (Kershif blocks, palm trunks, olive wood, etc.…) this situation has weakened the city's structure (Battesti, 2006). It was severely damaged by three days of heavy rains in 1926, which led to a complete abandonment of the city (Waked, 1956).

Later on, the oasis started to expand towards the gardens; they chose places with more solid soil. Later, these places were not available anymore and they started to build on more muddy unstable soil. The new houses were built with the same techniques as Shali's houses, with a lack of knowledge of the soil's nature. It did not take long for a structural problem to arise due to the lack of a strong foundation and suitable soil for construction, which led some to add a layer of foundation, 50 cm of yellow stones.

Photograph by Sir Alan J. Cobham

THE DRIED-MUD TOWN OF SIWA STANDS ON A HIGH ROCK IN THE LIBYAN DESERT

Around about the town, which resembles in some respects an Arizona Hopi village, lies the historic oasis of Jupiter Ammon, planted with palm trees, orchards, and grain.

Fig. 26: Shali fortress after the damages from heavy rains in 1926. Taken by Sir Alan J. Cobham, 1928

2.8 RADICAL CHANGES

According to Mr. Aboubakr, the director of the Siwian house museum and member of The Siwian Heritage Documentation Center, the Second World War played a major role in changing the oasis; the Axis alliance occupied it for almost three months (Aboubakr Ismaeil, 2021). During this time, foreign soldiers brought to the oasis several machinery and technologies: trucks, tanks, cars, etc.…, but also it was the first-time a bar, or a coffee shop opened in the oasis to serve the military. After they lost the war, they left behind a big change, mainly in transportation technology. The "Karooza'' was introduced to the oasis: it was a carriage pulled by a donkey, whose name probably originates from the Italian word 'Carrozza'. Mr. Aboubakr remembers that when he was a kid the 'Karooza' was made of the tanks' wheels abandoned during

the war. The Axis allies also abandoned some of their trucks, which became the main means of transportation to the outside of the oasis for many years after the war. Mr. Aboubakr adds that during his high school in Matrouh - Coastal City on the Mediterranean Sea, 250 km north of Siwa - his only transportation option were the trucks (Fig. 27). That increased trading from and to the oasis, and the number of visitors, which led to the appearance of the 'Marboua'; a living room to meet the guests; in their houses.

Fig. 27: Truck used to connect Siwa and Marsah Matrouh. Taken by Attilio Gaudio, 1954

Starting from the 1950s, several events occurred in the oasis that led to radical changes, socially, economically, and architecturally.

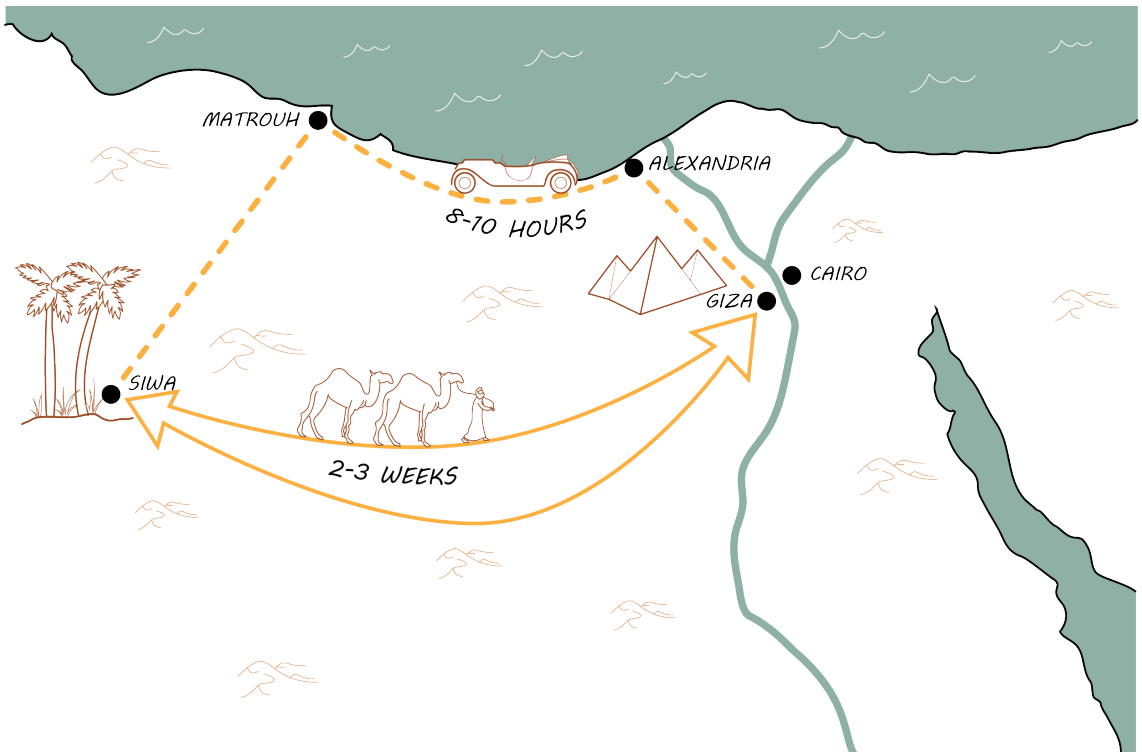


Fig. 28: Diachronic map of travel time with different means of transportations. Done by Youssef Mekael

2.9 AGRICULTURAL EXPANSION

Starting from the twentieth century, the idea of agricultural expansion started to arise, as it would benefit the wealth of the oasis, but it faced two main issues. The first issue is the lack of an agricultural drainage system. Siwa is located in a depression 18 m below sea level. Groundwater underneath the Oasis is extracted for agricultural activities, however as not all the water is absorbed and used, it drains through soil with high salinity into the center of the depression creating the salty lakes. The lakes would remain full during the winter season and evaporate during the summer thanks to the high temperature, leaving a salt bed behind. This was a repeating system (Sallam, Abd El-Aal, Fedorov, Bobrysheva, & Ruban, 2018).

Beginning in the 1950s', The introduction of deep drilling into the ground allowed them to extract larger volumes of water much quicker. This led to the expansion of agricultural land. however, led to an influx of water in the salt lakes (Fakhry, 1973).

The Egyptian Ministry of Irrigation permits digging a well along with any agricultural expansion project, unlike in the past, where the council "Magles El-Ajwad" enforced a strict law concerning the usage of water, 'El-Wagba' which means meal; they appointed a person to each spring to manage the water distribution to the lands (Waked, 1956). The influx of water in the salty lakes led to a rise in the level of the lakes which enlarged their sizes. The lakes are still enlarging year after year as the digging of the wells is still allowed. Many properties are destroyed because of this issue and especially the agricultural lands around the lakes are dying due to the rising of the soil salinity or because they sink under the water.

In the last seventy years, the government has tried several projects to stop the rise of the water level in the salty lakes; to improve the agricultural drainage system, or to dry the lakes, but the projects have not reached completion due to high costs.

The government in Egypt is trying to find super technological solutions, rather than local simple ones. Professor Horton explained during the webinar. (Protecting endangered heritage: Advances in environmental monitoring. 26th of November 2020, online lectures).

The second issue is workforce shortages. Siwa is a small community, and these types of projects require a significant number of workers. Two other factors have also worsened this issue. The military service law in the beginning of the 60s', which used to be compulsory only for the Nile valley residents, has been extended to Siwians as well, creating further shortages in the workforce, as it can last for several years (Fakhry, 1973). The second factor is the presence of oil in Libya; in 1962, almost 300 young Siwians were attracted to work there because of high salaries and the vicinity of the oil wells in Gagbub, a Libyan oasis less than 100 km from Siwa, and share the same family routes. This shortage led to immigration from the Nile valley to fill the gap.

2.10 OIL, INFRASTRUCTURE, PUBLIC FACILITIES, AND NEW CONSTRUCTION TECHNOLOGIES

The oil discovery in Libya encouraged different international oil companies and the government in Cairo to start searching for oil in the area of Siwa during the 50s'.

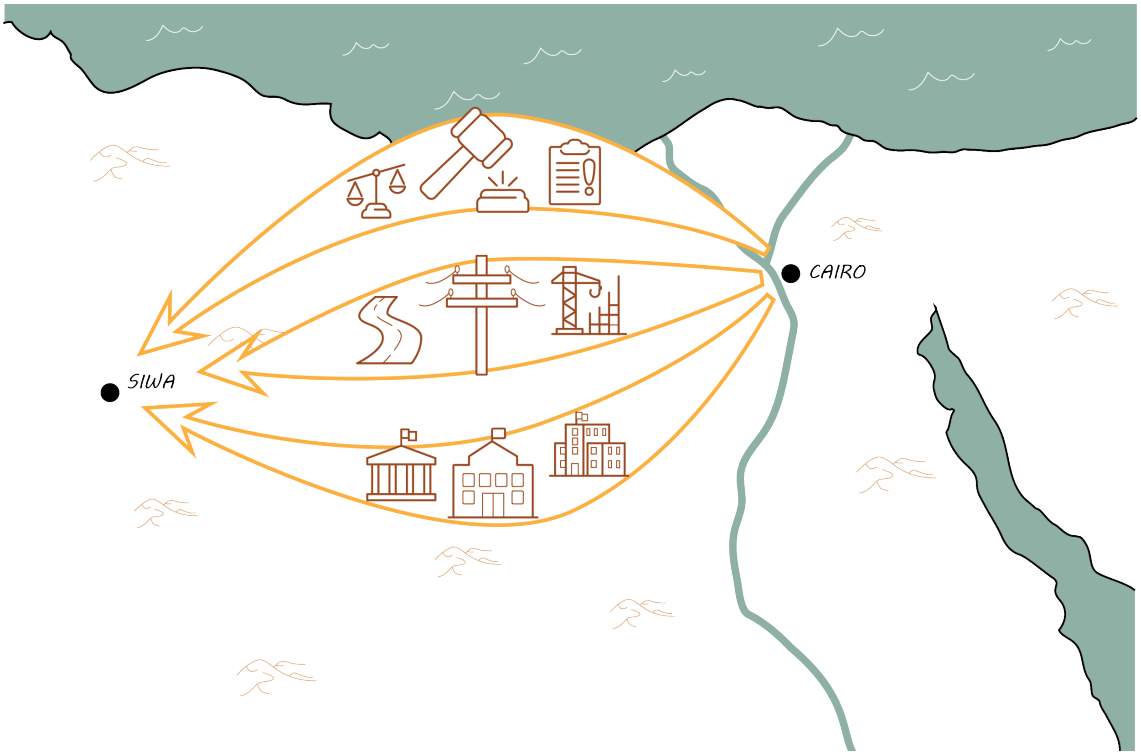


Fig. 29: Diagram map of centralized government infrastructure projects. Done by Youssef Mekael

Initial studies indicated the possibility of the presence of oil, in 1969 the digging of experimental oil wells started, but so far, no oil has been found (Fakhry, 1973). Following the 1952 military takeover done by the "Free Officers Movement" led by Gamal Abel Nasser (Torrey, 1965). Nasser served as the second president of Egypt from 1954 until his death in 1970 (Farid, 1996). During these years, he embraced a version of socialism and initiated a pan-Arab movement that was highly influential across not only the Arab world but also many of the postcolonial countries (Elsheshtawy, 2013). Nasser attempted to modernize Egypt through an economical revolution. Many national projects started among the country; infrastructure projects and public facilities: roads, electricity, public offices, hospitals, schools, etc.… (Pascoe, 2015)

Siwa experienced a somewhat different story. Mohamed Gamal El-Mesery, the head of the police department in the late 50s' wanted to modernize the oasis so that it would look like other cities in the country. Simultaneously, an American oil company finished its work with no oil appearing, thus they decided to end the project and

Fig. 31: *Local branch of the Ministry of Agriculture built during Nasser period.*
Fig. 32: *Taken by Youssef Mekael, 2021*

Fig. 30: *Nasser School in Siwa built during Nasser period. Taken by Youssef Mekael, 2021*

abandon the oasis leaving behind construction materials - mainly cement - that were meant to be used in the construction of oil well facilities (Aboubakr Ismaeil, 2021). El-Mesery found an opportunity to modernize the oasis; he took all these materials and started to build some new facilities such as a sporting club, cinema, and others. To fill the labor shortage, he encouraged young Siwians to work in the construction sites; it was the first time that Siwians worked with cement. These Siwians learned the construction techniques and, for some of them, it became a job and later a source of income. The construction in the oasis was always a 'Fazaa'.

Siwians continued using the kerchief for their buildings and kept the 'Fazaa' system. These young men start earning money for constructing houses and other buildings mostly for foreigners; non-Siwians; who would come to work or invest in Siwa, mainly in the agricultural sector. Later during the 70s', a wave of public facilities reached Siwa, the road to Matrouh was paved with asphalt, and several public buildings were erected: schools, a hospital, a post office, and others. At this point, the construction framework got divided into two systems, the first is Kershif construction and worked using the "Fazaa" system. The second is reinforced concrete with bricks or white stones, built by a contractor and paid labor.

All the public facilities and government buildings in this period were built in reinforced concrete; it was the first time this material came to be introduced to the oasis and in a very short period. Previously, these types of public buildings, even if they were limited, were built with local materials such as stone (Waked, 1956). These government buildings are similar if not identical all over Egypt; public schools in Siwa are similar to the ones in Cairo, Alexandria, Aswan, and South Sina. As most of these facilities were parts of national projects. Nasser empowered the centralization of the Egyptian institutions, his successors; even though they had different political visions; they preserved the centralization of the country (Pascoe, 2015). These projects are designed in Cairo, in a way to be implemented simultaneously in the cities or the villages dedicated to the national project. Although this solution helps to solve the shortage of service in a specific section in a short time, it does not respect nor represent the identity of the place.

Impact on the old traditions

The vast immigration from the Nile valley - farmers, government employees, teachers, oil company's workers, etc... - helped the oasis to modernize in several fields of life. Also, they had a massive impact on the Siwians traditions. Fakhry criticized what he called "Blind imitation", he noticed many Siwians imitate the residents of the Nile Valley who came to Siwa in clothes, the way of talking, and several habits to prove that they did belong to a modern society (Fakhry, 1973). Undoubtedly, these impacts had left their fingerprint on the architectural heritage. Siwian were calling their houses 'Beit Nedif' - which means the clean house - because they saw it is less dusty and fit better the modern appliances.

