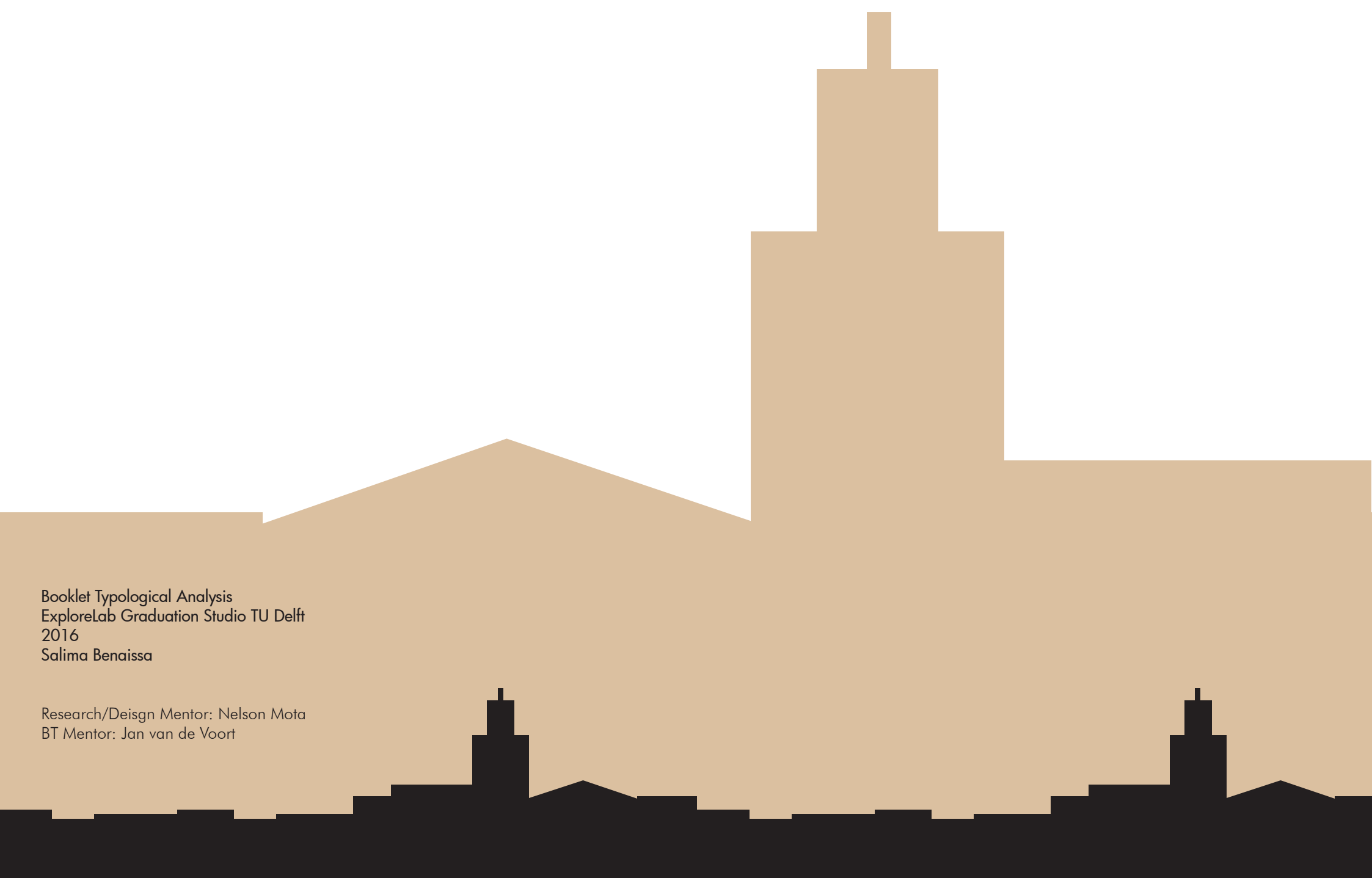


TYPOTOLOGICAL ANALYSIS of Dwellings in North-East Morocco

Booklet Typological Analysis
ExploreLab Graduation Studio TU Delft
2016
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TYPOTOLOGICAL ANALYSIS

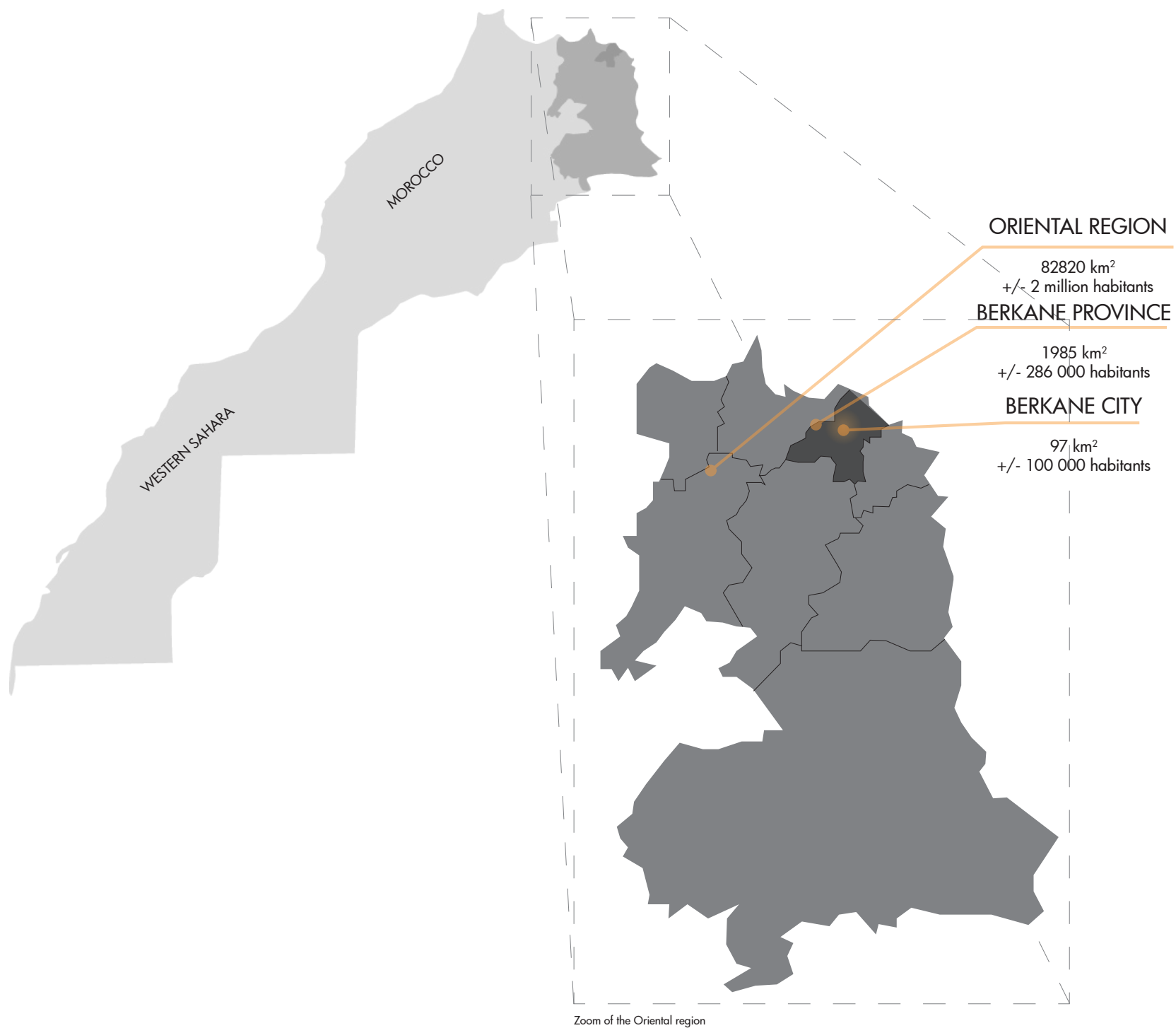
Architecture in Morocco has always dealt with external influences, way back in time the Romans in the 1st century introduced their way of building in North-Afrika, today we see the increased globalization influencing the architecture. This can be seen back in different aspects in the built environment throughout the years, such as the building configuration and the used construction methods, resulting in different building types evolving through time. The North-East region is less known for its architecture, compared to the bigger cities such as Casablanca and Rabat who have been strongly influenced by the French colonists, and the southern part of the country, which is known for its vernacular architecture, consisting of adobe *kasbahs* and further to the south in the Sahara desert, of nomad tent structures. This typological analysis illustrates which different housing types have been evolving in the North-East of Morocco and how the change in time affected the way people live their traditional lives. By means of case studies in and around the city Berkane, which is one of the most extreme North-Eastern cities of the country and one of the numerous medium sized cities in Morocco, this typological analysis should give an insight on the architecture created throughout the years specifically for this Mediterranean climate in the North-East of Morocco.

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THE ORIENTAL REGION

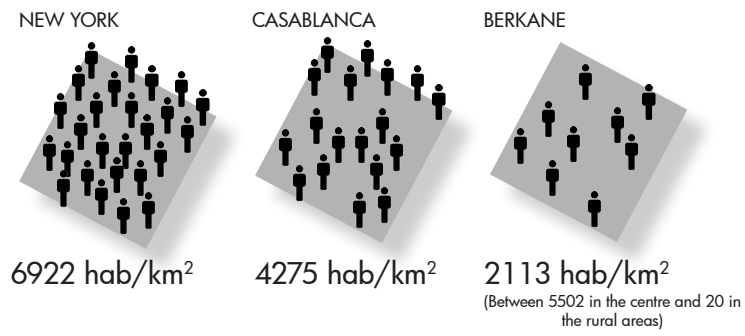
The Oriental region in Morocco is located in the extreme North East of the country, connected to the Mediterranean sea on the North side and Algeria on the East side. The region consists out of mountains and lower land (for example the Trifa plain, which has very fruitful land), it has an overall Mediterranean climate. The Moulouya river divides this region from the higher Rif mountains to the West. The city Berkane is the second largest city of the region, after the capital of the region, Oujda. Berkane has been established before and developed during the French protectorate and is thus a relatively new city, which is still growing today. Inhabitants were mainly residing in the surrounding mountain areas and moved to the city under and after the French Protectorate. Today, the city is coping with a strong urbanisation since people are leaving the countryside for the city, this urbanization is taking place in different ways and stages, which will be explained later on.