In addition, Siwians who came back from Libya also contributed to the transformation of local traditions. Mr. Aboubakr mentioned an interesting story about a specific piece of technology which, in his opinion, created a revolutionary impact. At the end of the 60s-beginning of the 70s, many Siwians, returned from Libya bringing with them new appliances which could not be found '*even in Cairo*'. A technological revolution, for example, was the portable stove. It might seem a small gadget, but it has left an impact on the composition of the Siwian house and the social life of Siwians. The portable stove can be used for cooking, but it also provides a decent amount of heat during the cold nights, therefore many Siwian left the winter room 'Etgharfit Nshitee' and stayed in any place in the house or outside, as they now had a portable heater and a portable kitchen. The warm "winter room" could be replaced with any other room because of a device that provides the needed heat. This phenomenon of replacing natural heating or lighting by the design of the house with technological appliances is still strong nowadays.

2.11 HEAVY RAINS AND THE DEATH OF THE KERSHIF

Siwa's climate is classified as a hot desert climate, but occasionally it receives heavy rains for a couple of days. In 1985, for several days, the oasis received heavy rains, which flooded the oasis and led to the destruction of many houses, and many roofs collapsed. The houses built on the muddy soil were the ones that got most severely damaged due to the soil's nature and the weak foundation. This type of houses already had several structural problems as many of them were sinking into the ground due to the heavy load (Fig. 33). This had led several Siwians to build one floor house instead of two as usual hoping to reduce the load on the soil, but the 1985 heavy

Fig. 33: Sinking house due to structure deficiency. Taken by Youssef Mekael, 2021

rains came as the straw that broke the camel's back. Siwians ran to the mountains to escape in the caves, and ancient Egyptian tombs, until the rain stopped.

This event created a fear toward traditional architecture and especially toward the Kerchief, as Siwians saw that the "modern buildings" in the oasis were not as severely damaged as the Kerchief ones.

According to sheikh Omar, sheikh of Awlad Moussa's tribe and the official spokesperson for the tribal Sheikhs, the severely damaged houses were not restored in Kerchief, as most of them were rebuilt in white stone 'Toob' (Sheikh Omar, 2021). This was facilitated by the opening of a white stone mine near Siwa. The new roofs were built using wooden trunks, a layer of a plastic sheet, and then a layer of earth 'Tafla'. Later, some of these houses changed to concrete slabs. The main reason for such a choice was the time factor; such a construction technology does not require more than a few weeks to be finished. For the remaining houses, owners started adding one or two rooms built in the new materials (Fig. 34), or, as Siwians prefer to call them, 'cleaner'. These new rooms were attached to the existing kerchief houses, in case a similar weather event occurs, so that Siwians do not need to escape to the mountains any longer.

After the 1985 rains, Siwians abandoned the kerchief architecture for the 'cleaner' ones (stone and concrete), the "Fazaa" culture disappeared, and the construction work became a professional paid job. Every time someone wanted to build or to expand a house, workers had to be paid rather than after it was almost free based on social activity. (Sheikh Omar, 2021).

Fig. 34: New construction type attached to the vernacular building in Shali.
Fig. 35: Taken by Youssef Mekael, 2021

Concrete architecture with all its contradictions, which do not suit the nature of life in the oasis. The traditional materials disappeared; white bricks (Toub) or the reinforced concrete, a symbol of modernity and global identity (Shehab, 2009), have replaced them. Kershif has become outdated, a material that people are ashamed of and considered for the poor who cannot afford concrete houses. The construction process transformed from a social activity to a job for migrant workers who come from the valley seeking money, unaware of the heritage of the place.

2.12 A BRIEF RECAP

By charting the history of Siwa and its construction techniques, this chapter has shown how the Siwians created a unique architectural legacy using the limited local materials existing in the surrounding environment. Throughout Siwa's history, the Kershif architecture changed and upgraded under several circumstances. The eventful years following the second world war led to the introduction of many trends in technologies causing the disappearance of this unique legacy. Was it the mistake of the Kershif that couldn't keep pace with the changes of the times? In the next section, I will move to a more recent wave of revival of Kershif's legacy.

CHAPTER 3

The revival of Kershif

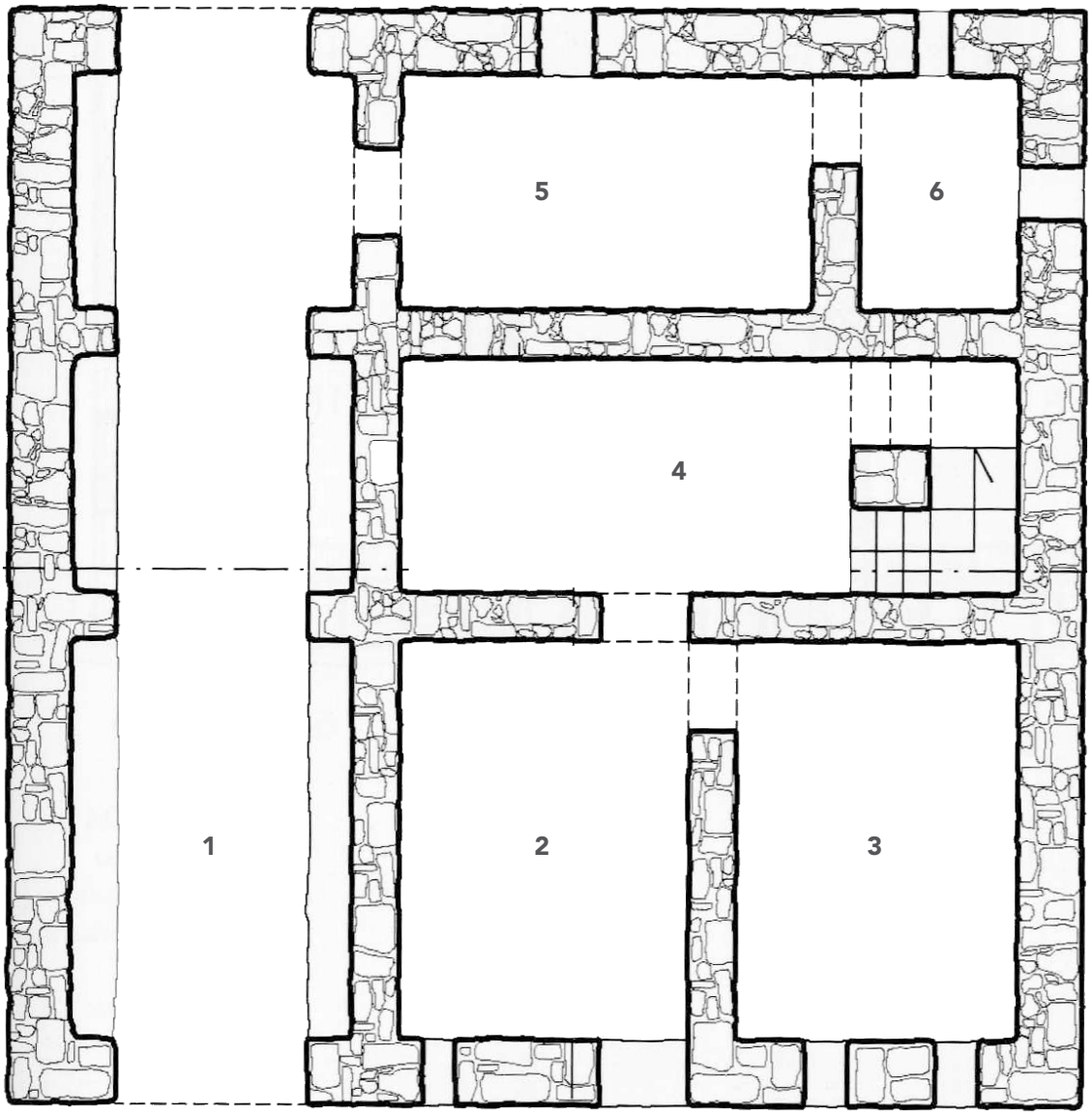
The Kershif disappeared for almost ten years until befor coming to life. Although many of its techniques were revived, it has been re-utilized in many different purposes other than housing construction technologies.. In this chapter, I will uncover the story of the rebirth of the Kershif. As well as being a part of Kershif's history, it is also a precious part of my memory as I lived most of these events and I witnessed the changes that occurred to Oasis and the Kershif.

3.1 THE SIWIAN HOUSE MUSEUM.

At the vend of the 80s', a Canadian-funded project reached the oasis to document the Siwian traditions before they would disappear and be forgotten. The project constructed what is now "the Siwian House Museum", a replica of a traditional house built using kerchief stones and furnished as a traditional house; the team responsible of the project bought several pieces of furniture and traditional clothes to let visitors experience how life was inside a traditional Siwian house. The house was the first building to be built in Kerchief since the heavy rains event. As kerchief construction was always built during "Fazaa", the project could not find a contractor or builders to hire for the job. They started asking people for help offering those gifts and sometimes even money so that they agreed to work with them to build the house; therefore, the house was built in the same old techniques but with a lack of knowledge of the soil's nature and foundation. The house today is still standing but it is facing some structural issues and has started to sink into the ground a few centimeters (Aboubakr Ismaeil, 2021).

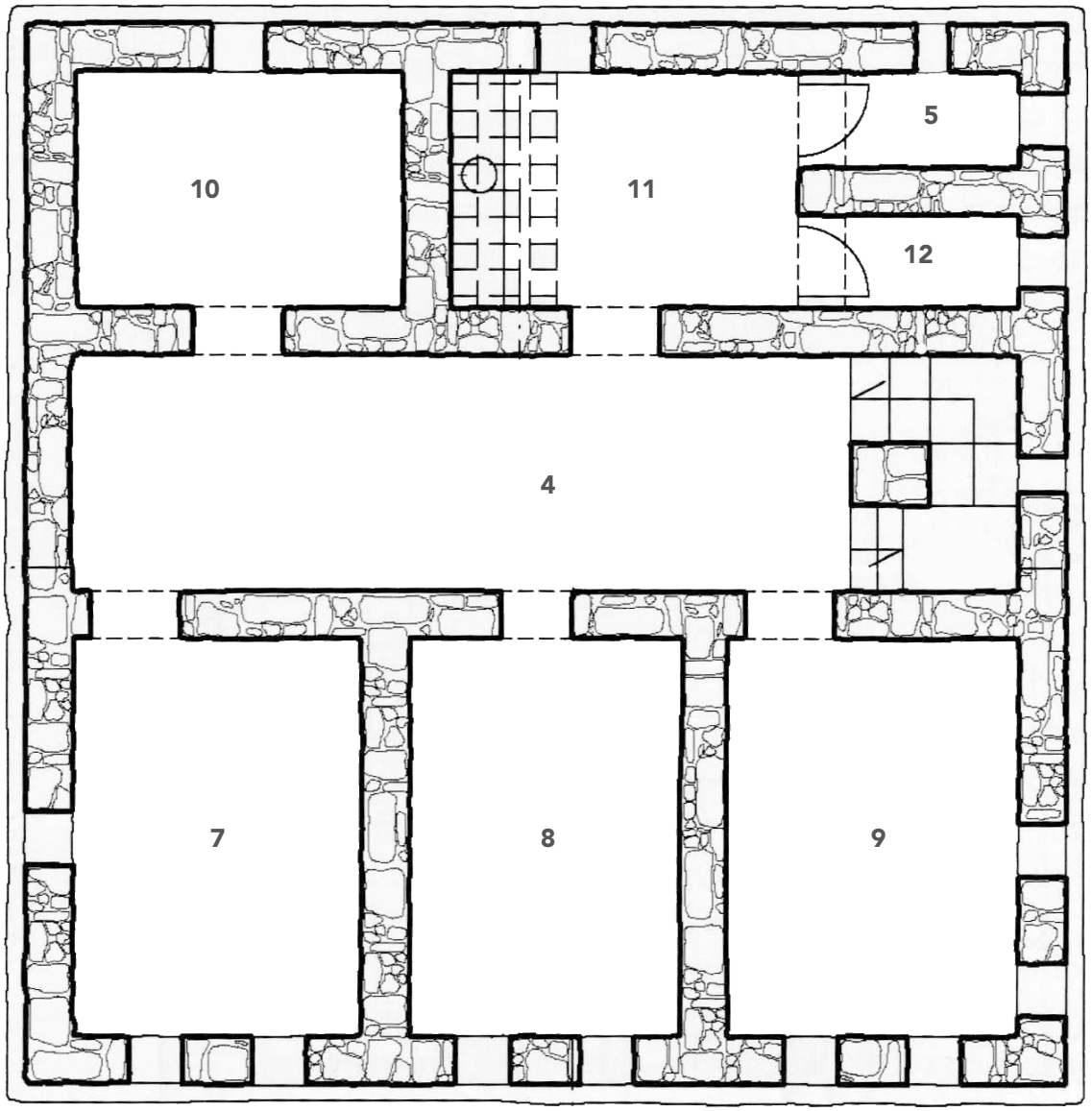
In the following figures display a survey of 'The Siwian house museum' done by Adelina Picone in her book "*La casa araba d'Egitto: costruire con il clima dal vernacolo ai maestri".*

Fig. 36: The Siwian House mueum. Taken by Battesti, 2006



1. Khos
2. Entrance
3. Marbouaa- 'guest room'
4. Foyer
5. Storage
6. Toilet deposit

Fig. 37: *Ground Floor Plan*



7. Summer room
8. Sleeping room
9. Summer room
10. Winter room
11. Kitchen
12. Dry toilet

Fig. 38: First Floor Plan

3.2 EQI AND THE ECOTOURISM

EQI 'Environmental Quality International' a corporation that addresses development needs in different sectors. Based in Cairo, Egypt, EQI operates in different cities across Africa and the Middle East, providing services as consultants and direct investors in sustainable development initiatives (EQI, n.d.).

At the beginning of the 90s', the company made a study about the future of "Eco-tourism in Egypt" and of the places with the potential to host such an activity. Eco-tourism is a form of tourism involving responsible travel to natural areas, conserving the environment, and improving the well-being of local people. Its purpose may be to teach the traveler, to produce funds for ecological conservation, to directly benefit the economic development and political empowerment of local communities, or to foster respect for various cultures and human rights (Honey, 1999). The study included several unique places in Egypt from south Sinai, the Red Sea, and different oases in the western desert. In 1994, the company decided to invest in one of these places with a project of an Eco lodge. The choice landed on Siwa, given the mix between its unique culture, the natural resources, and its architecture.

Dr. Mounir Nemattala founder of EQI and his two architects my father Emad Farid and his work companion Ramez Azmy went to the oasis on a field trip mainly to find the right spot for the Eco lodge and study deeply the architecture and the culture of Siwa.

"Shali and its spectacular architecture fascinated us. The western Shali was still inhabited, and we were invited several times to different houses for dinner and tea, which increased our curiosity and interest to learn more about this architecture." (Emad Farid, 2021)

At that time, nobody was building in Kershif, and the craft was disappearing, and every time they ask Siwians about it they weren't getting a sufficient answer such as: *"why are you asking about it, or it's an old technique we don't use, why don't you build 'Beit Nedif' clean house"* (Emad Farid, 2021)

At the same time, they visited a unique place 15 km from Shali called 'Beld El-Roum' which means the roman city. Abandoned settlements next to rock-cut tombs dating back to the Greco-Roman time of the oasis. Sir Belgrave talked in his book about a Christian community that used to live in this place until the beginning of the 20th century (Belgrave, 1923), and according to Siwians, there was a monastery there a long time ago. Unfortunately, not much history is known about this place.