Zoom of the Oriental region

FACTS & NUMBERS

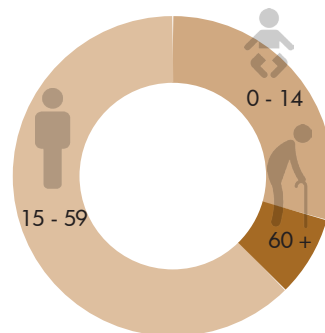
THE ORIENTAL REGION & BERKANE



The region has a **MEDITERRANEAN CLIMATE** with a maximum average temperature in **JULY** of **33 °C** the minimum average temperature in **JANUARI** is **4 °C**

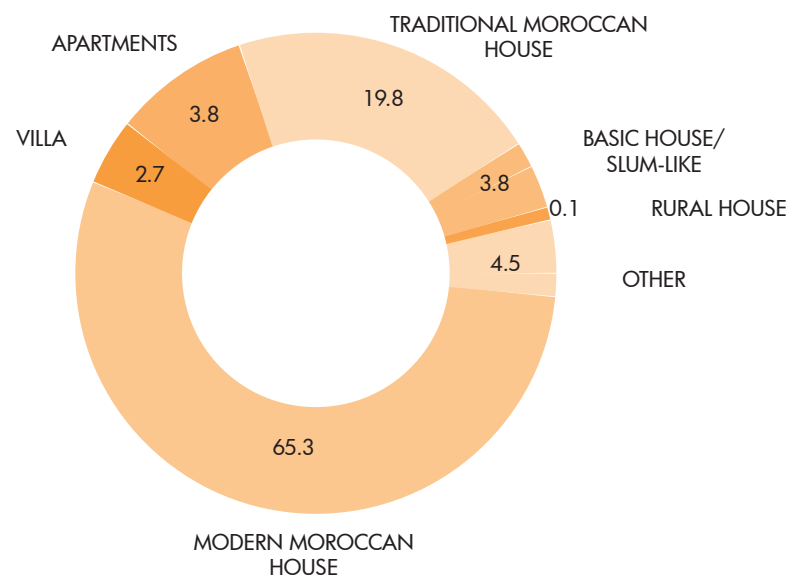
350 mm annual precipitation
 more than **300 DAYS** a year **SUN**

POPULATION AGE
 URBAN AREAS

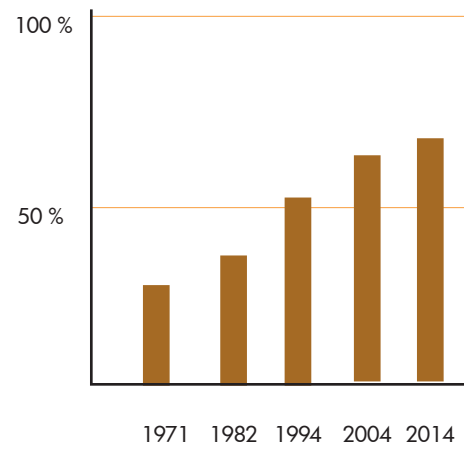


The city Berkane consist out of **43 107 FAMILIES** with a **POPULATION OF 182 690**. Which means families consist out of +/- **4.2 FAMILY MEMBERS**. In rural areas this is approximately **5.4 FAMILY MEMBERS**.

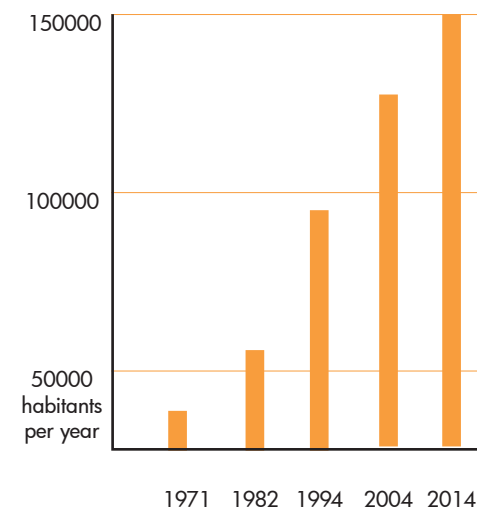
AMOUNT OF POPULATION PER HOUSING TYPES IN URBAN AREAS IN THE ORIENTAL REGION (2004)



PERCENTAGE OF PEOPLE LIVING IN
URBAN AREAS IN THE ORIENTAL
REGION



URBAN POPULATION INCREASE
IN THE ORIENTAL REGION



MAP OF BERKANE



CAP DU L'EAU



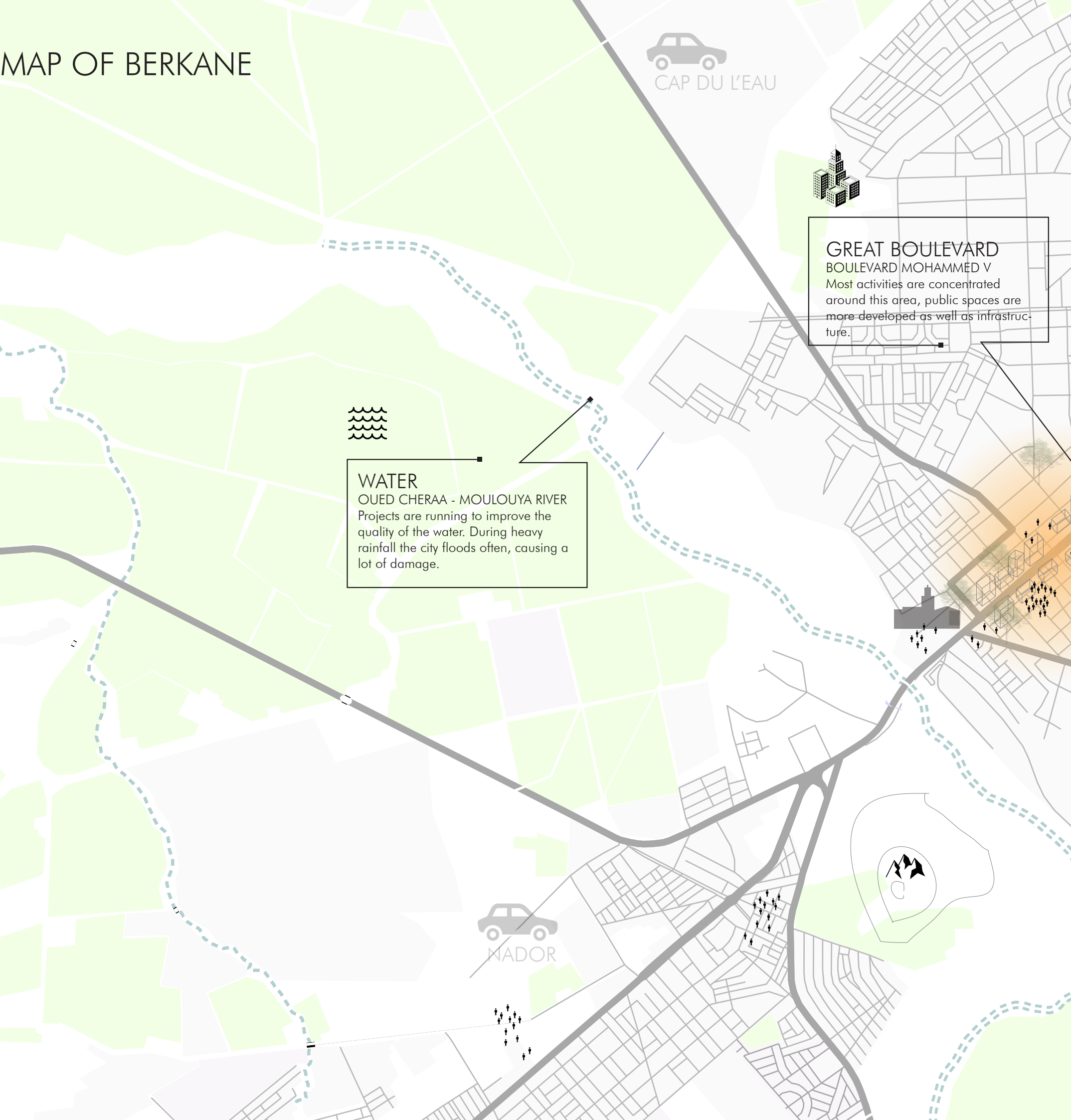
GREAT BOULEVARD
BOULEVARD MOHAMMED V
Most activities are concentrated around this area, public spaces are more developed as well as infrastructure.



WATER
OUED CHERAA - MOULOUYA RIVER
Projects are running to improve the quality of the water. During heavy rainfall the city floods often, causing a lot of damage.



NADOR





SAIDIA

STRONG URBANISATION

The outskirts of the town are becoming bigger and bigger due to the fact that the population in urban areas is growing. By means of creating new projects, the capacity of the city is increased, not always respecting the characteristics of the site.

OUJDA



**AGRICULTURE
ORANGES**

The region is know for its cultivation of citrus fruits, mainly oranges and clem-entines. This is one of the main export products and even in the city centre there is an abundance of these fruits.

ROMAN PERIOD

105 BC

The region is inhabited by Romans and native Berber tribes, especially in and around the river Moulouya, they divided the area into an East and West side. During this period the region was already developing in terms of creating an infrastructure and encouraging agriculture on the fruitful ground.

HOSTILITIES

1859

The local people (Beni Znassen) fight the French occupation, which is mainly coming from the already occupied Algerian lands) under Martimprey Du Kiss to prevent them from taking control over the region.

ARRIVAL OF GENERAL LYAUTEY

1907

French army general Lyautey visited the Oriental region and is the founder of a city now called Ahfir, next to the border of Algeria.



IMMIGRANTS ENTER THE TOWN

1908

After strong resistance of the Beni Znassen against the French, the French finally used their forces and violently got control over the region. The new city provided housing for French people, Algerians and Spanish people. The urbanization is based on colonial Algerian cities: wide and spacious organized roads, surrounded with trees. Spacious houses are constructed and the city became a mixture of different cultures, especially by the Europeans and the North-Africans. The European houses are still found and inhabited today.

SPANISH MUSLIMS INHABIT THE AREA

1600s

The Muslims that inhabited the Iberian Peninsula fled their country during the reign of Philip III, mainly coming from Andalusia. Most of them fled to the Algerian city Oran and continued their journey to end up in the North of Morocco, since the country reminded them of their homeland.



FOUNDATION OF THE CITY BERKANE

1907

The city was founded by the French on a strategic point to control the local tribe Beni Znassen who were residing in the surrounding areas. It was named after Sidi Mohammed Aberkane, a 19th century saint, Aberkane means black in the Berber language.



NATIONAL UPRISING

1953

People start heavy protests against the occupation of the French.



INDEPENDENCE

1956

French troops leave and make place for natives to direct the region. Morocco officially becomes independent.

COLONIZATION

1912

Morocco officially becomes a French Protectorate, with certain areas left occupied by Spain, such as the Western Sahara. General Lyautey was responsible for the decision of making Morocco a protectorate instead of a colony like Algeria, he was of opinion that the people do need education an a more civilized society but not as drastically as the other colonies.

EUROPEAN LANDOWNERS

1909

5000 ha of the region Berkane falls in the hand of Europeans after change of regulations. This results in a huge amount of dwellings to be build and agricultural land to fall in hands of the French occupiers.

CONSTRUCTION OF THE SAINT AGNES

CHURCH

1920

The church remains a landmark in the city today, it is constructed in a French style for the French Christians that inhabited Berkane.

185 HOUSES IN BERKANE

1911

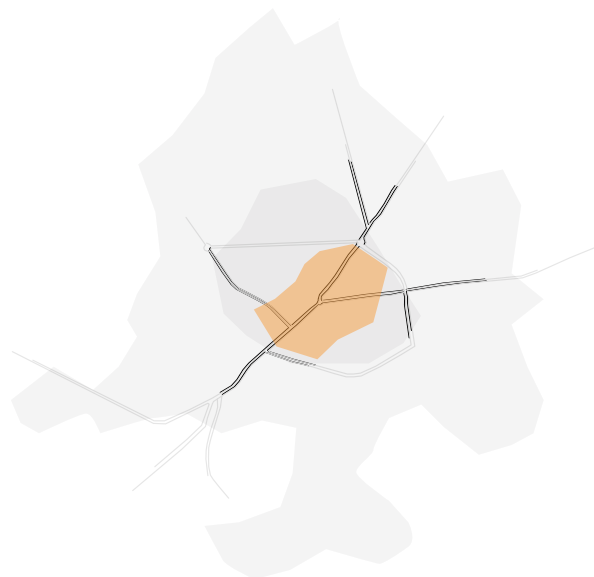
The different types of inhabitants are the base of a new town that is being developed, the city is growing due to the increased number of French people. Mostly colonial buildings are still a part of the city today.