The architecture of this place is different from the traditional Siwian one. It is a mix of rock-cut chambers, and some of them are extended outside with one or two rooms. The walls are built using sandstone; rough or well-shaped in some cases; some walls are built using adobe bricks similar to the ones in the Nile valley. The remaining

roofs are mainly vaults and domes made in the same adobe bricks.

The two architects were aware of this type of architecture as it is similar to the traditional one of the Nile's valley; also, they had designed previous projects using this architecture. As the Kershif was unknown to them, they decided to use the adobe architecture. They brought some artisans from Aswan in the south of Egypt to prepare adobe bricks to use in the project, and builders who were specialized in the construction of domes and vaults (Ramez Azmy, 2021).

In the meanwhile, they found some people who claimed to be builders of Kershif, and some of them had participated in the construction of the Siwian house project. The problem was that none of them was a 'Meaalem' or a master but most of them had participated in Fazaa when they were young. Eventually, the two architects met two people who changed everything: Hamza, a master in Kershif, and Bakreen, a master in palm roof. It was not easy to convince them to work again after a long time with the old techniques of construction. Later, they convinced their friends with whom they used to do the Fazaa to join them; together they formed the leading construction team. For the architects, it was an architectural treasure, an opportunity to revive old architectural techniques, and protect heritage from being lost (Emad Farid, 2021).

The first year passed studying the culture, searching for the location, and sourcing the workers. The investment plan was decided to start with two projects in two different locations in the oasis. The first is "Adrère Amellal" which means the White Mountain. A unique spot on the salty lake almost 10 km from Shali, it was a garden full of palm and olive trees. Under the mountain, there were about ten dilapidated seasonal Kershif built homes used for the harvest season that belonged to 18 different families who owned the garden. The second one was "Kenooz Shali" a Village Lodge located within the palm groves in the center of Siwa less than 500 m from Shali (Nemattala, 2021).

3.3 ADRÈRE AMELLAL

The initial layout of the homes was kept, and extensions were added to create an eco-lodge, with an organic farm. The produce from the farm is then used in the eco-lodge, to create a sustainable circuit (EQI, n.d.). The architects redesigned the existing houses and added extensions to create 40 unique and different rooms, inspired by the architecture of Shali mixing it with the architecture from 'Beld El-Roum', a mix of the two architectural type to get the best of each and to solve technical or design issues with the most usage of local material. They started the work together with Hamza and Bakreen's team learning from them the secrets of the Kershif, and the workers they brought from Aswan for the adobe part of the project. Later, many young Siwians join the project and start learning from Hamza and Bakreen the craft. For the first time that Siwians are being paid to build Kershif. The work began, every day the architects were learning and discovering more about Siwa and the

Kershif until they blended within the oasis' environment, they wanted to explore new local materials that were never used before in the architectural field. The first material they explored was the pure salt rocks; the salt previously was used mainly for cooking usages. The first idea was to shape it into construction blocks and build with them; a couple of samples were shaped and sent to Cairo to be professionally tested in a lab. After receiving a positive result from the lab, they decided to use them in different places in the project; for walls, and roofs in thinner blocks laying on wooden trunks, and in some spaces, the roof was a dome built in salt blocks. The usage of salt wasn't limited only to the construction elements. As it is a simple material to shape, the architects worked with local craftsmen to produce pieces of furniture out of the salt blocks: beds, side tables, lamps, candleholders, and others. The exploration of different materials didn't stop with the salt; they explored other materials, the olive wood, different stones found in the oasis. Also, they introduced a new craft from the Nile valley: the palm leaves furniture (Emad Farid, 2021).

Adrère Amellal was planned to be an example of the value and profitability of adopting a sustainable development approach to commercial ventures, starting from the construction, and the usage of the local materials, and the inclusion of the local community. Relying on the organic farm to provide the food. The waste management as the gray and black water are recycled through a wetland to be used in the organic farm. The lodge does not have electricity, so lanterns and beeswax candles light rooms at night.

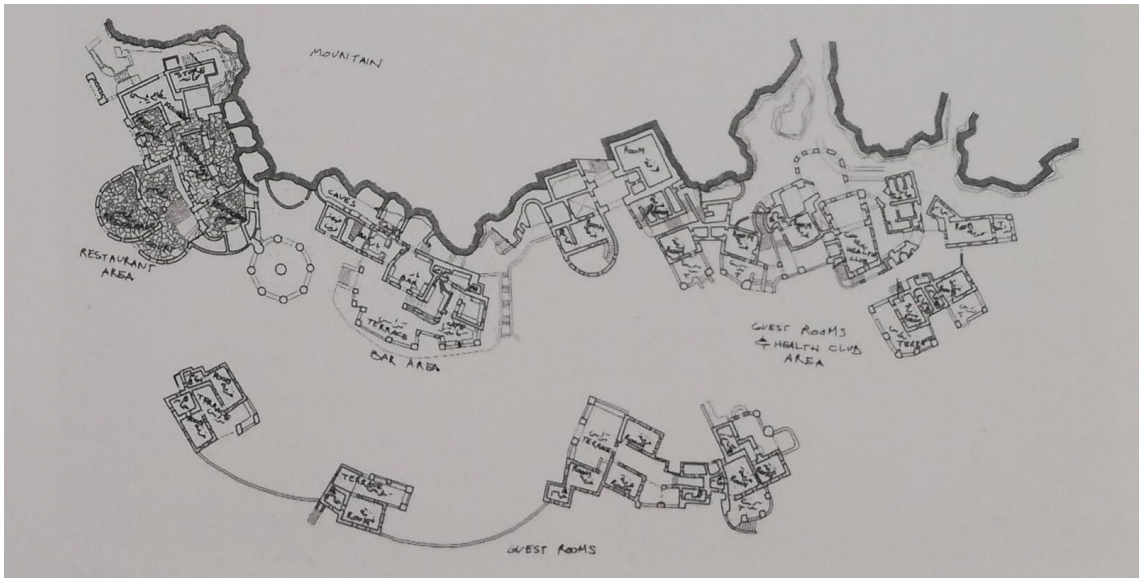


Fig. 39: Ground Floor Plan of The Adrère Amellal hotel. Done by Emad Farid

Fig. 40: Adrère Amellal hotel. Source: EQI

Fig. 41: Adrère Amellal hotel. Source: EQI

Fig. 42: Adrère Amellal hotel. Source: EQI

Fig. 43: Adrère Amellal hotel, the interior design inspired by the traditional Siwian house. Source: EQI

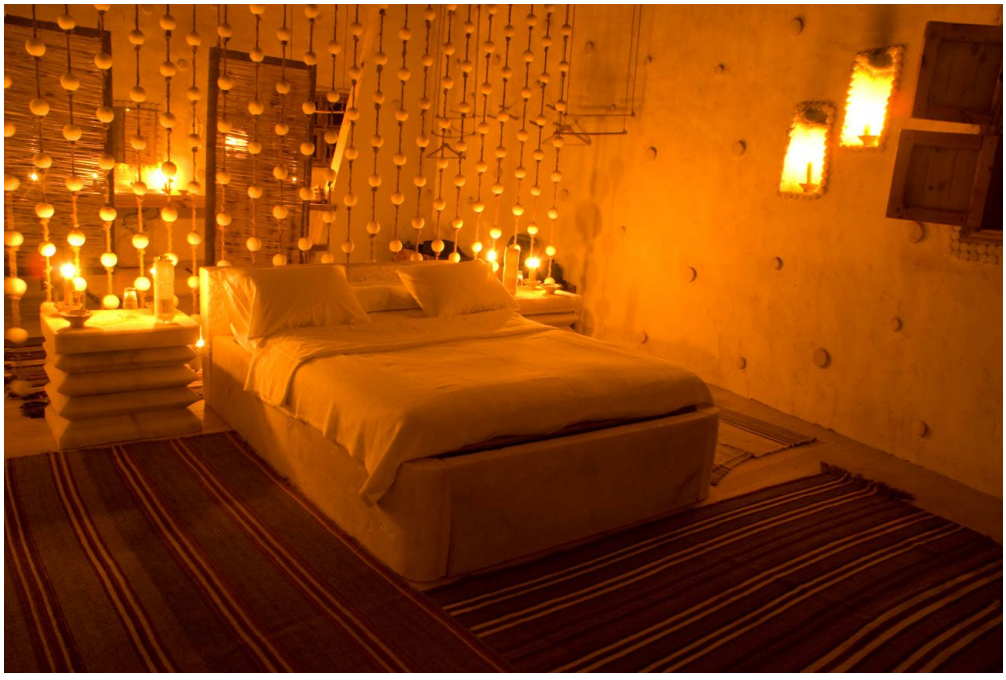


Fig. 44: Adrère Amellal hotel, The usage of the pure salt blocks for the furniture. Source: EQI

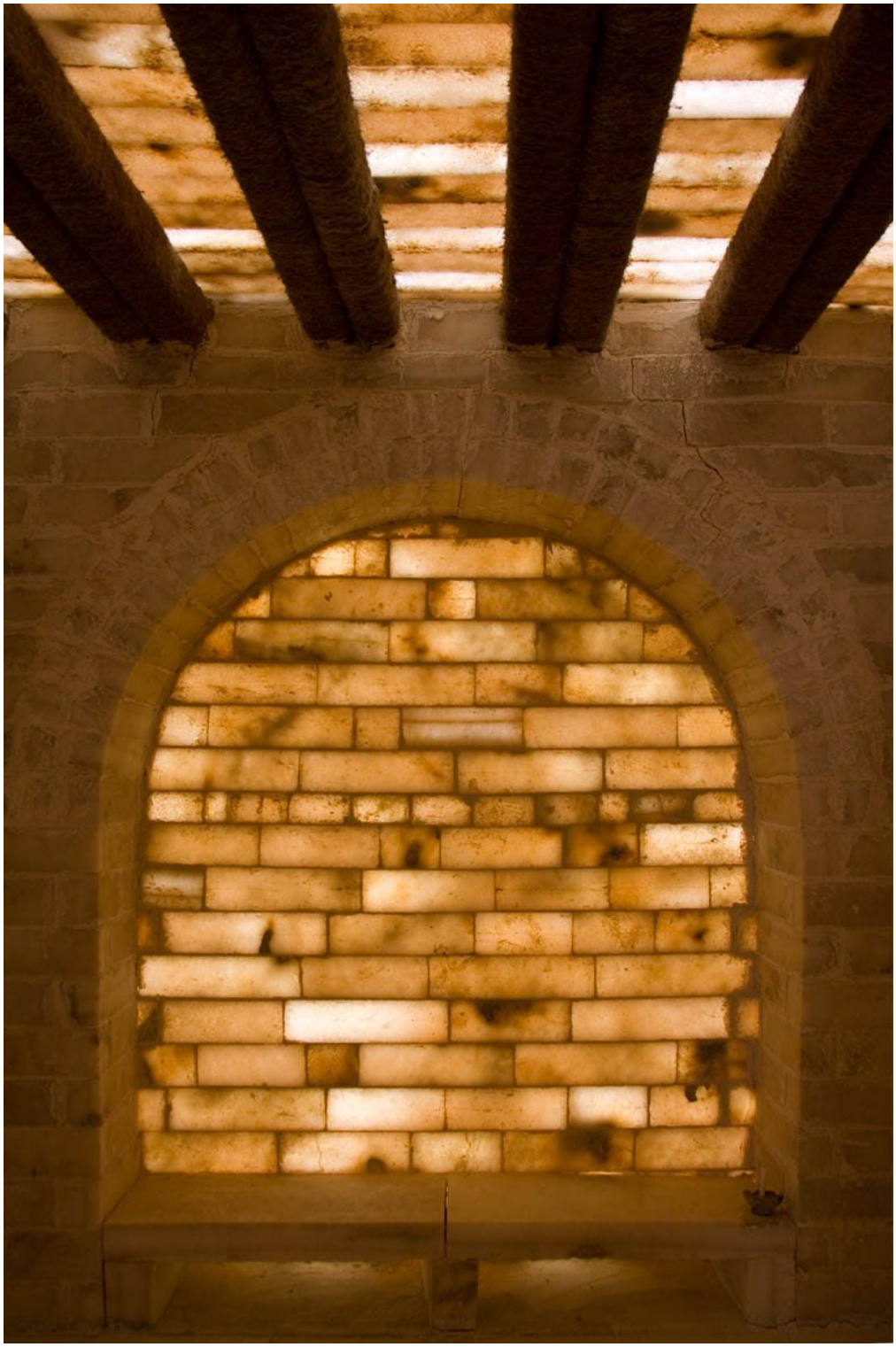


Fig. 45: Adrère Amellal hotel, The usage of the pure salt blocks in the construction. Source: EQI

3.4 KENOOZ SHALI

Kenooz Shali meaning the treasures of Shali main design concept was to create an outdoor-indoor experience; located within a palm garden. The architects tried to avoid the cutting of the palms and designed the building in between the palms, with some rooms having the trunks of the palms within, and the terraces having palms coming out from the floor overlooking the palm grove. To avoid structural issues in the future similar to the houses built in the garden, the architects contacted a consulting office to have a professional soil report to understand why the houses were sinking into the ground and how they could solve this issue. After the soil investigation, the office recommended adding two layers of soil substitute under the foundation, a mix of gravel and sand each layer makes 30 cm. To be more flexible within the palms, the architects decided to use adobe bricks for the walls rather than Kershif, but they plaster it with Tafla to give it the Siwian spirit, Later, an extension was added. An abandoned family home built in Kershif was redesigned to fit more rooms and other activities for the lodge. According to the architects, the house was in a good structural condition with a few issues that were solved by reinforcing the walls by adding buttresses in Kershif connected with branches of olive wood (Emad Farid, 2021).

Fig. 46: Kenooz Shali lodge. Source: EQI

Fig. 48: Kenooz Shali lodge. Source: EQI

Fig. 47: Kenooz Shali lodge. Source: EQI

3.5 NATIONAL AND INTERNATIONAL REPUTATION

These projects put Siwa on the tourism map, especially Eco lodge tourism; before, Siwa was only a destination for adventurers and backpackers. In particular, Adrère Amellal attracted many international public figures, Hollywood stars, businesspersons, politicians, and royal families. Probably the most famous visitor to the lodge was Charles, Prince of Wales, in 2006 (Smith, 2006). The lodge was mentioned in several notable newspapers and magazines; it also won several national and international prizes such as the "Best Practice by UNCHS Johannesburg World Summit for Sustainable Development" in 2002. This reputation helped grab the attention from different sectors: investors, academics, the national government (EQI, n.d.).