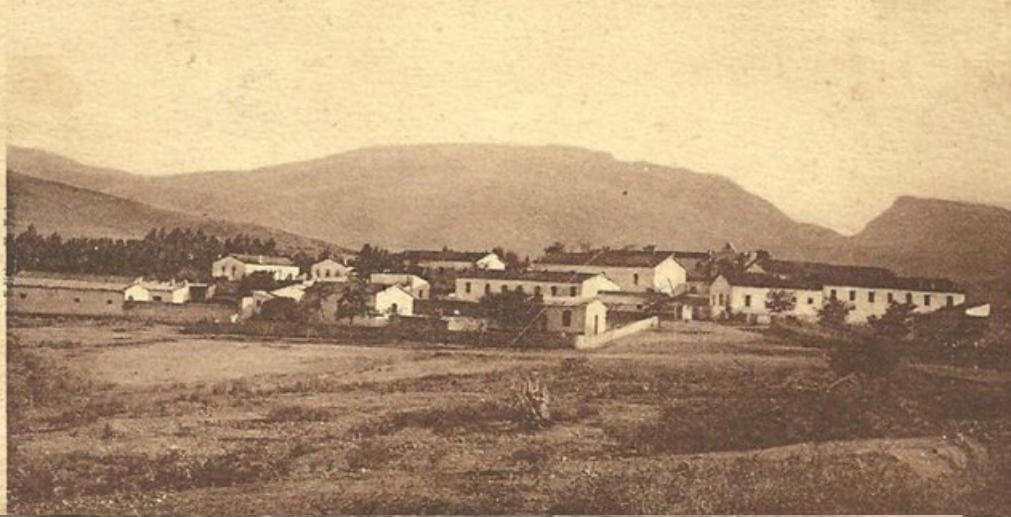


BEFORE & DURING COLONIZATION

1844 - 1956

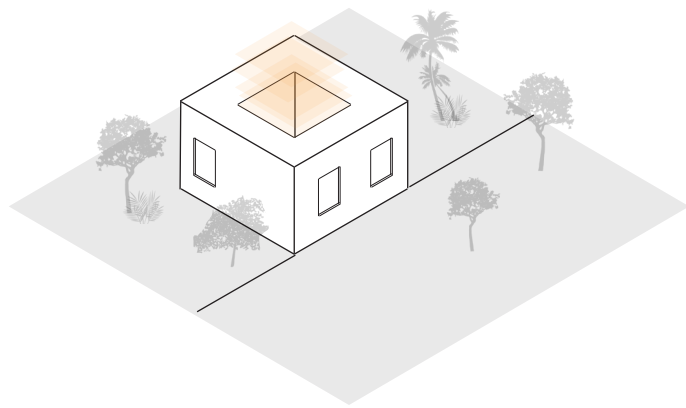
Morocco became a French protectorate in 1912, the years before the establishment of the protectorate the French were also involved in Morocco and worked their way to establish the Protectorate with the treaty of Fes on the 30th of March. This influence was present from 1844, where French forces constructed a fort in the Algerian city Maghnia, near the Northern Moroccan Border. Local tribes resisted this and fought the forces, since this was seen as Moroccan territory, in the same year the borders between Algeria and Morocco have been set and the Moroccans officially recognize the fact that Algeria was colonized by the French. The country was free of being the French protectorate when the King Mohammed 5 took the throne on the 28th of November in 1955, In 1956, one years later, the Spanish occupiers also left Moroccan grounds and the complete independence of Morocco was celebrated. During the occupation the country was lead by modernist movements who strongly influenced the architecture, mainly in the bigger cities and in the creation of new towns. After the independence, one of these modernist movements, GAMMA, kept influencing the architecture and urbanism in mainly the bigger cities.

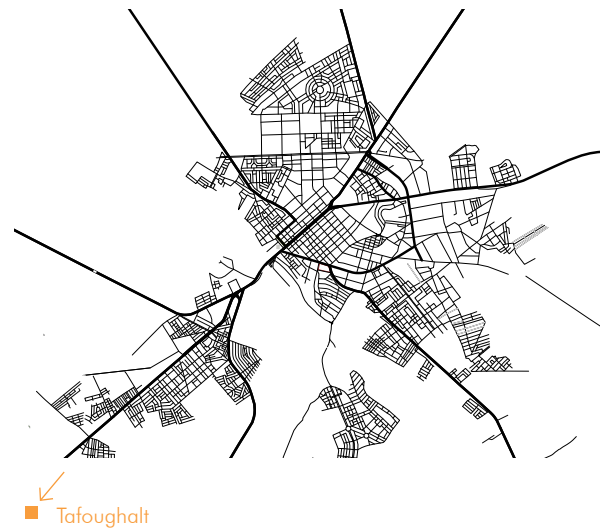




17. Martimpsey-du-Kiss (Maroc) Grande Rue





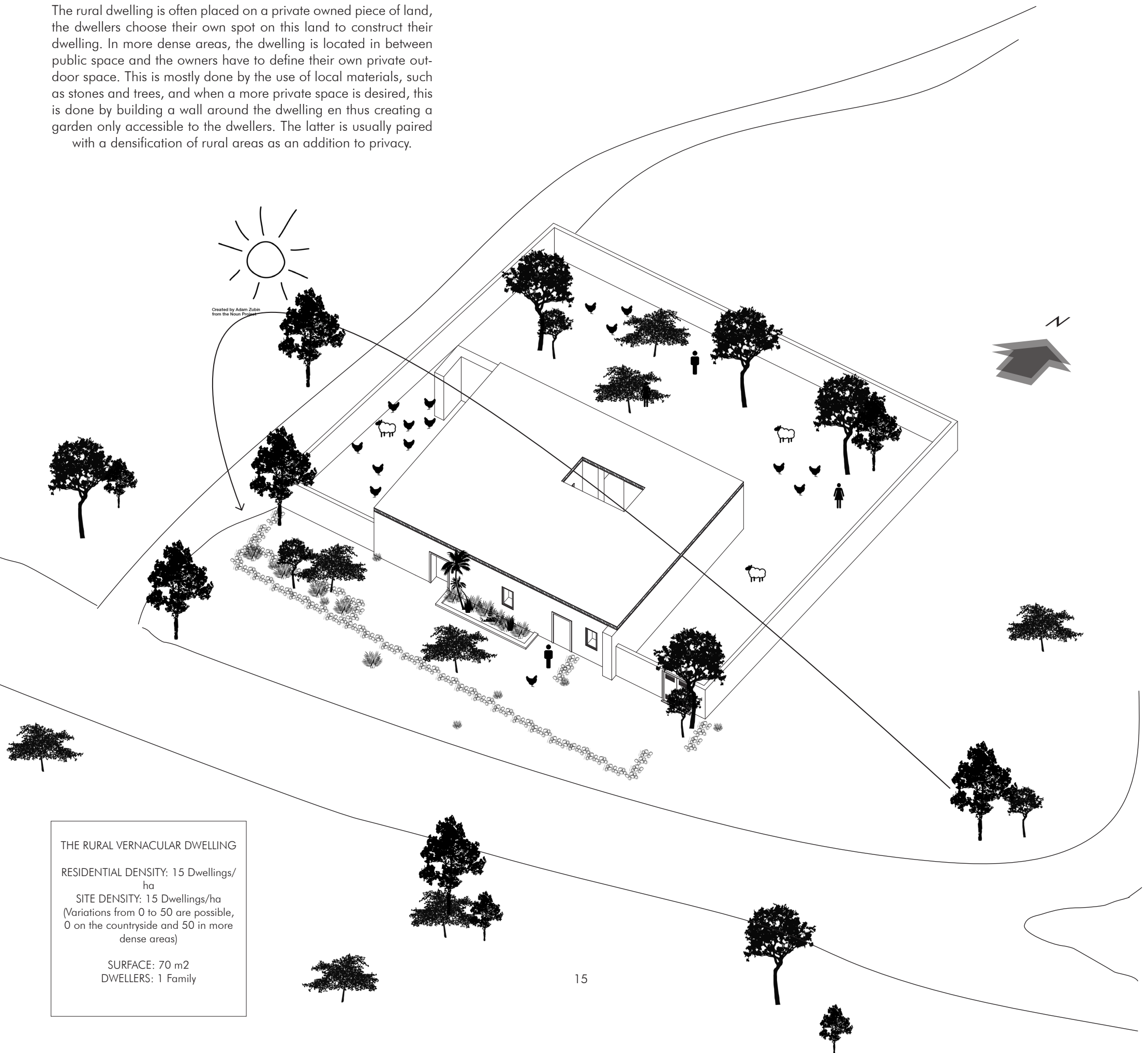


THE RURAL VERNACULAR DWELLING

Since Morocco consist of a broad variation of climates, the rural vernacular architecture differs a lot throughout the country. The most commonly known *kasbahs* and nomad tents are mainly found in the south, not in the North-East of the country. The vernacular architecture of the North-East is less known, since the focus in this study will be on this part of Morocco, typical rural vernacular houses in this area are examined. This architecture shows the position of the people and their local and regional solutions to different problems, topography, context, climate, light and tectonic form. The vernacular architecture of the Northern region of Morocco is less known than other traditional types of art like music, clothing and jewellery. Because the configuration and adaptation to local climate is fully designed by the habitants themselves, this architecture mirrors the translation of local culture and tradition in architecture in a realistic way.

SITUATION

The rural dwelling is often placed on a private owned piece of land, the dwellers choose their own spot on this land to construct their dwelling. In more dense areas, the dwelling is located in between public space and the owners have to define their own private outdoor space. This is mostly done by the use of local materials, such as stones and trees, and when a more private space is desired, this is done by building a wall around the dwelling and thus creating a garden only accessible to the dwellers. The latter is usually paired with a densification of rural areas as an addition to privacy.



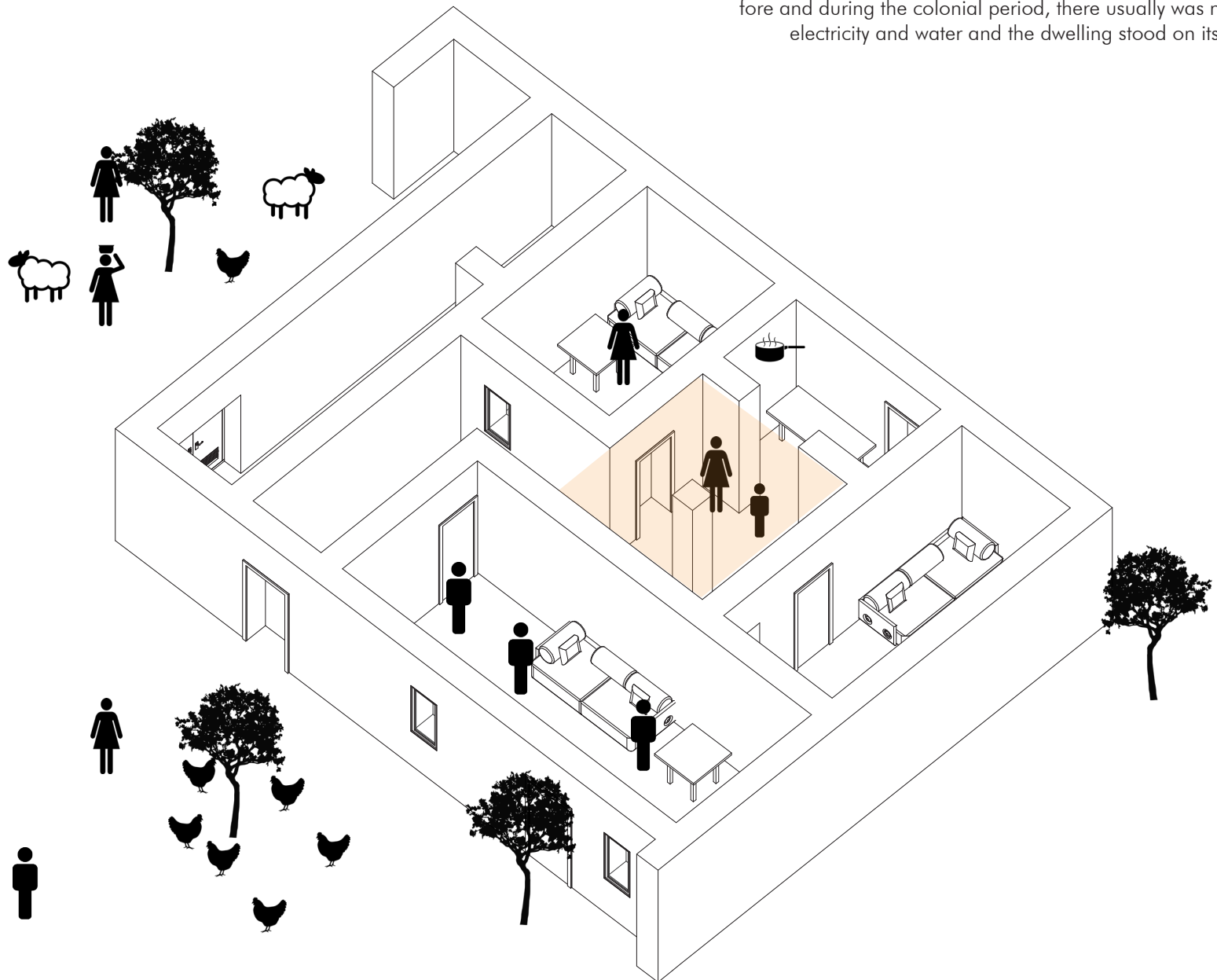
THE RURAL VERNACULAR DWELLING

RESIDENTIAL DENSITY: 15 Dwellings/
ha
SITE DENSITY: 15 Dwellings/ha
(Variations from 0 to 50 are possible,
0 on the countryside and 50 in more
dense areas)

SURFACE: 70 m²
DWELLERS: 1 Family

USE & CONFIGURATION

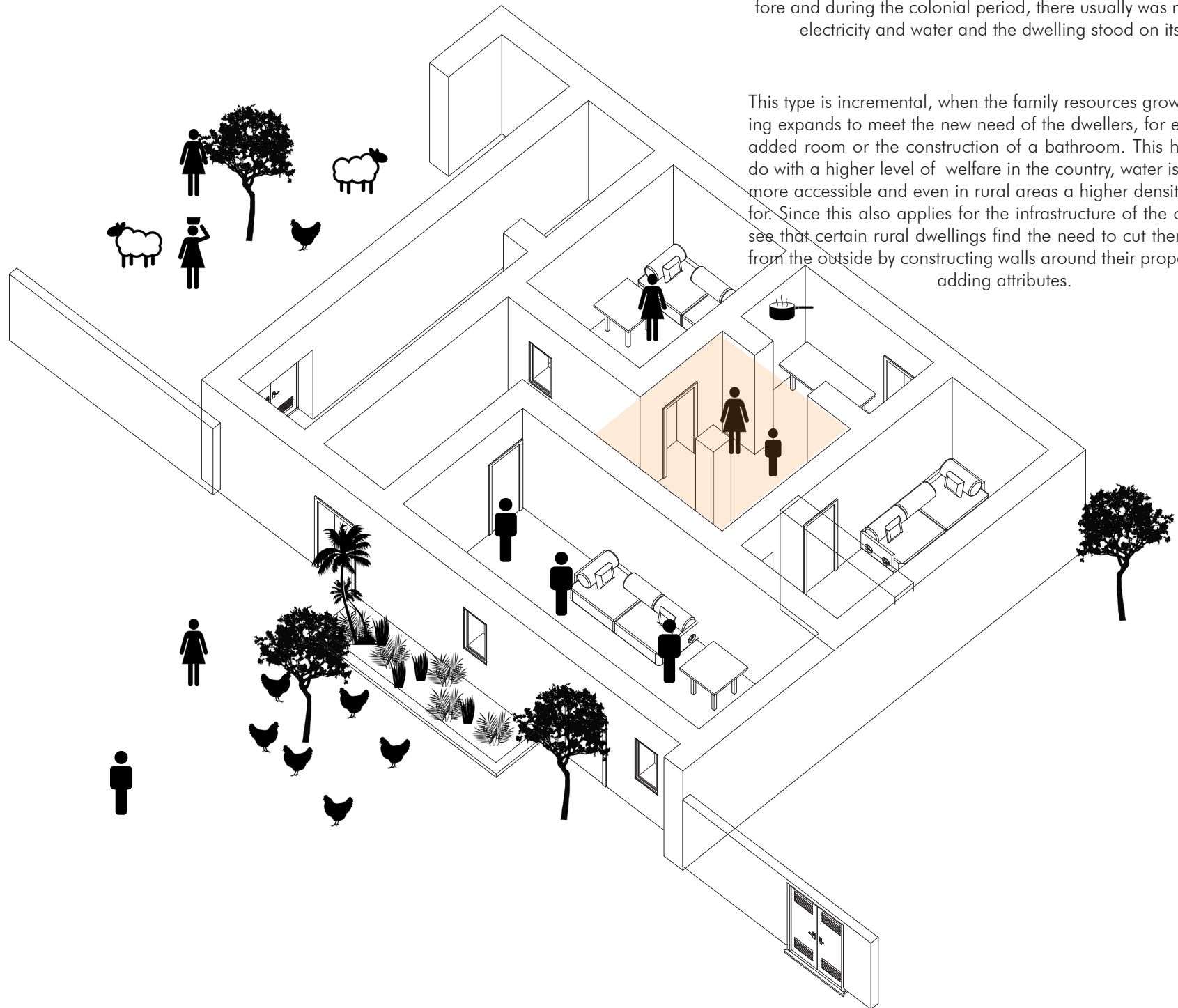
The dwelling is inhabited by one family, situated in the East part of the Rif mountains. Since this is a rural dwelling, there is place for animals in the interior and exterior of the building. The kitchen is attached to the patio for practical purposes and all the bedrooms are orientated towards this patio. Privacy is maintained in this area by placing the entrance to the living room away from sight, mainly to receive guests in the living room without jeopardizing the privacy of the other rooms. This is the way the dwelling was inhabited before and during the colonial period, there usually was no access to electricity and water and the dwelling stood on its own.



USE & CONFIGURATION

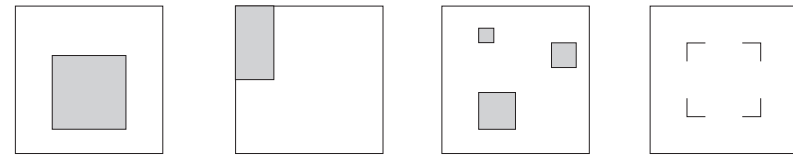
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This type is incremental, when the family resources grow the dwelling expands to meet the new need of the dwellers, for example an added room or the construction of a bathroom. This has a lot to do with a higher level of welfare in the country, water is becoming more accessible and even in rural areas a higher density is wished for. Since this also applies for the infrastructure of the country, we see that certain rural dwellings find the need to cut themselves off from the outside by constructing walls around their property and by adding attributes.

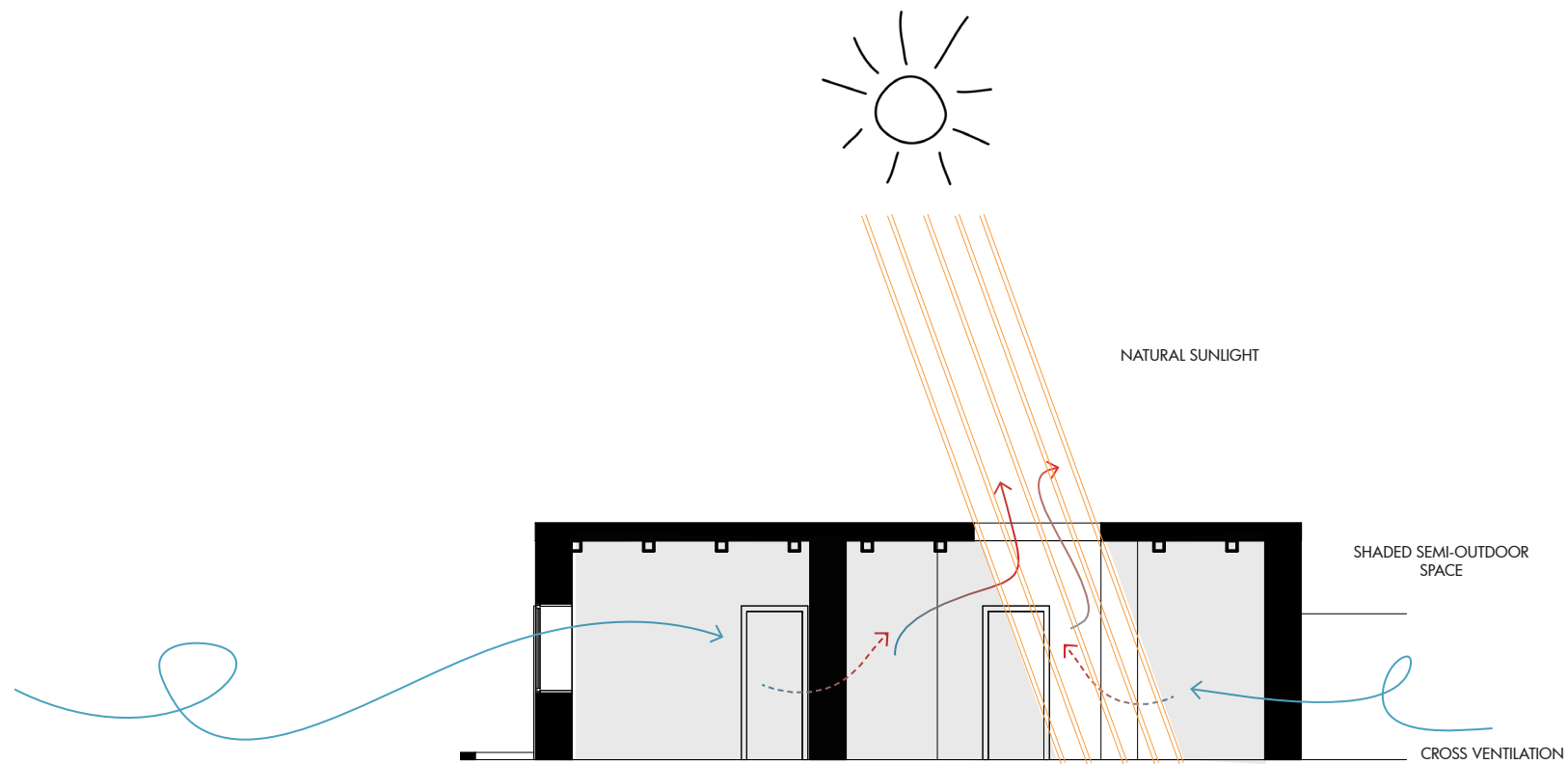


CLIMATE

The amount of consideration of the existing climate is strongly visible in these types of vernacular rural dwellings. The dwellings are almost always orientated around a patio, open or closed, they make one of the most characteristic aspects of Moroccan architecture. This dwelling is located in the mountain area near the city of Berkane, it is known for colder and wet winters and dry summers. The building is compact and has a sloped roof to answer to the conditions in the winter of the site (possibility of snow). The patio provides a high ventilated shaded area in the summertime, in the mean time it is a gathering place and an extension for the living room and kitchen.