In previous years, Siwa used to attract only investors in agriculture; after the tourist boom in the oasis, many other actors found a new destination to invest in the tourism sector. Even though not all these projects were built as Eco lodges, most of them are trying to keep the Siwian spirit.

As far as academics are concerned, Siwa had throughout its history attracted many explorers, historians, and Egyptologists who documented the oasis in their books and research and worked on the uncovering of local archaeological sites. In addition to that, because of the agricultural peculiarity of the oasis, many scholars in this field published papers about the agricultural potentials and opportunities of Siwa and they addressed the technical issues concerning the water levels and salinization. After the revival of the Kershif techniques, also architectural, civil engineering, and urban scholars became interested in Siwian architecture, many of them collaborated with EQI to document their work into an academic format, and some institutes assisted in some of the restoration works (Ramez Azmy, 2021).

After this renewed attention for Siwa, also the Marsa Matrouh governorate decided to collaborate with EQI to erect several public buildings and facilities in the Siwian architectural style to preserve the architectural heritage of the oasis. One example is the bank building of the 'Banque du Caire', considered to be the only bank built in stones and mud in Egypt (Fig. 49). Despite the traditional construction technique, the bank managed to achieve the security standard required by the ministry of interior. Other examples include a visitor center and a showroom for the Siwa protected area for the ministry of environment. Siwa is connected to the rest of Egypt through two bus lines, the buses used to stop in the main square 'Midan El-Souk, The Souk square' in front the fortress of Shali. The governorate decided to construct a proper bus station following the architectural style of the oasis and using its traditional materials, few kilometers away from the square (Fig. 50).

In addition, as the Egyptian code does not recognize the Kershif as a constructional material, the governorate allowed the investors to use it for their projects through direct permission for tourism facilities. In addition, they set the maximum height of

new construction to 11m and set a color palette for the buildings (beige) to preserve the Kershif color of the oasis.

Fig. 49: Banque du Caire. Taken by Emad Farid

Fig. 50: The bus station. Taken by Emad Farid

3.6 ALBABENSHAL HERITAGE LODGE

EQI decided to invest in a third project in the tourism sector, a third Eco lodge. Albabenshal Heritage Lodge sits on the walls of the spectacular jagged ruins of the Shali fortress. They took five old houses and renovated them to create a hotel of fourteen rooms around a courtyard and a small boutique shop selling Siwian products and handicrafts (Fernandez-Galiano, 2011). The boutique shop, which happened to be the place of the first shop opened in the oasis to sell goods, according to senior Siwians, was restored with its original furniture. They gave the hotel a local name, Albabenshal, or the door of the town taken from the name of the first door of Shali. Everywhere in the hotel, the gradual fading of its walls and terraces in the debris of the old settlement is clear; even the facade of the hotel disappears amid demolished Shali houses (Asfour, 2011).

Fig. 51: Albabenshal Heritage lodge. Source: EQI

The lodge won in 2010, The Hassan Fathi Award for Architecture by The Alexandria and Mediterranean Research Center 'Alex Med', Bibliotheca Alexandrina (Asfour, 2011). The Egyptian ministry of antiquities gave attention to the Siwian historical monuments and started several restoration projects to preserve and protect the Siwian heritage.

Fig. 52: Albabenshal Heritage lodge. Source: EQI

3.7 THE 'ATIQ' MOSQUE, AND 'TETNADI' MOSQUE

Interest in preserving Siwa's remarkable heritage was sparked among the local community when the minaret of the 'Tetnadi' mosque, which means the deep well mosque; toppled over in the late 1990s, during an earthquake. Having witnessed EQI's engagements in the oasis, the Siwian community, through the Siwa Council, approached the firm to preserve and restore the 'Tetnadi' mosque; however, the Ministry of Antiquities, which holds jurisdiction over the Shali archaeological site, steered EQI to restore the older mosque the 'Atiq'; the old mosque; first (Emad Farid, 2021). Unfortunately, the project stopped due to the Egyptian revolution event in 2011. The work resumed in 2013, later in 2014 the work in 'Tetnadi' mosque started. This restoration, which was completed in 2015 and using EQI's own private funds, prompted some of the house owners in the vicinity of the mosque to undertake the restoration of their own houses, and subsequently converted them into bazaars, since these were more attractive to tourists. The mosque now has a parish of about 150 daily users (EQI, n.d.).

Thanks to the touristic activities and the public facilities, the Kershif architecture was revived and reused again in the oasis, but for many Siwians the Kershif became a material linked to the tourism or the foreigners who built winter houses in Siwa. After Albabenshal Heritage Lodge, the local inhabitants start looking at the fortress and houses around it differently; it is not some abandoned and demolished walls anymore; they found a cultural and an economical value.

Fig. 53: The Atiq mosque. Taken by Youssef Mekael, 2018

Fig. 54: The Tetnadi mosque. Taken by Youssef Mekael, 2021

3.8 THE AGHURMI MOSQUE

Funded by The British Council in Egypt, The Project builds on EQI's successful track record in restoration in Siwa, especially after the restoration of the Atiq and the Tetnadi Mosques. EQI and the British Council engaged in a program to train the local community to restore another Kershif edifice, the Aghormi Mosque, situated atop the Aghormi mound. As part of the project, EQI restored the entrance and staircase leading up to the mosque. These stairs are used by every tourist that visits Siwa, as they not only lead to the Aghurmi Mosque but also the Oracle temple of Amun.

The project trained 92 Siwians, many below the age of 30, to revive the dying art of traditional Kershif building. EQI already has a manual of traditional Kershif building techniques. The training exercise builds the capacity of Shali residents, property owners, and their families, to equip them with the requisite capabilities for upgrading their own homes and residences, to secure the sustainability of the project. These trained individuals will eventually form part of the force entrusted with sustaining Siwa's Kershif heritage, at the end of the program (Nemattala, 2021).

Fig. 55: The Aghorm mosque. Taken by Youssef Mekael, 2021

3.9 THE REVIVAL OF SHALI FORTRESS

The European Union launched the “Revival of the Shali Fortress Project” in the Siwa Oasis with a grant of €540.000 and co-founded EQI with 60.000 (EU NEIGHBOURS south, 2018).

The project seeks to revive, restore and conserve Shali’s archaeological site, and the partially abandoned and degraded settlement surrounding it.

The project aimed to help boost Siwa’s economy, by improving its international standing as a leading eco-tourism destination and reinforces the sustainable development in Siwa by establishing a commercially viable micro-finance scheme that would allow low-income communities to restore their properties and expand their businesses, responding to the urgent socio-economic and healthcare needs of the Oasis’s most vulnerable population (EU NEIGHBOURS south, 2020). The official inauguration of the project was in November of 2020. The project led to the appearance of the streets, where visitors can experience walking within the fortress’ narrow streets as it was described in the travelers’ books of the 18th and 19th centuries. Many settlements surrounding it were restored for commercial use as boutiques and workshops for the Siwian handcrafts. In addition, two of the abandoned houses outside the wall were restored to host a healthcare center, and a library dedicated for Siwian and Saharan studies.

Fig. 56: The fortress after the preservation intervention . Taken by Youssef Mekael, 2021

Fig. 57: Areal view for the fortress after the preservation intervention . Drone footage, 2020. Source: EQI

Fig. 58: Areal view for the fortress after the preservation intervention . Drone footage, 2020. Source: EQI

Fig. 59: *During the preservation intervention. Taken by Youssef Mekael, 2019*

Fig. 60: *During the preservation intervention. Taken by Youssef Mekael, 2019*

3.10 THE RESTORATION OF MANY HOUSES IN SHALI

The restoration projects in the oasis and in particular, the Albabenshal lodge project revealed the potentials that Shali can offer. Many foreigners bought old houses and restored them, having the Albabenshal lodge as a reference. Most of the houses were restored for the use of winter houses, but the growing tourism (house renting/ Airbnb) business encouraged them to rent them during their absence, some of them expanded their houses by buying the neighboring ones.

Fig. 61: House in Western Shali, before the restoration. Taken by Battesti, 2006

Fig. 62: House in Western Shali, after the restoration. Taken by Youssef Mekael, 2021

Fig. 63: *House outside the Fortress in Shali, after the restoration. Taken by Youssef Mekael, 2021*

CHAPTER 4

New inhabitants

After reading many historical books and academic papers preparing for this thesis, I spent the month of April of 2021 in Siwa. Planned to be a field trip, it turned into a rediscovering trip to the oasis. I had many questions to ask the elders and the sheikhs of the oasis, questions I couldn't find an answer for in the books and papers. It has been almost three years since my last visit to Siwa, the latest restoration projects changed not only the appeal of the oasis, but the Siwians too. I noticed a strong pride among the young Siwians towards their heritage. Also, I noticed many of the Siwians are having talks about their traditions and heritage in the cafes, which was something new for me. In this chapter, I will demonstrate how the revival of the tradition is living through a relationship between the locals and new types of residents, leading to new kind of tourism in Siwa.

In a more and more interconnected world, the remote work model has grown remarkably around the world. 'Digital nomads' (Makimoto & Manners, 1997) consider homes where Wi-Fi Internet exists, as they have a similar nomadic life, but they look for an internet connection instead of water.

In Siwa, according to some of the digital nomads who were spending time there during my fieldwork in April 2021, its unique culture and tradition and its appealing nature are what the digital nomads are usually looking for. It is a relatively cheap place to live, especially if you are earning in a foreign currency (dollars or euros).

"Siwians are friendly and easy to establish a friendship with but quite different from the one we are used to. In one month here, I attended two weddings, one funeral and I was invited many times to their houses for dinner or tea. But I never had a house tour, or I never met their wives or even knew their names" (Kevin Thomas, 2021)

Said Kevin, a Jamaican math teacher in Saudi Arabia, he had been teaching online due to the Covid-19 restrictions in his school. Therefore, he had decided to spend this academic year traveling around.

This group of temporary residents is new to the oasis, as foreigners usually come to the oasis for work and earning money, unaware of its culture and traditions, or tourists who come for a couple of days to enjoy their vacation and leave. Digital nomads are different; they stay for a longer time than tourists do, and they are more curious to learn more about the oasis' traditions and secrets than seasonal workers. A strong connection was established between the Siwians and these foreigners, thanks to the curiosity from both sides to learn more about each other's cultures. Siwians became aware of how important and special their heritage is and especially the architectural one. They found a different value in these ruins, a part of their identity was revealed, which led to the transfer of the heritage discussion from academic talks to public conversations.

4.1 KERSHIF'S' CONTRADICTION

The Kershif world radically changed within the Siwian community; it is not considered architecture for the poor anymore; however, it remains controversial. The majority of Siwians agree that Kershif houses are more comfortable, as they do not need any kind of appliances for heating or cooling. Many of them talk about a spiritual comfort they feel when they stay in Kershif buildings. The controversial issue concerns the future of the Kershif and why it is not used in the new house construction. One point of view is even if it is comfortable naturally, nowadays technologies are offering solutions to overcome these issues. My friend Moustafa invited me for a dinner in his new house and I had a chance to talk with his father Mr. Hamza about his choice to build the house in concrete and bricks rather than Kershif, He explained his point of view:

"If I built this house in Kershif I had to organize the rooms respecting the north-south direction to control the temperature and the kitchen need an opening to the sky for the ventilation, which would have not allowed to place my shop on the main street and a secondary entrance for the guest from side of the house. But now thanks to the technologies we have, I placed an air-conditioner in each room and solved the problem of temperature and ventilation" (Hamza, 2021)

However, Mr. Hamza is representing a group that sees Kershif as a good tourist attraction and source of income. I had the chance to talk to many of them who own an abandoned Kershif house and a big majority of them would like to sell it or restore it to rent it for tourists. Abd El-Rahman, a young Siwian working as an accountant in a hotel built in Kershif, he clarified his point of view about the Kershif as building material:

"When I travel, I like to go to these hotels in high buildings and use a card to enter my room, it is a part of my vacation. Kershif is the same for these tourists, it is a part of their trip too. But not to live in" (Abd El-Rahman, 2021)

Abd El-Rahman, as many other young Siwians I had the chance to talk with, shares the same idea. They grew up watching TV and movies, and many of them had the chance to travel to different cities in Egypt and even study there, they felt that the 'normality' is to live in concrete houses, and even though the Kershif enjoy many advantages on the concrete, they see it as a sort of a fantasy to enjoy for a while, and they should live as what they see normal from their own point of view.

At the same table I had the conversation with Abd El-Rahman, another fellow who expressed a different point of view. Homayed is a young Siwian who has been working in the hospitality sector for more than ten years. He built many friendships and

Fig. 64: Abandoned house outside the Fortress in Shali, "for sale" sign on it. Taken by Youssef Mekael, 2021

connections with people from all around the world. He speaks passionately about his family's house, and how his grandparents' spirits are still there:

"Our house is not fully in Kershif, we kept the living room and the guest room, and the rest is modern. But in these two rooms where you can really feel the serenity" (Homayed, 2021)

He adds that his brothers are Kershif builders; therefore, they still work while making a Fazaa every while to fix the house.

Homayed represents a group with a different point of view. Many of them, which I had the chance to catch a conversation with, see the Kershif as a part of their traditions and culture that should be preserved and protected. Moreover, even if there are some difficulties in constructing a completely new house, many of them build a room in Kershif, usually the "Etgharfit Nshitee", the winter living room, and attach it to the house to keep a part of the traditional house in the new one. In addition, many of them, even if they live in a modern house built in concrete and white stone or bricks, they build what they call a 'Chalet' in Kershif. Similar to an alpine chalet, it is a small cabin composed of one or two rooms with a toilet and a kitchen situated within the palm gardens. It is a cabin where the family spends weekends or escapes the harsh cold nights or the hot summer days.

4.2 DIFFICULTIES AND CHALLENGES T ORENORMALIZE THE KERSHIF

Fig. 65: A new constructed house, mixing between red bricks and Kershif. Taken by Youssef Mekael, 2021

The Kershif architecture was brought back to life, but it is not back to common use as before, it became a niche material. After discussing with many Siwians I can conclude the difficulties to employ the Kershif again as the main construction material into main four issues: Cost, construction time, construction regulation, and space limitations.

How the Kershif building can cost money if the raw materials exist in the surrounded environment of the oasis, until today no warehouse nor a contractor is selling Kershif stones or palm trunks. The cost of the materials used for new buildings and the restoration projects built in Kershif are usually the transportation of the stones from the lakes to the site. The palm trunks in the case if the property owner does not own a palm garden and wooden beams from Cairo or Alexandria in the case of a wider span in the design. Most of the cost goes to the skilled workers where they are relatively costly compared to the regular builder due to the special skills required and to the minor number of them. On the other hand, if the reinforced concrete and toob houses are cheaper, most of these houses are built without the consulting of a civil or a structural engineer to properly design the structure of the building. The outer walls have no layer of insulation, and the big majority of the houses are not plastered from the outside. The roof in most cases is left with no insulation, in some cases, a plastic sheet is added on the top of the concrete as a waterproof layer in the case of rare rain. An unfinished and non-consulted structure can lead to several issues that can condition the safety and the cost-effectiveness of the building.

Many Siwians mentioned the short time the concrete building required as a positive point. Siwa's traditional lifestyle and its economic model does not require a fast construction, which makes this point related to the third issue, the construction laws.

The ministry of housing proceeded with an Egyptian building law applied on all the different Egyptian regions without taking into consideration any local techniques nor local materials. According to the laws (the Egyptian law no. 119 for the year 2008 in issuing the building code, and the law no. 144 for the year 2006 in organizing the demolition of buildings and non-falling structures and the preservation of architectural heritage). The Kershif is not recognized as a construction material; therefore, it is impossible to get a construction permit for such a type of building, it allows only the restoration, as it is an architectural heritage. In addition, the law forbade the construction of buildings on agricultural land, which made the horizontal expansion of the house impossible. As before, when one of the children is getting married, the house expands to host the new family (Battesti, 2006).

As the oasis grows and the need for new houses faces the Siwians with two choices, restore the Kershif house, and stay in it or destroy it and rebuild and a new one in reinforced concrete. The concrete seemed to be the best solution, fast to build, a thinner wall, which means more space and easy vertical extension.

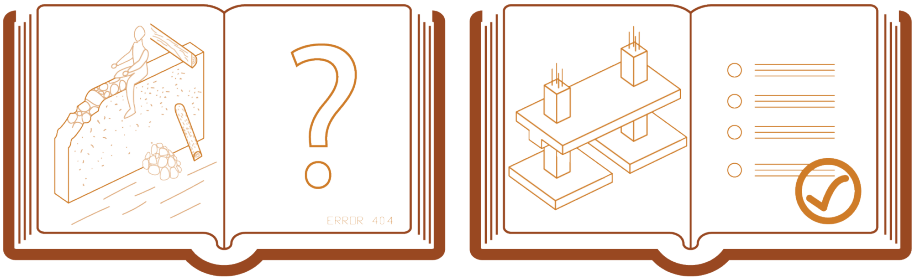


Fig. 66: The non recognition of the Kershif in the Egyptian construction code. Done by Youssef Mekael

As I understood from many Siwians, laws are very complicated and very hard to apply or even to understand, and most of the buildings are outlawed. During the feasts or any off day, they build as fast as they can; here comes the white brick and the reinforced concrete as a magic solution; so, when the city discovers the house after vacations it becomes hard to remove it, and at that point, Siwians pay a fine to legalize it. Which was one of the reasons to stop the organic expansion of the oasis and led to the abolishment of the council's rules.

The fourth issue, the available space to construct is the main obstacle to any sort of normalization of the Kershif. The thickness of the walls in such a construction is relatively huge compared to the concrete and toob ones as it can get up to 80cm and one meter in some cases, which is considered as a waste of spaces in such small plots. Besides, in the case of an expansion for the house in the future the vertical expansion is the best option in a small plot.

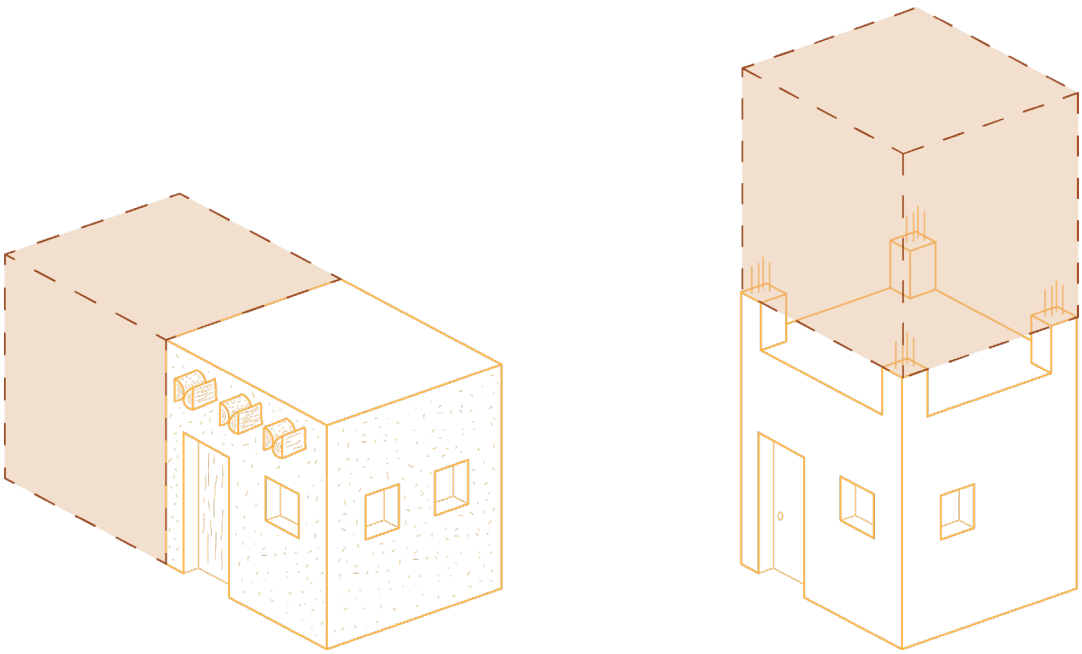
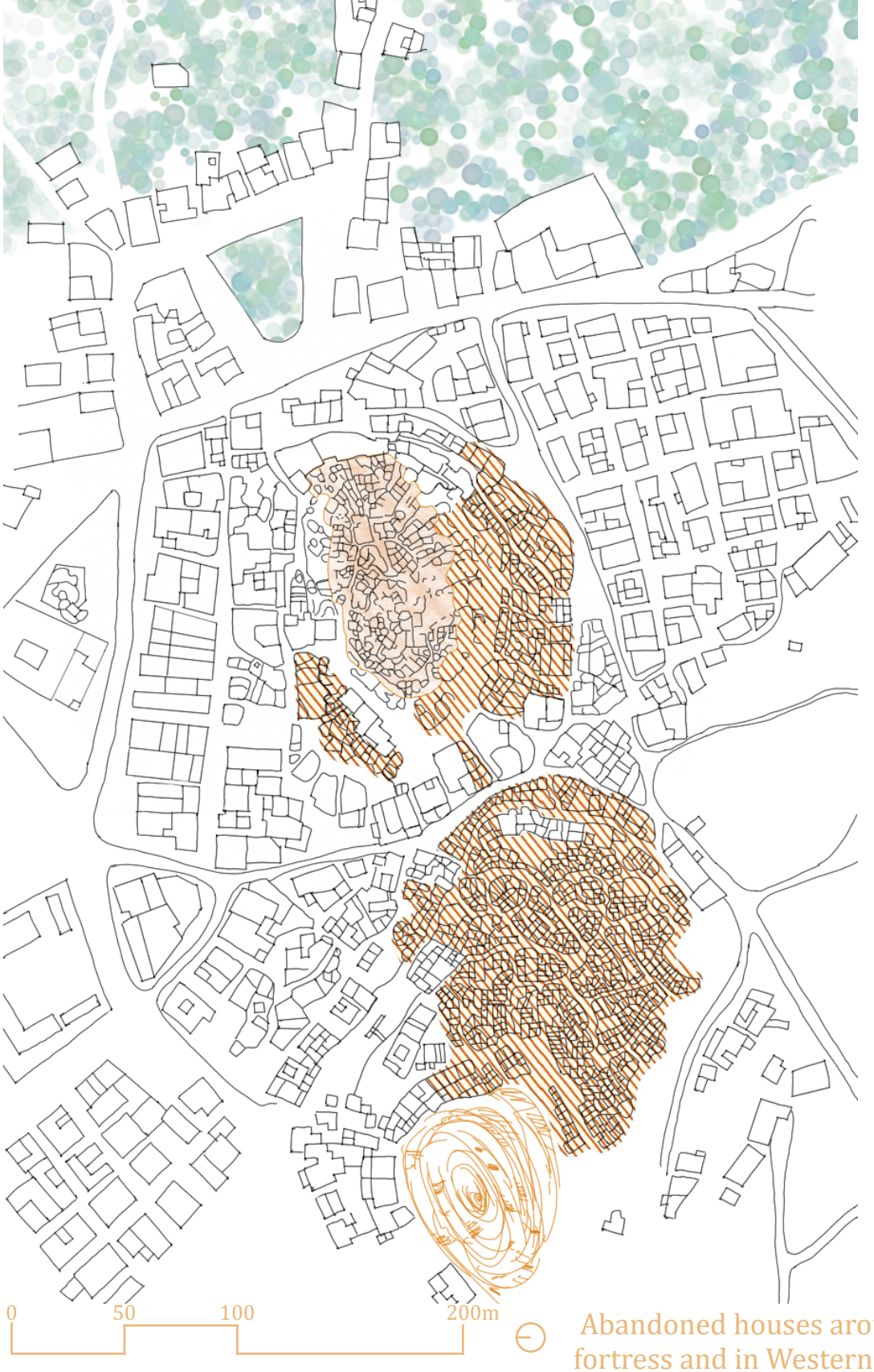


Fig. 67: The Vertical expansion. Done by Youssef Mekael



Abandoned houses around the fortress and in Western Shali

Abandoned houses

The fortress

These issues didn't lead only to the abandonment of the Kershif as a construction technique but forced many Siwians the feasible solution was to abandon their houses and build new ones. In some cases, next to the old ones and transform the Kershif one to a deposit for the new house or as a stable. In other cases, they leave the whole area and move to a new one, that is the case in the western Shali as the number of the inhabitant increased, the new generations decided to abandon the area and move to a new place where they can build a new house with modern materials (Fig. 68).

4.3 THE HOUSES AROUND THE FORTRESS AND IN WESTERN SHALI

Nowadays, tourism and the recent restoration interventions in the oasis led to the creation of public awareness of the Siwian architectural legacy. It is the dawn of a new chapter in Siwa's legacy. Most of the people who consider Kershif an important part of their culture, are working or somehow related to the foreigners in the oasis; either foreign companies, NGOs, or the different tourism operations: hospitality businesses, restaurants, coffee shops, etc... The cultural exchange created this awareness towards their traditions and culture. This awareness is not perceived

Fig. 68: Western Shali. Taken by Youssef Mekael, 2021

only through the relationship of the people and the Kershif; it led to the creation of Siwian NGOs that protect the Siwian heritage. For example, the association of 'Abnaa Siwa' - Siwa's Children - is an association working on preserving the Siwian heritage through several workshops and seminars for all ages (Sheikh Omar, 2021).

Foreigners or the strangers to the oasis in general - in which I consider myself one of them - are playing a major role in the relationship between the traditional technology of construction and the Siwians. After reviving these techniques, what kept it alive is the presence of different foreigners in the oasis, not only for the hotels or their houses, but is the cultural exchange creating an awareness towards these techniques that established this relationship. The more the number of foreigners will increase and especially the digital nomad type, the more of these cultural exchanges will increase, which will lead to a change in how the Siwians see many of their traditions.

Siwa is heading to a more cosmopolitan culture, leading to a stronger culture exchange. However, fears for the future the houses around the fortress and in Western Shali are rising as the renting business is booming there. I met Jonathan, a French freelance journalist who had been living in Siwa for more than two months at the time of my visit, working on an article about the economy of salt. As we found a common interest, we spent a lot of time together showing him around the oasis. we had a conversation about the future of the abandoned houses in the western Shali, as he had worked couple of years ago on a reportage on the over-tourism in Venice, he said:

"If this business will keep rising with no regulation, it will become a small Airbnb town like Venice!" (Jonathan, 2021)

He is pointing to a topic some foreigners in Siwa have mentioned while interviewing them, they mentioned other European cities than Venice where the downtown has been transformed to what they called 'Airbnb town' empty from locals and the over tourism led to a loss of the heritage of these towns. As it is a hard topic, I don't totally agree with them about comparing western Shali to these European towns. Nowadays, western Shali is a 'ghost town', even though couple of families are still living there and some houses have been restored, they are a small percentage compared the huge number of abandoned houses, bringing life back to the town while preserving its architectural heritage and its urban tissue is a hard mission, but not impossible.

During my interview with Sheikh Omar, he explained his point of view on this issue:

"I am happy to see the western Shali restored and the houses there are in a better situation than ruins, but I will be happier when I see next to these tourist activities a Siwian family house, a craftsman workshop, the old olive press is working again, etc. next to each other." (Sheikh Omar, 2021)

Many Siwian families lost interest in restoring the houses and see the restoration in such a place as an investment in the renting business, even the Siwian who are passionate to live in Kershif houses prefer to build their new houses rather than going back there. The challenge here is how to revive western Shali following an adaptive reuse strategy to create a mixed-use area full of different activities that respect the historical values of the area and its heritage, a town that expresses its historical identity in its contemporary style? The foreigners and in particular the digital nomads are an active partner in reviving many of the traditions, therefore having activities for them; hospitality, caffes, and restaurants; is necessary. Many of the artisan craftsmen open their workshops there too as they prefer to stay next to the touristic areas, the traditional Siwian business model where the craftsman prefer to live next to his workshop will encourage them to restore the house to live again and to open their workshops there. Also, cultural activities such as educational centers, libraries, and museums may attract many of the Siwians to the area again and strengthen the relationship.

This area cannot be a typical town of Siwa hosting daily life activities, due to its historical value, its shape, and the size of the houses there. Shali can be an example of reviving abandoned towns, where they tell their stories in a livable way. However, it can be a reference for the future expansion of the oasis.

CONCLUDING REMARKS
Tomorrow's Kershif

"*The dunes are changed by the wind, but the desert never changes*" (Coelho, 1988). Many changes occurred to Siwa throughout its long history; but it remains the little paradise in the middle of the desert, a haven from the danger of the Sahara.

The Siwians developed a community with a special culture and a rich heritage. Using the available local materials, the Kershif stones, they produced a fascinating architecture that fit the requirements of their lives. Due to some events in the last century, Siwa lost a part of its heritage which led to the disappearance of its architectural legacy. Tourism and cultural interests from elsewhere helped to revive the old Siwian construction techniques and the reuse of the Kershif stones.

This revival attracted many tourists and foreigners to visit the oasis, some of them decided to consider Siwa their homes for a period of time. This group of people became an active partner in reviving many of its traditions.