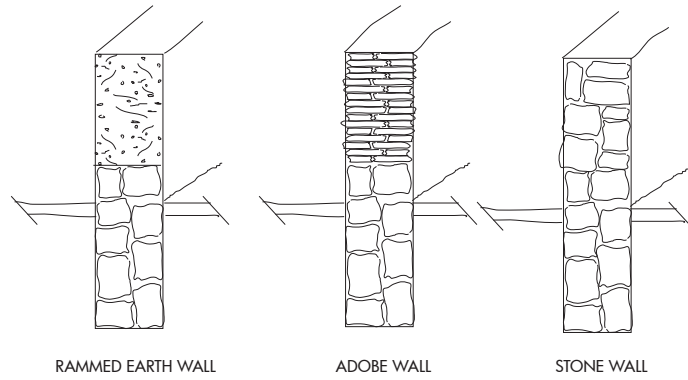


VARIATIONS OF PATIO'S

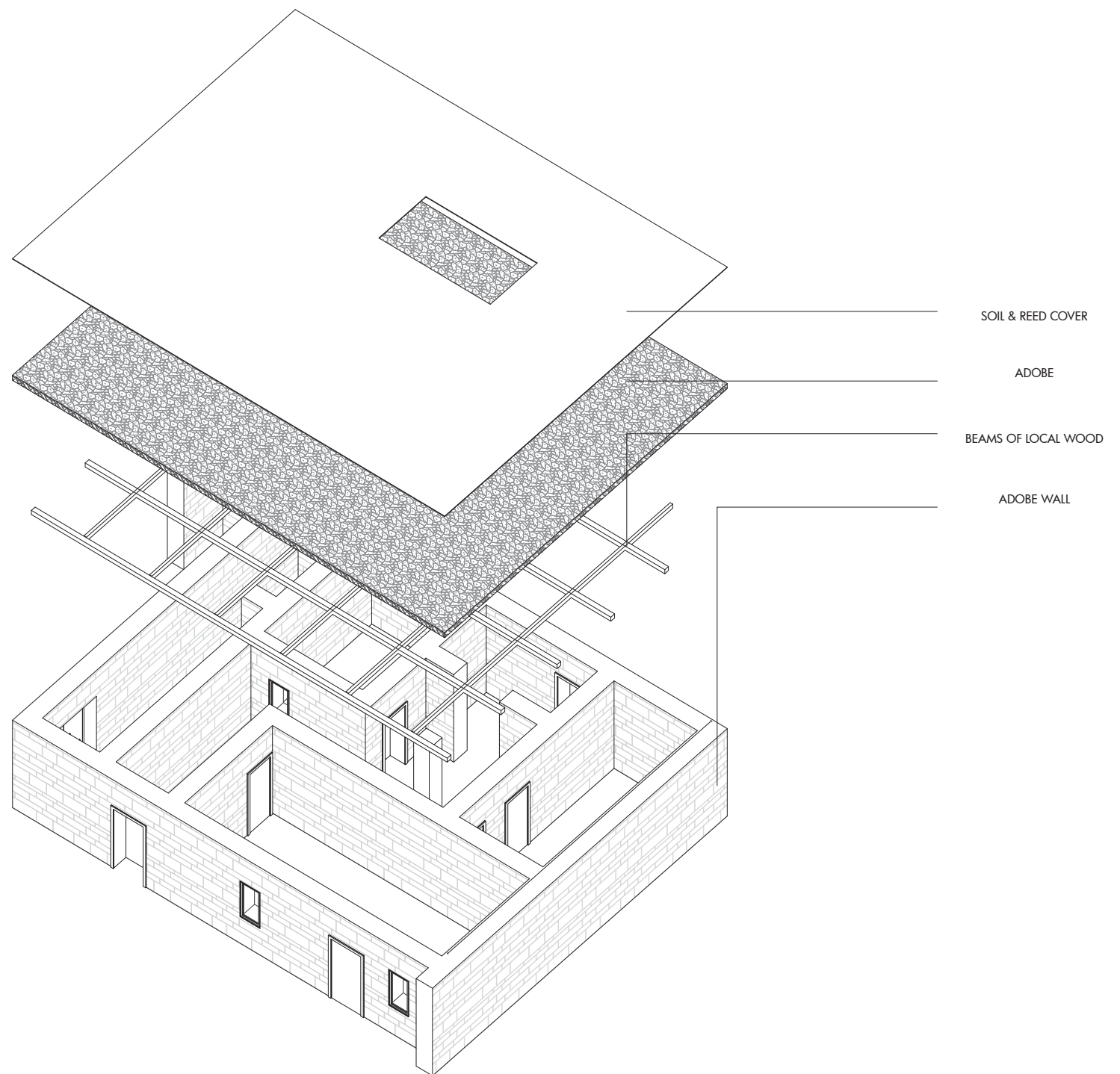


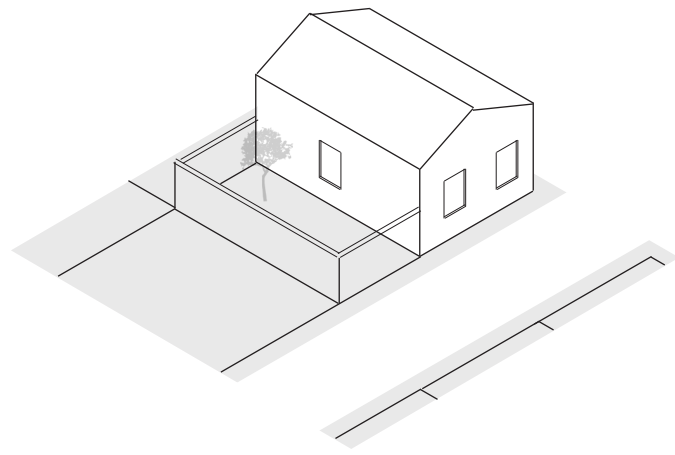
CLIMATIC ADVANTAGES OF A PATIO

CONSTRUCTION



Since this type is made by the habitants themselves and with the available materials, the building is completely natural. Nevertheless, in a more modern version of this type we see more use of imported materials such as steel plate roofs and the extension of a dwelling in concrete. In general the construction of vernacular dwellings in the North-East of Morocco consist out of carrying walls made out of adobe, rammed earth or stones. These stones are mainly available because they can be found at the riversides. Today these materials are not as widely used because of the abundance of new factories mainly in the cities Nador and Oujda, providing easy access to cement and steel reinforcement.





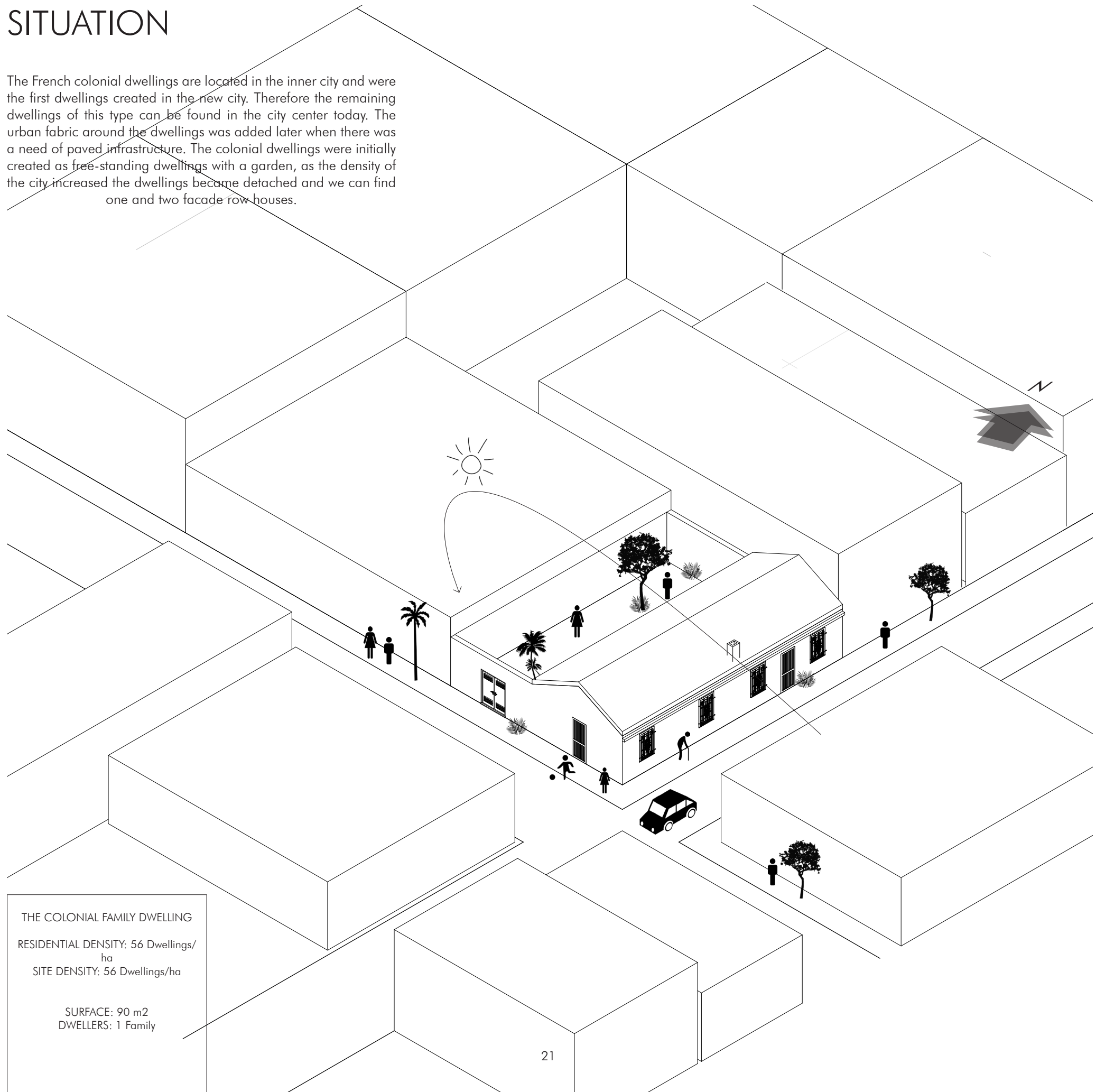


THE COLONIAL FAMILY DWELLING

Since the French presence in North-Africa, the French have been building lots of dwellings for the colonizers inhabiting the country. In the North-East of Morocco this was mainly in new created cities, therefore the presence of the colonizers are still remarkable today, where we see that the city centers are full of ancient dwellings of the French. This type was adapted in certain ways to the Mediterranean climate, but still has remarkable French features as the composition of the dwelling and the shape of the roof. This type is slowly disappearing in Moroccan cities since their location in the city centers provides good lots for new, higher, building blocks.

SITUATION

The French colonial dwellings are located in the inner city and were the first dwellings created in the new city. Therefore the remaining dwellings of this type can be found in the city center today. The urban fabric around the dwellings was added later when there was a need of paved infrastructure. The colonial dwellings were initially created as free-standing dwellings with a garden, as the density of the city increased the dwellings became detached and we can find one and two facade row houses.