Siwa is stepping into a new chapter in its history, what role is the Kershif going to play in this new chapter. Should the Kershif be normalized again, and become the common construction material in the oasis, and should the Siwa's architecture come back as it was before the reinforced concrete? The Kershif passed through different phases. The first one was the Shali fortress, the most primitive version of it, as the aim of life was safety and a shelter to sleep. As the nature of life changed, they were allowed to build outside the fortress. Thanks to technologies and the knowledge of that era, the Kershif upgraded to its second phase. Nowadays, the Kershif is in its third phase, where it was revived again, in limited typologies mainly in the tourism sector. However, the Kershif is changing rapidly and unpredictably and the effects of the climate changes in Siwa are rising year after year, the oasis is reaching high temperatures during the summer season and lower temperatures in the winter were never reached before. The concrete house has failed to confront these changes, and the available technologies are becoming a burden on the families from the economical point of view as the price of energy is rising. In the near future, the interaction between the environment and the Siwians has to be restored; the local natural materials will play a major role in confronting the climate changes, as some Siwians nowadays start to apply a layer of Tafla on the roof as an insulation layer.

The oasis achieved a public awareness to its heritage and its identity, but it lacks a

huge awareness towards the environment and the natural materials existing there. Environmental awareness will play a main role in the fourth phase of the Kershif. Possibly one with more concerns for the future for the oasis.

It is hard to predict that the Kershif will return as main construction material. Certainly, it will integrate with the new materials or the different local ones as a structural masonry wall for some parts of the building or as an insulation material to the outer walls.

A thought for Shali

In the last three decades, the area of Shali surpassed many phases of abandonment and destruction until a new spark of revival. Starting through private investors in the tourism sector, it leads some individuals to restore their private properties for their use and as commercial business. Siwians discovered an economical and cultural value in this area apart from ruins, and the desire to preserve the remarkable heritage of Shali sparked amongst many of them. The restoration intervention for the two mosques of the area was needed not only for their architectural value, but moreover for their cultural value. Later, the last restoration undergone on the fortress aimed to preserve it from disappearing, bring back the initial urban tissue inside the fortress, allowing the visitor to have an approach on how life within the fortress' wall was. This new given value arose from an established and well consolidated monumental one but managed to put Shali area on the touristic map, thus starting an economical growth.

For the next phase, I will demonstrate a peculiar approach of restoration from the one applied in the previous campaign on the fortress. This approach will be focusing on the abandoned settlements around the fortress and in Western Shali aiming to integrating the area back to life: not only as hotels for tourists and digital nomads but as livable areas with different activities of daily life.

It's a challenging mission to create a mixed-use area with different activities that respect the heritage and the historical values of the area. The sheikhs of Siwa, together with the council, as long as the Egyptian government already encouraged many houseowners to participate in an initiative to revive the area. Fifty-four houses have been chosen by them to be restored depending on their structural situations and on their location, in a way to revive the urban tissue of the area. The relationship I have with the sheikhs of Siwa allowed me to be a part of this initiative and propose a sort of toolbox for the adaptive reuse strategy needed for the houses. (Sheikh Omar, 2021)

The aim of the initiative is to bring back life to the area while preserving the architectural heritage, and the urban tissue of the area, to allow the area to expresses its historical identity in a contemporary style. They also hope that the initiative will encourage other houseowners to take a similar action in the future, either transforming their properties into main residential dwelling, commercial activities, and cultural projects; moreover, they will encourage this action to be applied within the same property. Separating the private part for the family and a commercial part that provides a source of income, will help them enter the circuit of the tourist attraction; they will not only participate into the new economy of Siwa but thanks to their traditions and historical memory, they will manage to provide the authenticity of the oasis life within the new standard of sustainable tourism. The Siwian traditional household next to their working place will adapt in this new paradigm allowing them to perform their tradition activities such as: Oil pressing, silver jewelry, palm leaf baskets, and many other artisanal activities. This will help

increase the communal life and the cultural exchange, which is symbolized, and will be strengthen, by giving more functions to the architectural typology of 'Khos', the covered areas where traditionally Siwians gather. All those initiatives are also supported by the Egyptian Ministry of Culture which planned to establish a museum within one of the houses of the area.

Among the chosen houses for the initiative some of them are inhabited: the majority are traditionally built with Kershif, some others are in mixed construction techniques, a mix between the Kershif, white stones, bricks, and concrete. As stated, more technological materials such as concrete are not well performing in the Siwa due to tradition and especially the climate of the desert. Even though the mix of those technologies is inevitable, Kershif is still the most performing material from the oasis in a vernacular approach.

The use of contemporary technologies cannot be avoided even in Siwa, the aim of this initiative is to establish Kershif as one of the competitive materials to be used in contemporary construction in Siwa as traditionally structure for masonry wall, or as a paired with other technologies as insulation layer. The following toolbox will demonstrate the potential of the Shali to adapt to mixed-use area, keeping an eye on its legacy.

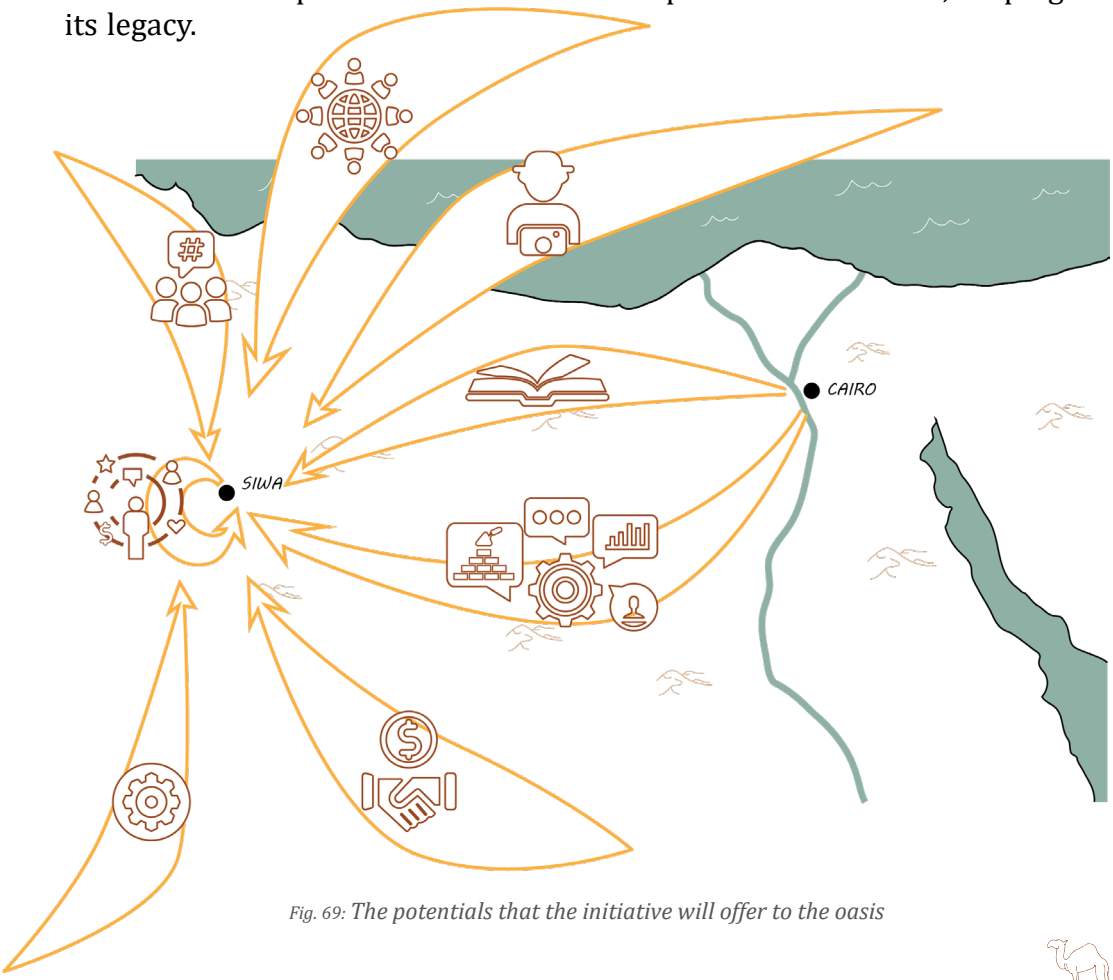


Fig. 69: The potentials that the initiative will offer to the oasis

General map of Shali area

The fortress

Different construction types

Kershif

Mixed between Kershif, bricks, white stones, and concrete

Bricks, white stones, and concrete

0 50 100 200m

The abandoned and inhabited houses

Abandoned houses

The fortress

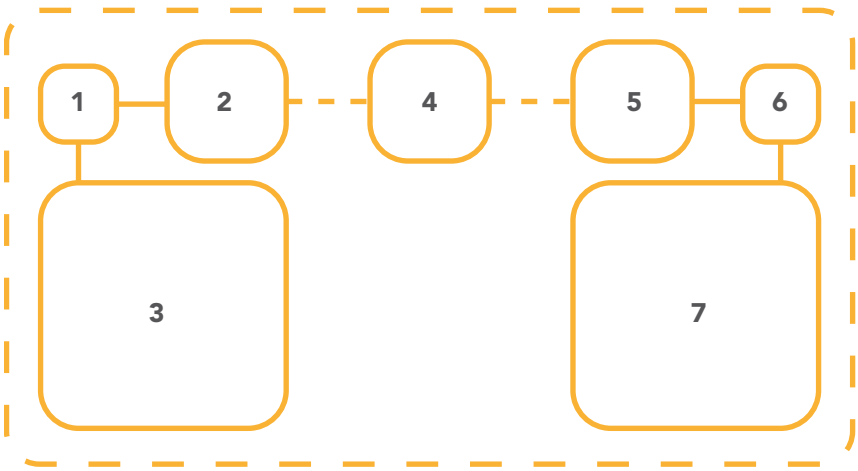
Inhabited houses in Kershif

Restored houses by non-siwians

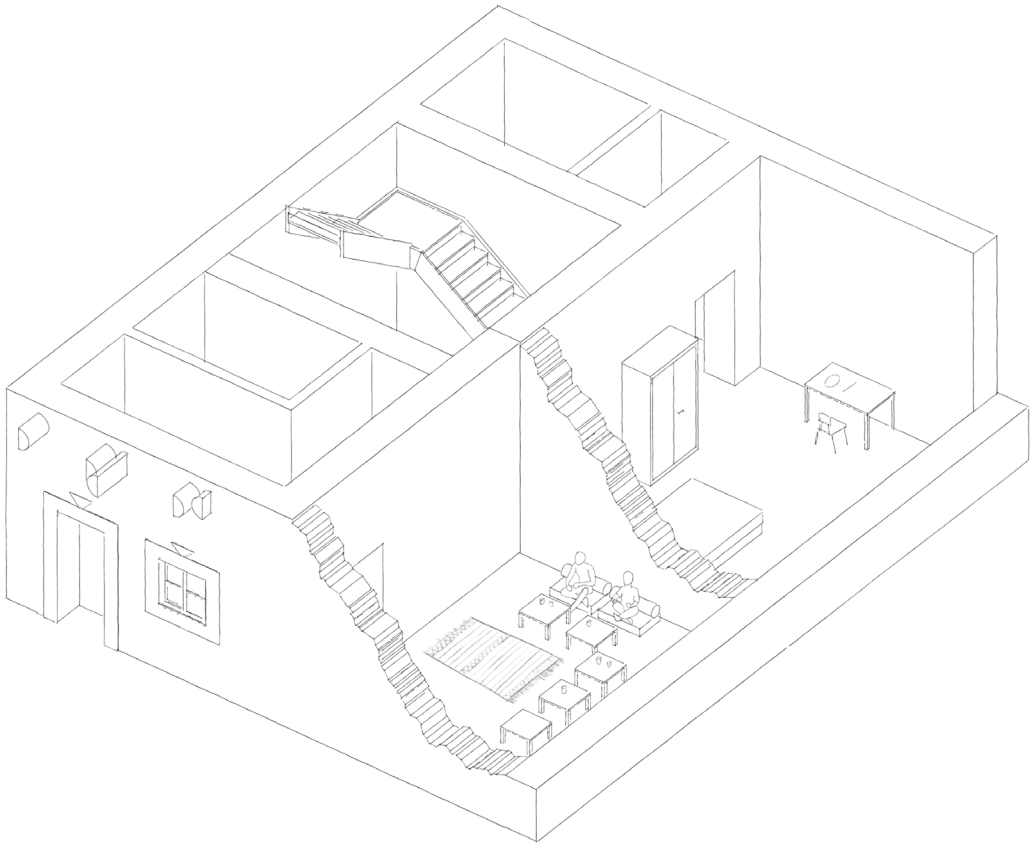

0
50
100
200m
The chosen houses for the initiative
Abandoned houses
The fortress
Restoration interventions
The fifty-four houses
Museum

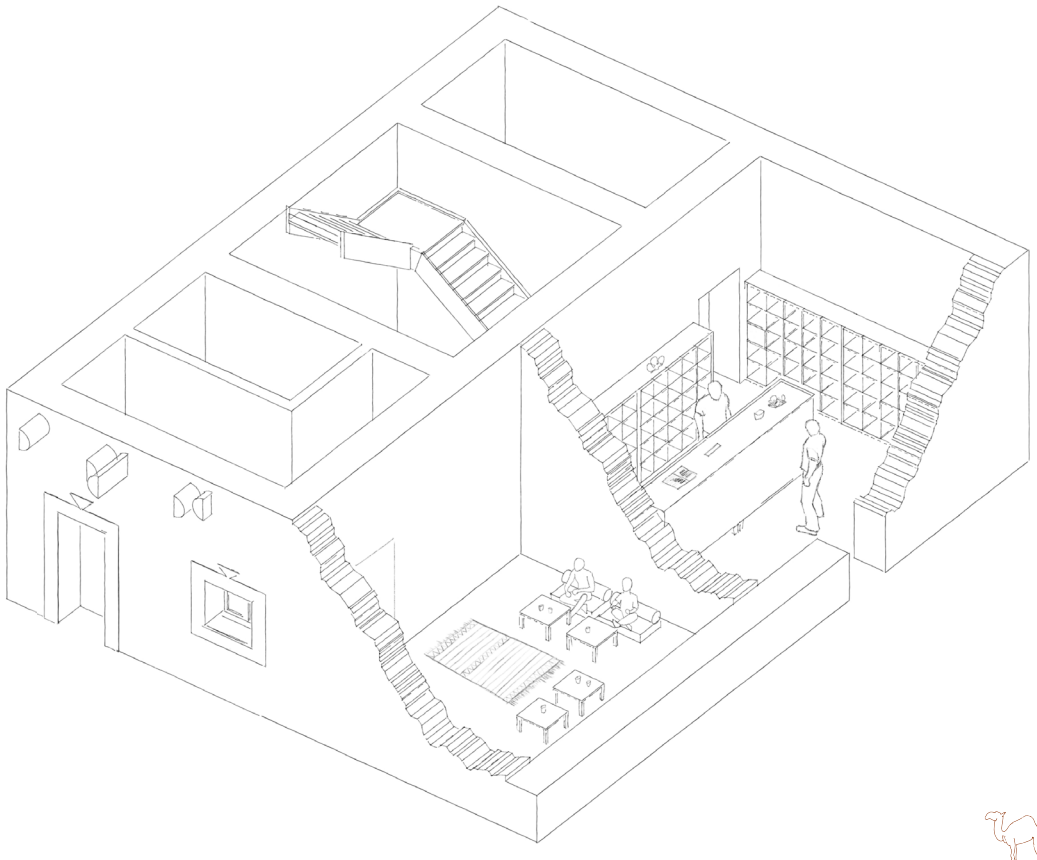
Mixed-use within the house

The house works as an economical unit that provides an income for the family while respecting the privacy and the tradition of the Siwian community. As the area will continue attracting non-Siwians. The commercial area within the house can host a shop selling goods; in addition, the house can take a part in the hospitality sector by providing a unit to be rented for non-Siwians.



1. Guest's entrance
2. service for guest
3. Marbouaa- guest room
4. Main Entrance
5. Service for the comercial area
6. Entrance to the comercial area
7. Comercial area

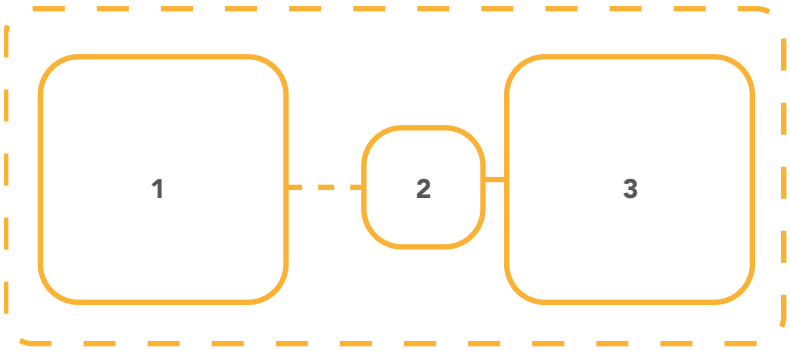




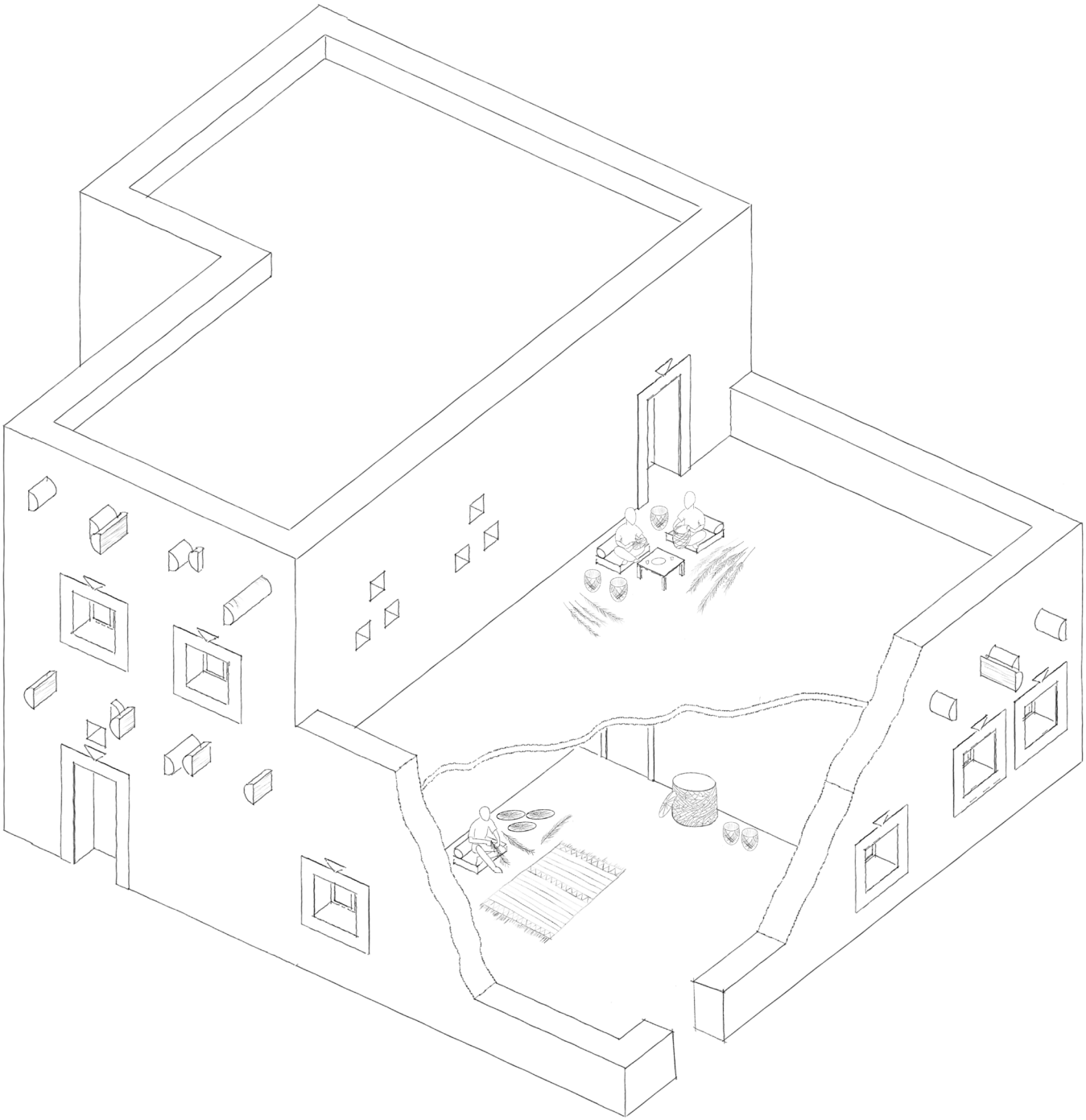
Workshop/ Showroom

Siwa is famous for its handcraft products. Beside the souvenirs for tourist, many of the daily life's utilities are still produced in Siwa, such as palm leaf baskets, rope, carpets, and many others.

Converting the house as a productive unit allowing the visitors of the area to live the experience of the production of the items they are buying. As it increases the value of the product it also increases the importance of preserving the intangible heritage of the craft within the Siwians.



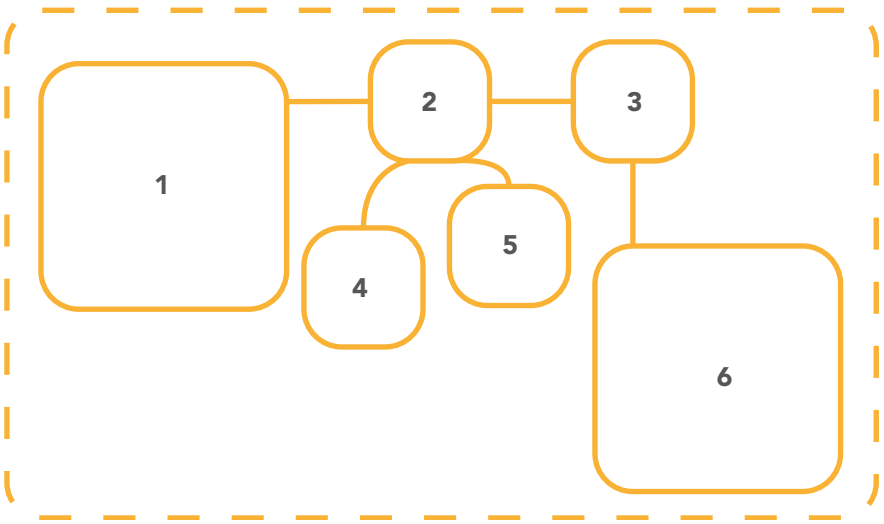
1.The house
2. service
3. The workshop/ showroom



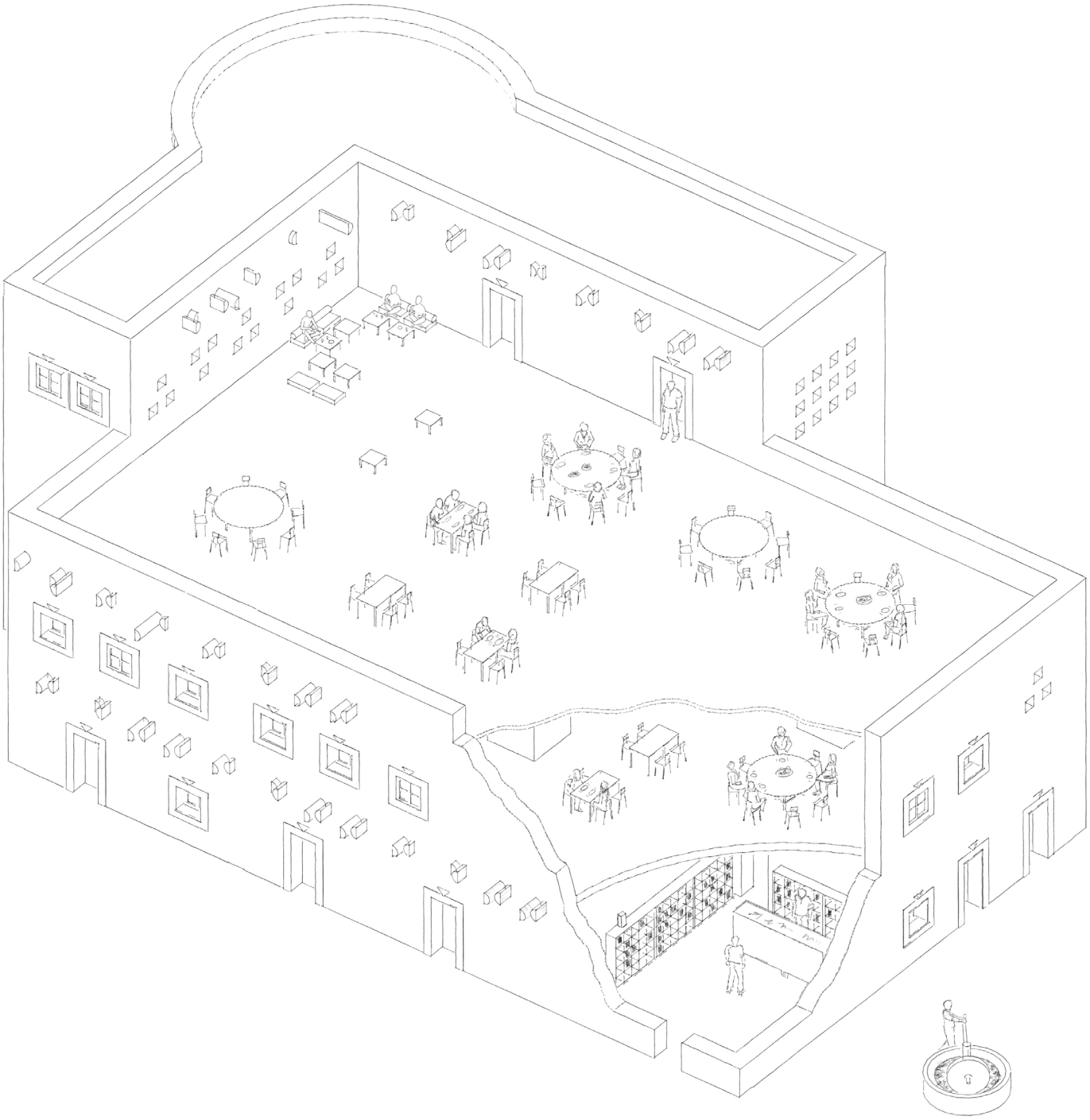
Reviving the oil press

The global trend for sustainable food production encourages some to restore their traditional oil press.

Converting the house as a productive unit allowing the visitors of the area to live the experience of the production of the items they are buying. As it increases the value of the product it also increase the importance of preserving the intangible heritage of the craft within the Siwians.