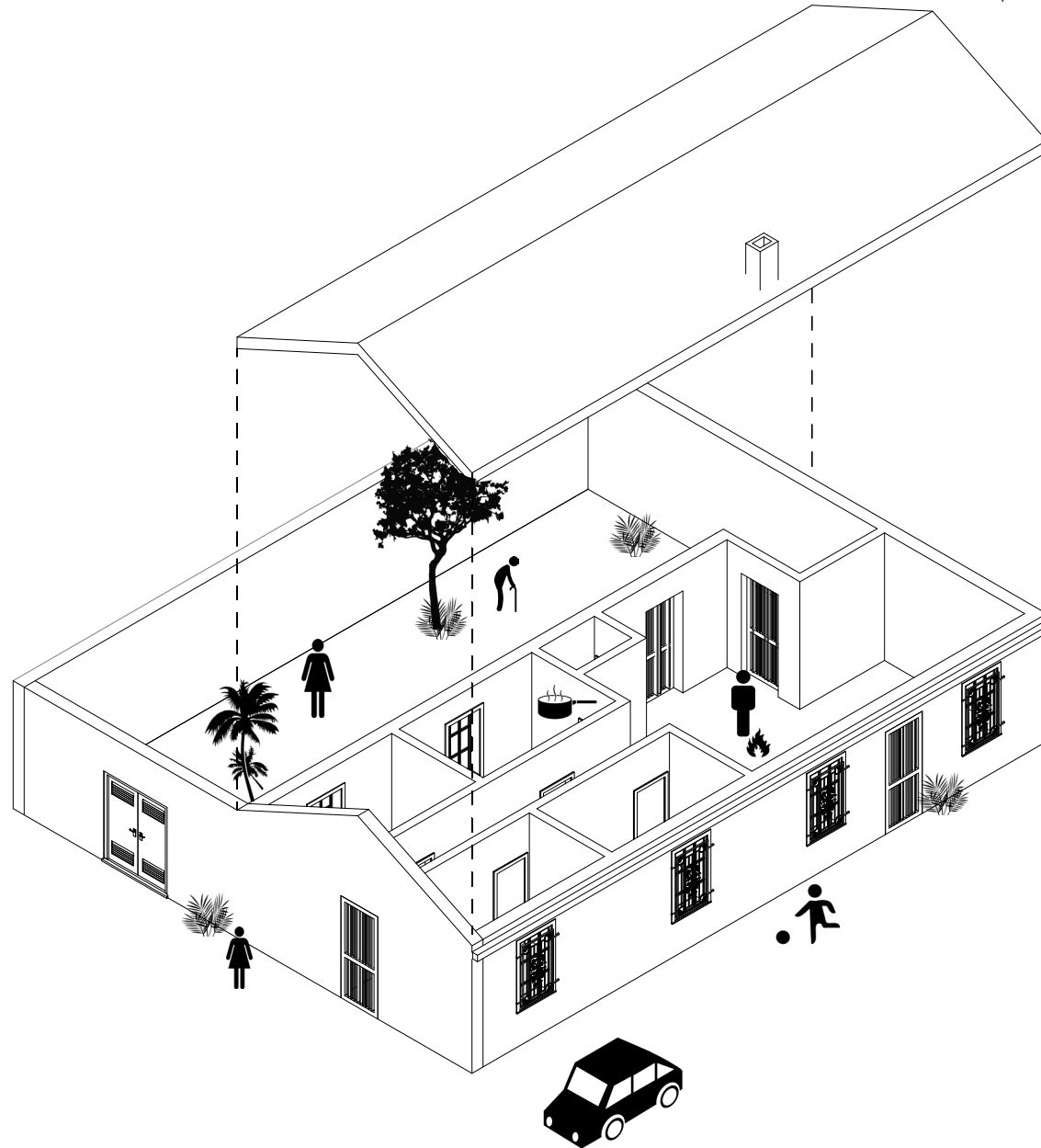


THE COLONIAL FAMILY DWELLING
RESIDENTIAL DENSITY: 56 Dwellings/
ha
SITE DENSITY: 56 Dwellings/ha

SURFACE: 90 m²
DWELLERS: 1 Family

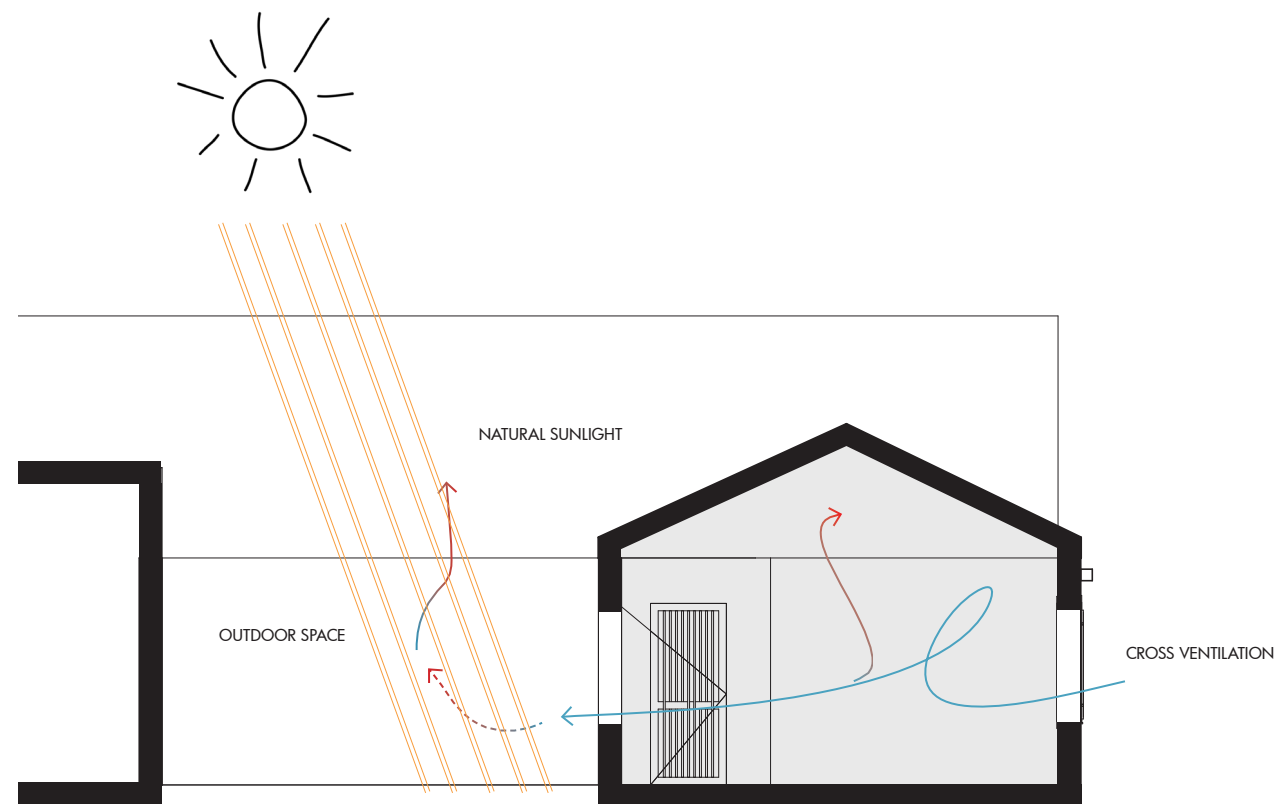
USE & CONFIGURATION

The configuration of the dwelling is based on French principles and traditional floor plans. Unlike most Mediterranean dwellings, they do not consist out of a patio. The dwelling usually contains a garden, which has a separate entrance to the street and provides possibility to open a merchandise. The main entrance is connected to a hallway that provides access to all rooms, in some cases a secondary entrance is found to provide direct access to the living room. French traditional aspects can be found back in the use of a fireplace and a sloped roof.



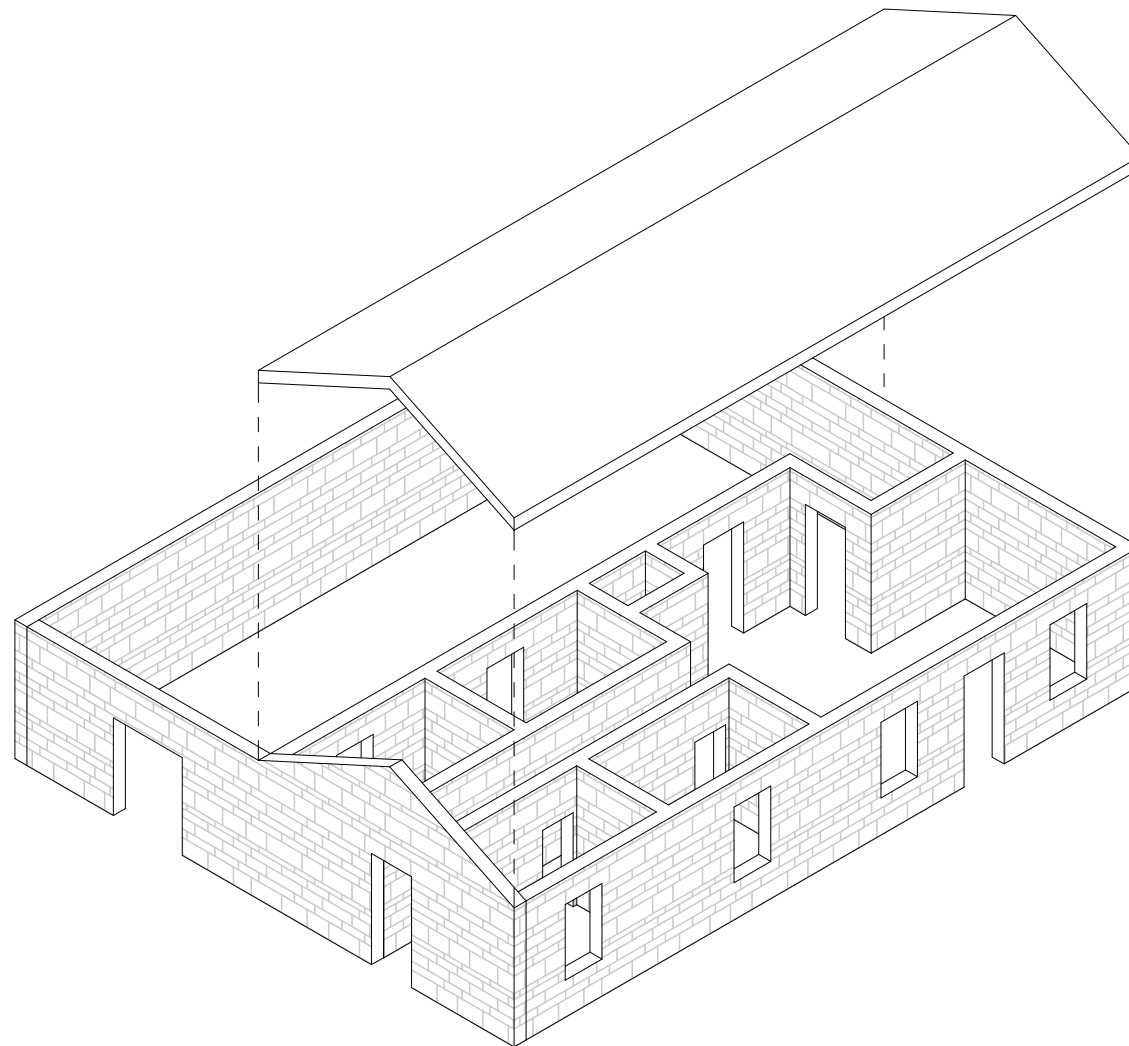
CLIMATE

Since the colonial dwelling was build based French ways of doing, the adoption to the local climate was not the first and foremost aspect thought of while building. The sloped roof is based on an European climate and does not come in handy in the dry and warm Mediterranean climate, this works however in higher areas of Morocco where there is more snowfall during winter, like in the nearby mountain areas. The same can be said about the use of a fireplace, which can be beneficial in winter periods but has no necessity in this climate since winters are generally mild. The traditional patio in Moroccan dwellings is not present in this type, the garden however has benefits for the climate since it makes cross-ventilation possible. Today, these gardens are usually filled with other dwellings because of the increased density of the inner city.



CONSTRUCTION

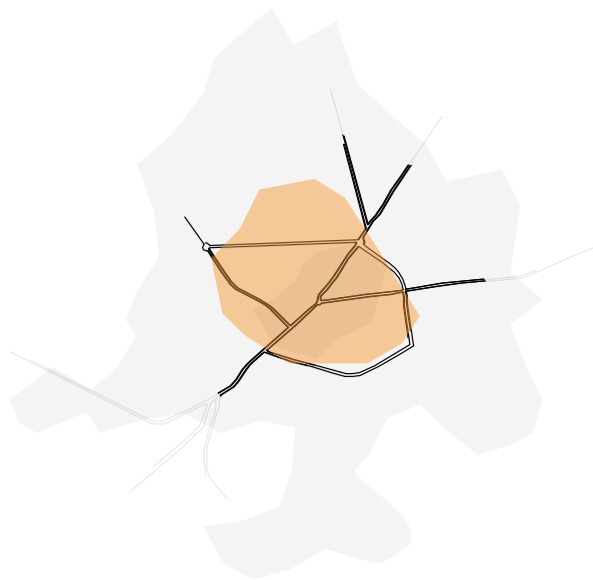
The construction of the colonial vernacular was mainly based on the available materials and the skills of the workers. Since native Moroccans were usually the ones that constructed the building, the used materials and construction methods are close to the pre-colonial period. The load-bearing walls are made of adobe and plastered to smoothen the facade. The roof is made out of roof tiles which refer back to French traditional dwellings.



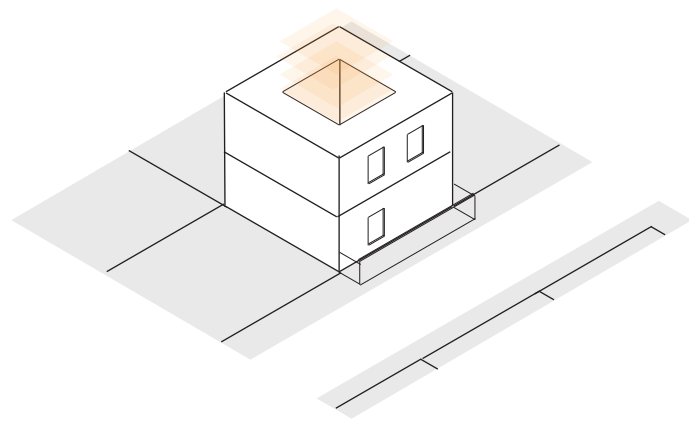
POST-COLONIZATION

1956 - 1970

This period marks the transition from independence to the new era, which marks the creation of a new way of building that corresponded with traditional ways of building. This period is known for this transition from being a French Protectorate into the independent Morocco, which resulted in mutual influences in housing types and the way of building throughout the country and even in France itself. Most people have been living in the rural areas and started to move to urban areas after colonization. This period marks a time where there is a quest for a building type that resembles the rural dwelling local people would live in, but adapted to an urban setting. Up until the 70s this was the way of building and this is still visible in most city centers in the Oriental region today.







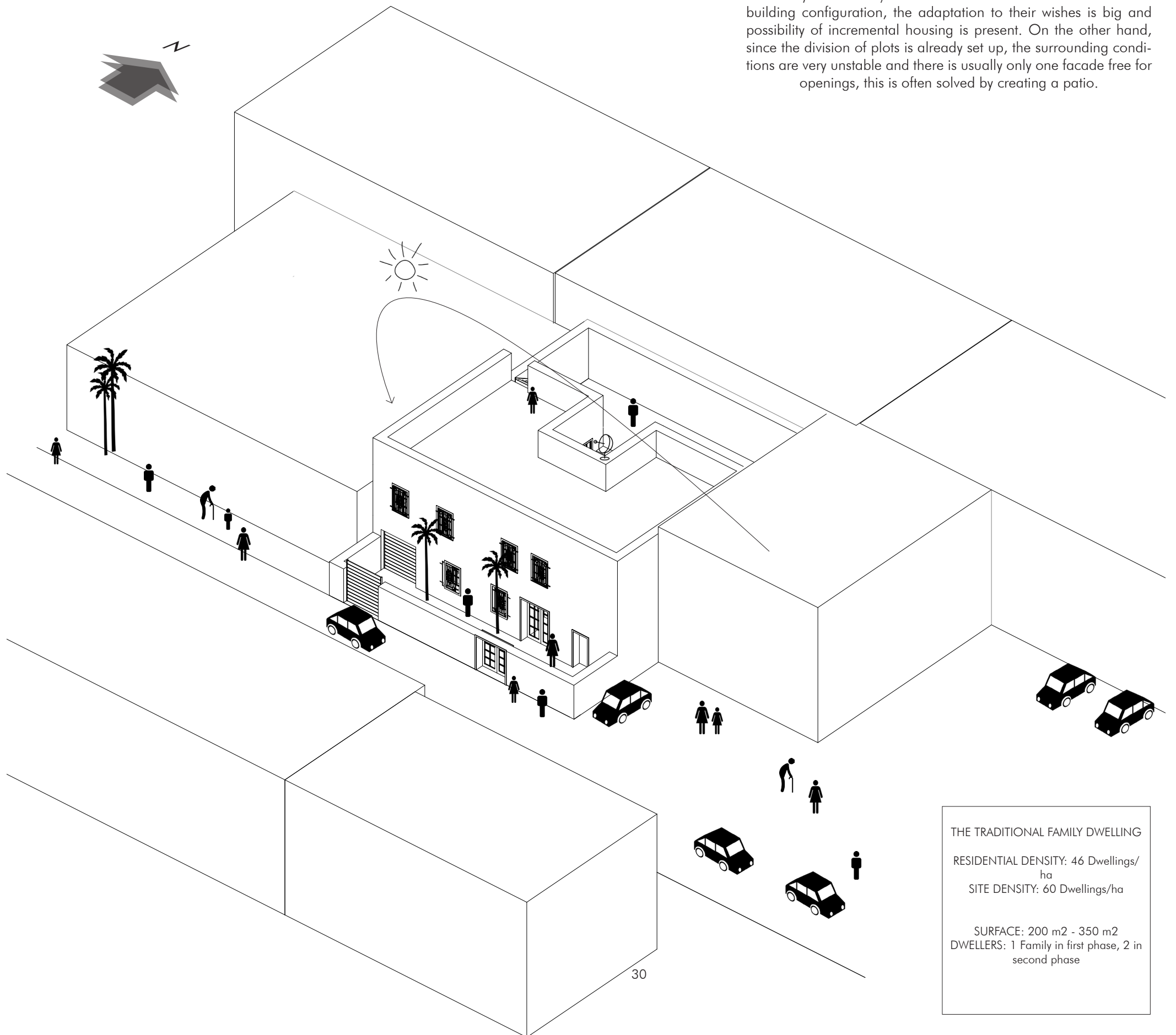


THE TRADITIONAL FAMILY DWELLING

During the colonial period, cities started to grow and dwellers from the rural area started to move to these denser areas. This resulted in variations of traditional housing in urban areas with influences from the French. Therefore this traditional incremental dwelling is a type that lies close to the vernacular, but was implemented in an urban context. The period between vernacular and today has been influenced by the French during the protectorate. People that were immigrating from the mountain areas to the city during this period have built their houses based on vernacular principles, in 'modern' cities. This is characteristic for housing developed during and after the independence, it is incremental, based on the growth of a family a new storey can be added up. Vernacular aspects are visible in the configuration and building material. In more recent types the traditional configuration is less present and spaces like the patio are strongly reduced to extents that it can not be called a patio anymore. Another aspect is the individuality and the possibility to adapt to the wishes and budget of the dweller.

SITUATION

Projects usually start with an urban plan provided by the government, or private parties, beginning with the division of lots with infrastructure and public space (which is very limited in the outskirts of the city of Berkane). Since the habitants can choose their own building configuration, the adaptation to their wishes is big and possibility of incremental housing is present. On the other hand, since the division of plots is already set up, the surrounding conditions are very unstable and there is usually only one facade free for openings, this is often solved by creating a patio.



THE TRADITIONAL FAMILY DWELLING

RESIDENTIAL DENSITY: 46 Dwellings/
ha

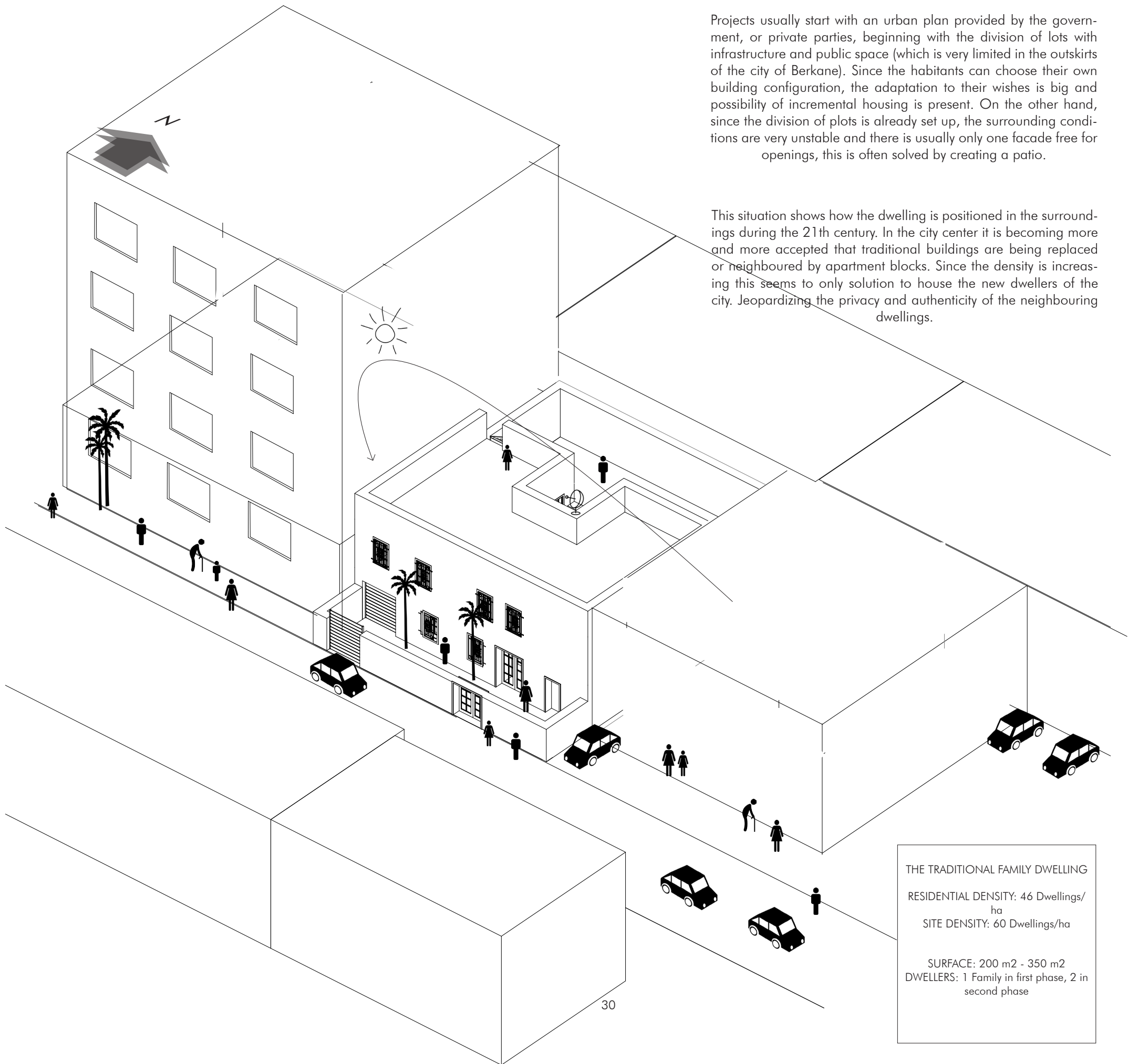
SITE DENSITY: 60 Dwellings/ha

SURFACE: 200 m² - 350 m²
DWELLERS: 1 Family in first phase, 2 in
second phase

SITUATION

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This situation shows how the dwelling is positioned in the surroundings during the 21th century. In the city center it is becoming more and more accepted that traditional buildings are being replaced or neighbored by apartment blocks. Since the density is increasing this seems to only solution to house the new dwellers of the city. Jeopardizing the privacy and authenticity of the neighbouring dwellings.