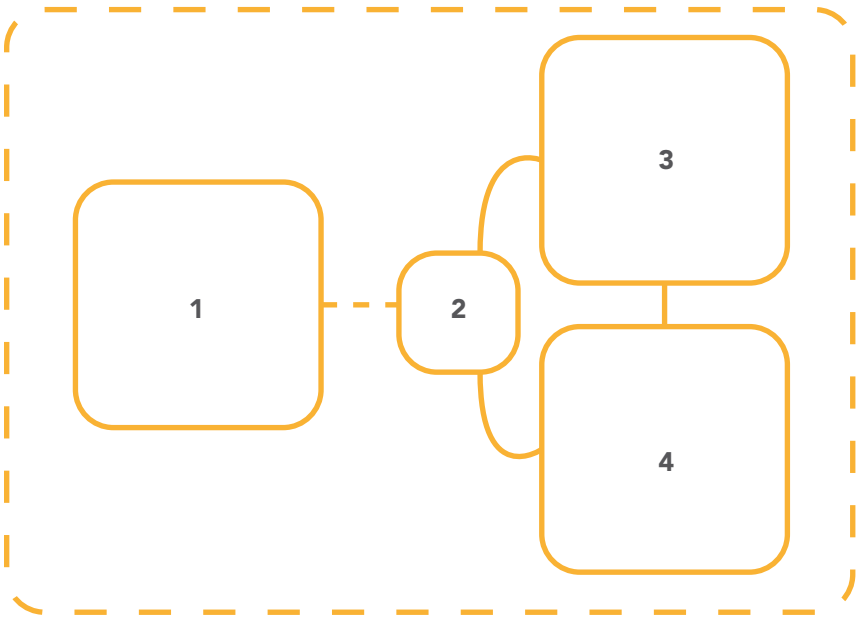


1. The House
2. Services
3. Storage
4. Shop
5. Oil press
6. restaurant

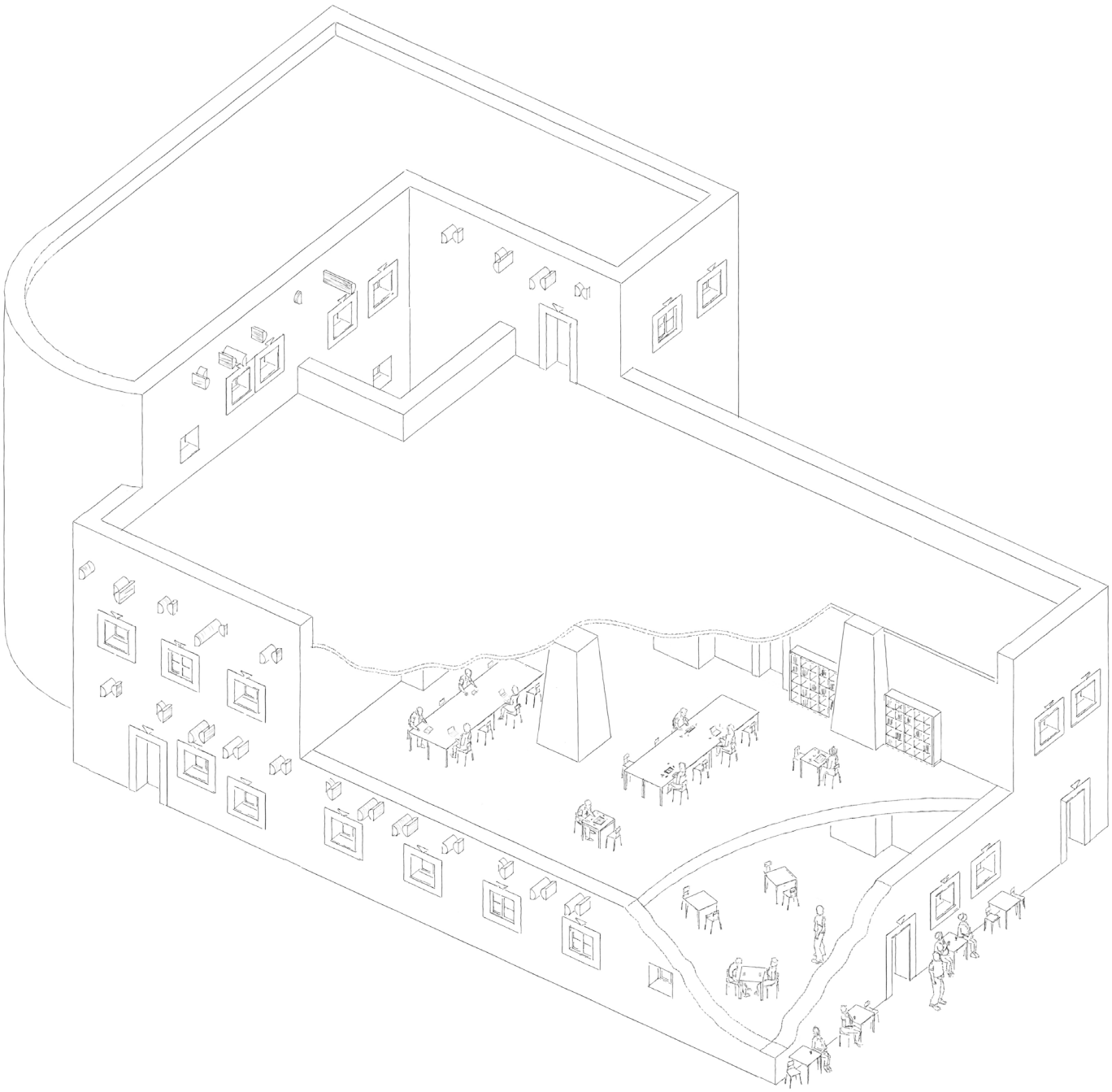


Co-working space

As the number of digital nomads is increasing in Siwa, the need for a proper place for them to work is needed, as they tend to use the coffee shops to work. Many of them have mentioned the need for such a place during the interviews as they find the coffee shops are a great place where they can socials with locals and the need for a place more focused to work is missing. The 'Kahwa' - coffee shop – is a very important place for social life not only in Siwa but in Egypt in general. Having a 'Kahwa' is important for the social life of the area and to increase the cultural exchange between the Siwians and the foreigners.

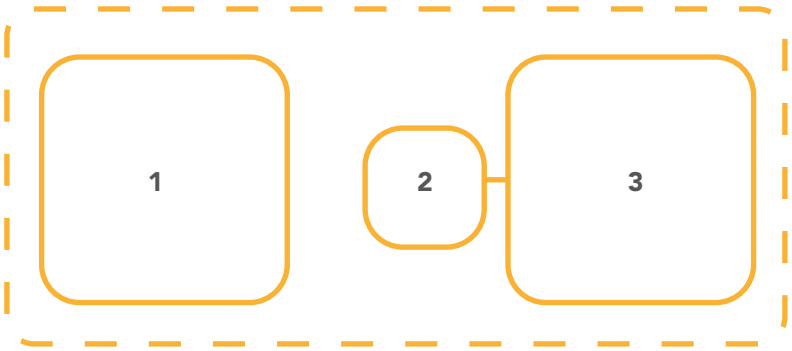


1. The house
2. services
3. Co-working space
4. Kahwa - Coffe shop

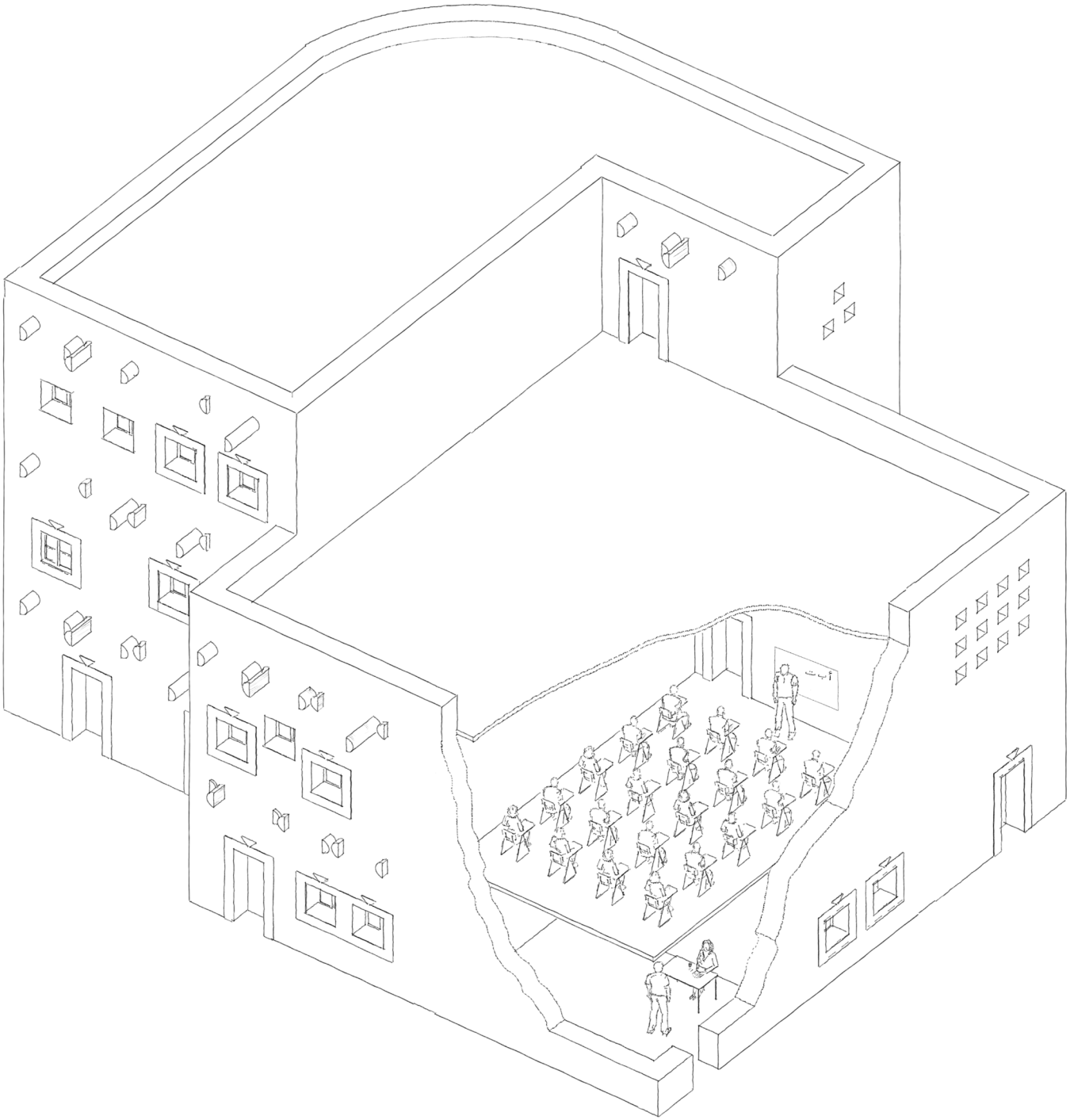


Learning center

The culture activities are important to keep the balance between the commercial activities and the private houses. Many Siwians mentioned during the interviews that a learning center where they can learn different skills such as foreign languages, computer software, classes related to the field of tourism. I noticed that many of the foreigners who stay in Siwa tend to get interested in learning the Siwian language or Arabic in the case of the non-Egyptian foreigners.



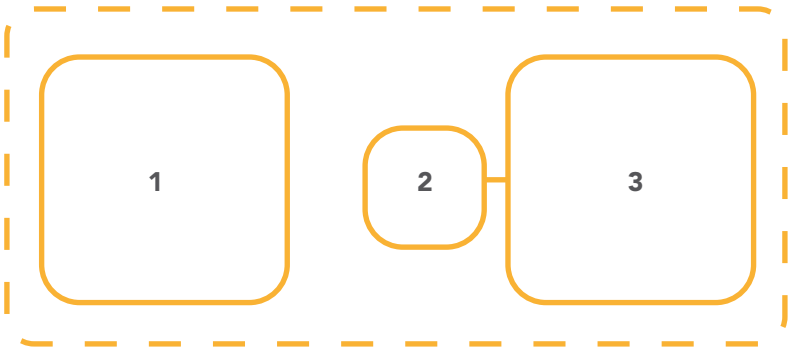
1. The house
2. services
3. Learning center



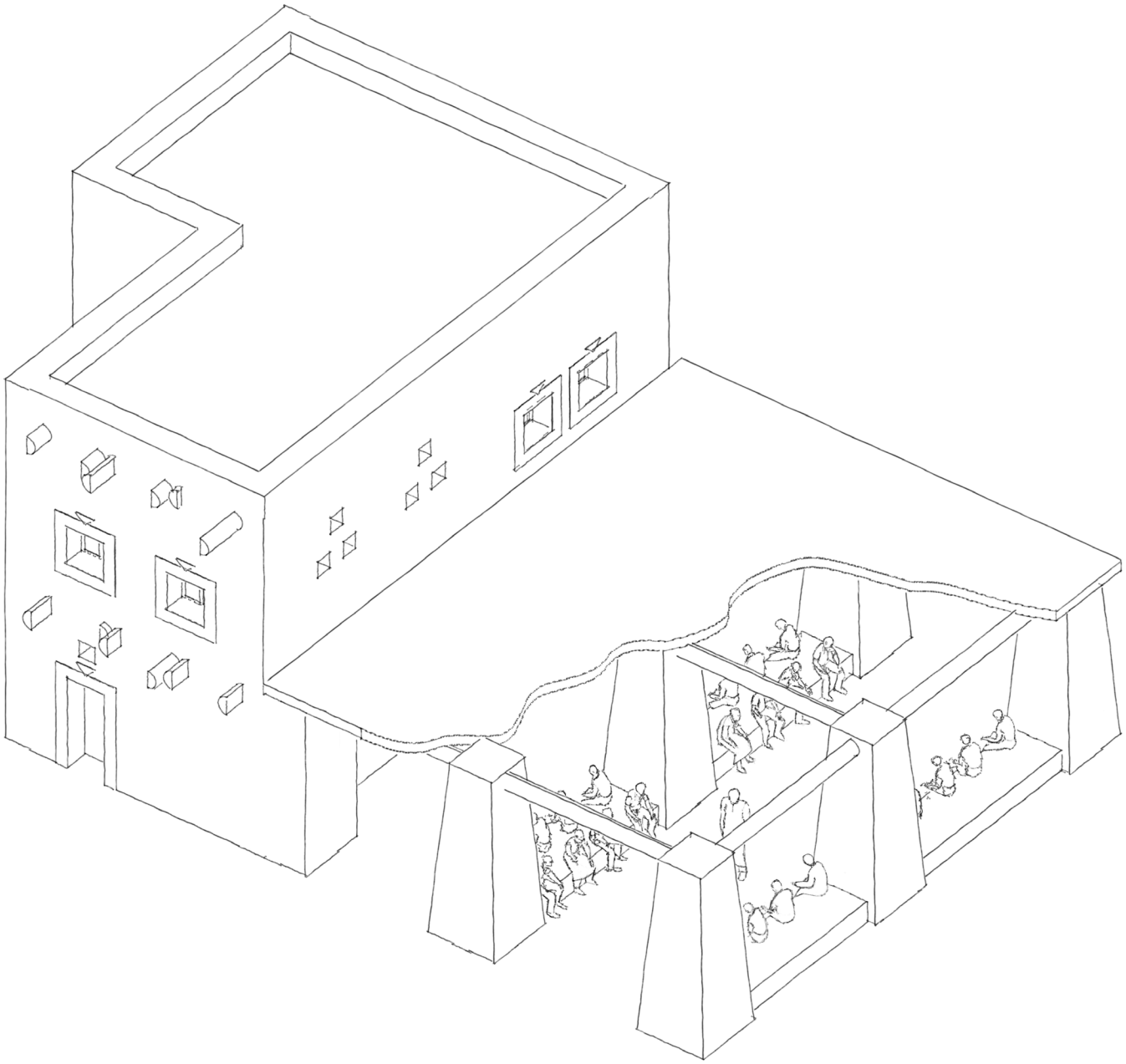
Khos

The Khos is a covered area where traditionally Siwians gather for different social events, such as wedding ceremonies, funerals, meting between the families, lectures, and others.

Restoring the existing Khos of the area is an essential to bring back life to the area for the communal life and the cultural exchange.



1. The house
2. services
3. Khos



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Ramez Azmy. (2021, 3 25). (Y. Mekael, Interviewer)

IMAGE CHAPTER COVERS:

Chapter 1 The sahara Desert - cover image - the dunes of the Sahara in the western Egyptian desert - Taken by Youssef Mekael, 2021

Chapter 2 Siwa Oasis - cover image - The oasis of Siwa, taken from the top of Shali fortress - taken by Youssef Mekael, 2019

Chapter 3 The revival of Kershif - cover image - Hamza the oldest master of Kershif during the restoration of The old mosque of 'Tetnadi' - Taken by Emad Farid, 2017

Chapter 4 New inhabitants - cover image - myself working on the computer in the desert - Taken by Abdallah Sulaiman, 2021

A thought for Shali - cover image - A thought for Shali - done by Youssef Mekael