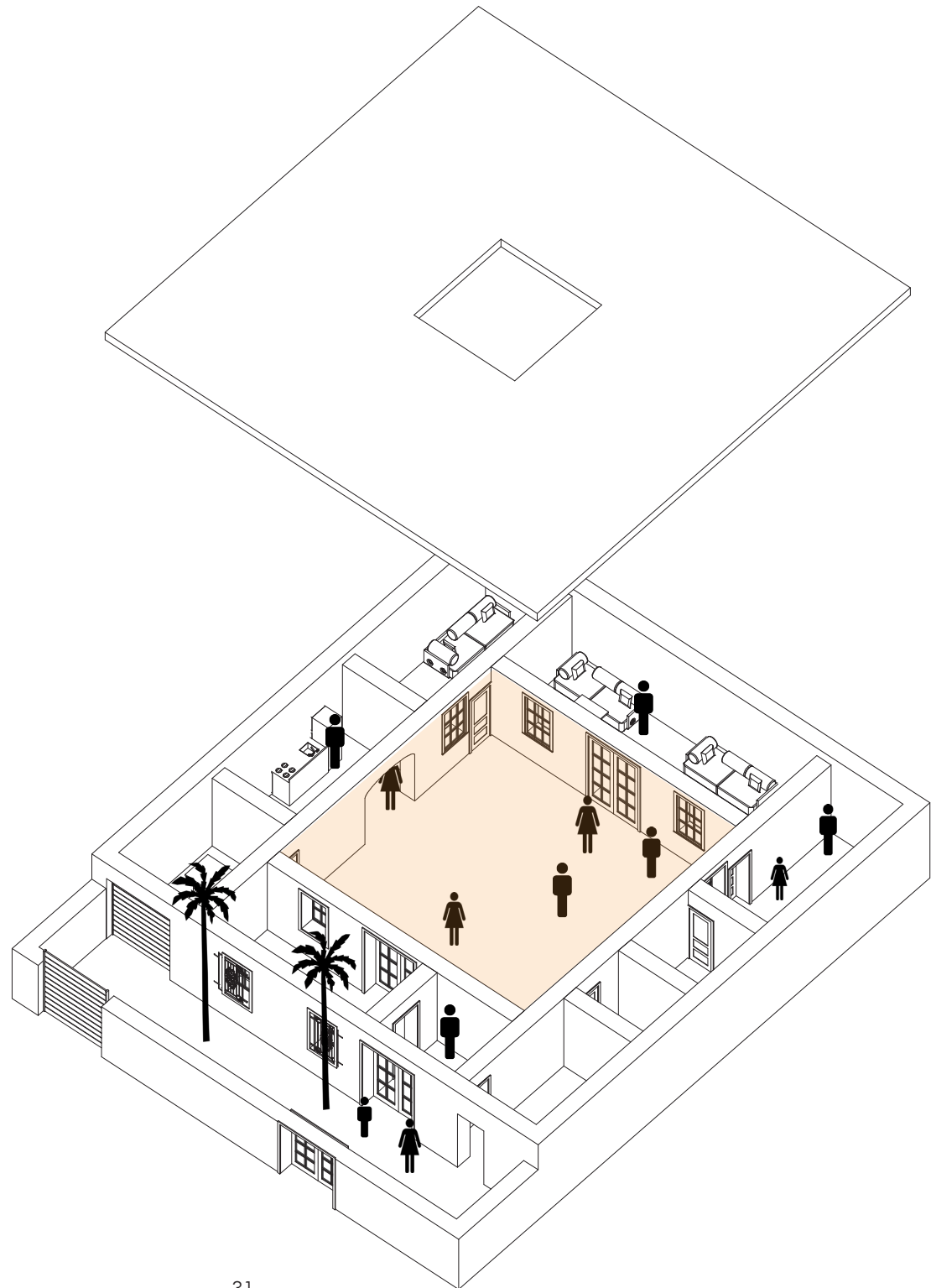
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CONFIGURATION

PHASE I

The dwelling is inhabited by one family, consisting out of two parents and approximately ten children. Since families are always changing and increasing and decreasing in numbers rooms are used to sleep in and as living room in the same time. This is also done to provide for the visiting family members, livingrooms are flexible to be used as bedrooms in all times.



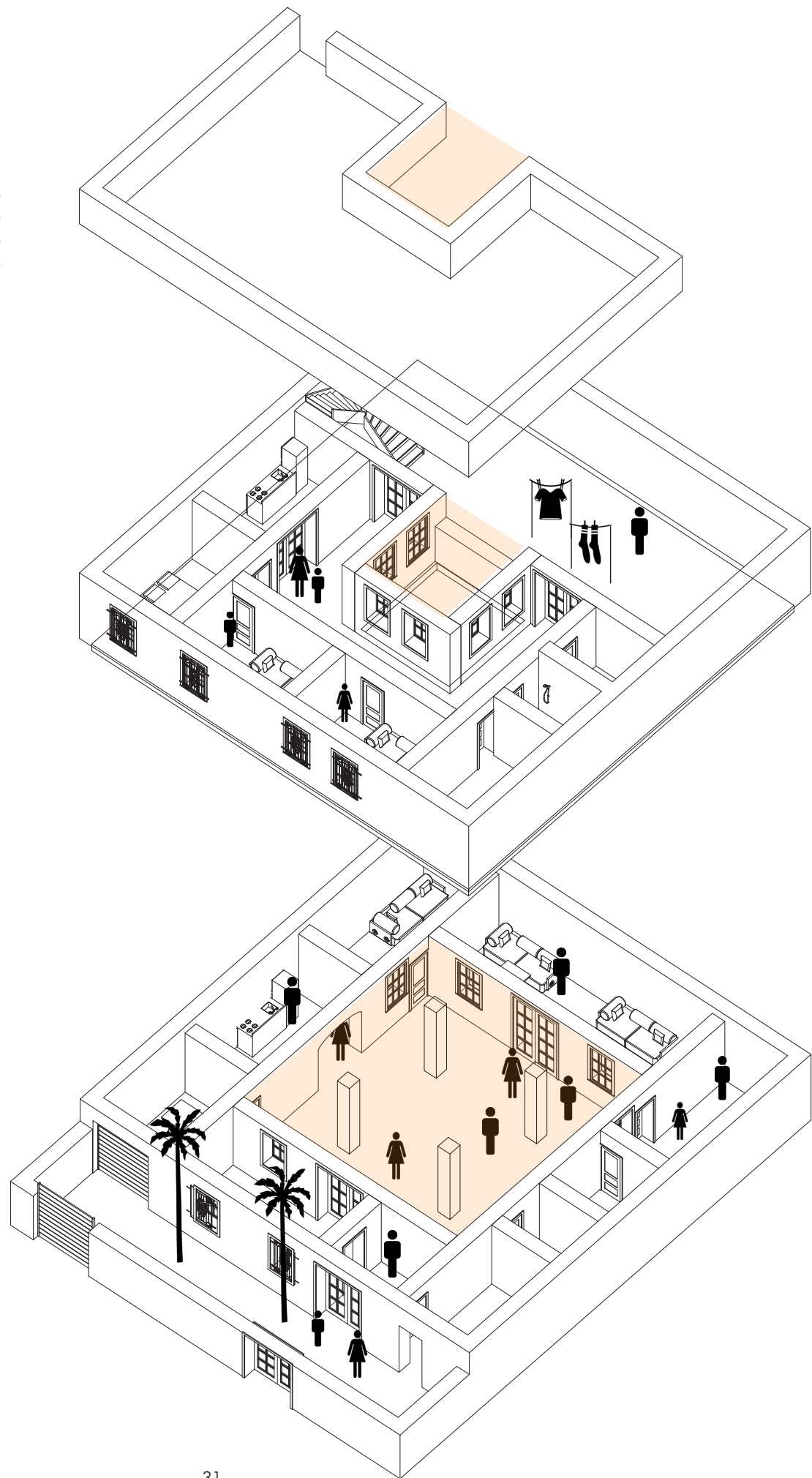
CONFIGURATION

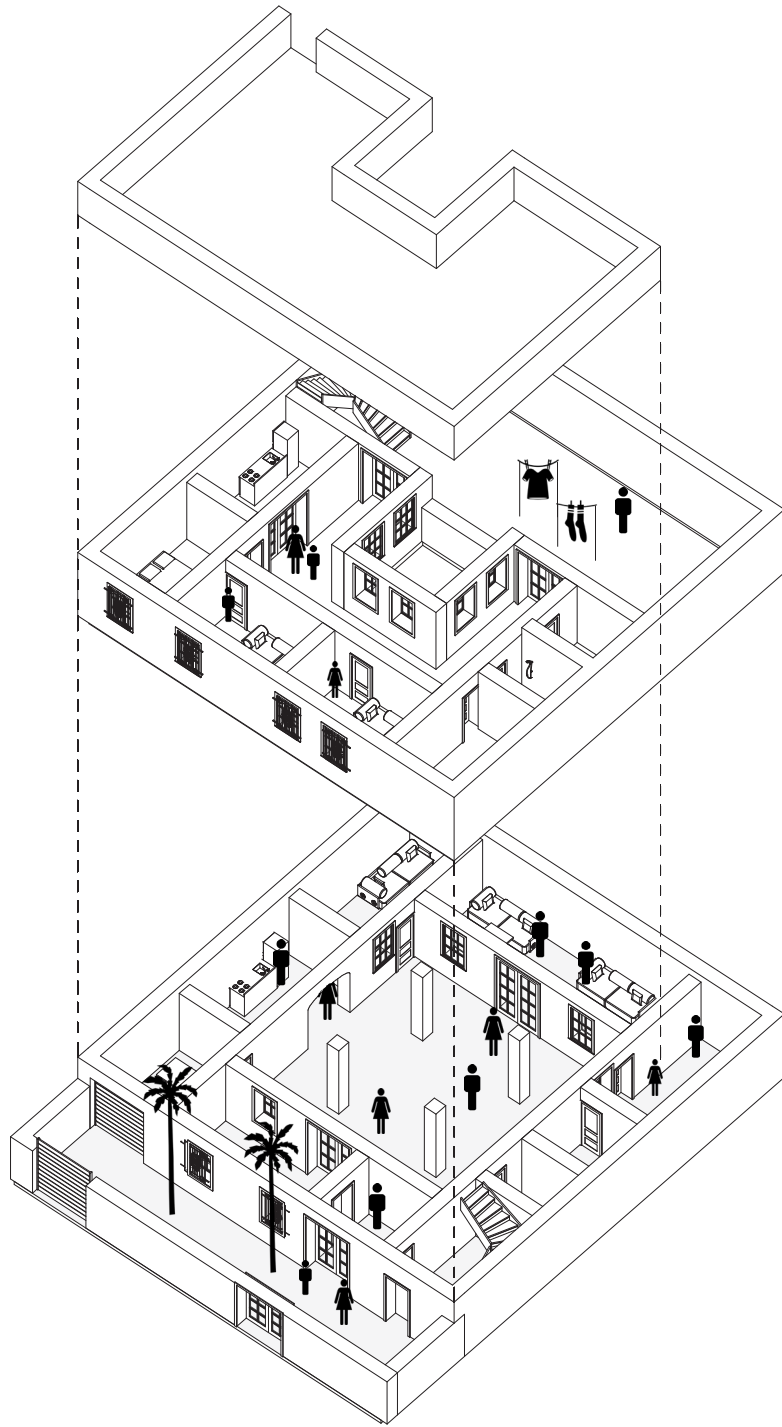
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PHASE II

The children grow up and get married, sometimes the children remain in their parents house, by added one storey to the dwelling a new dwelling is created, with own acces to the dwelling and with respect to the traditional patio.



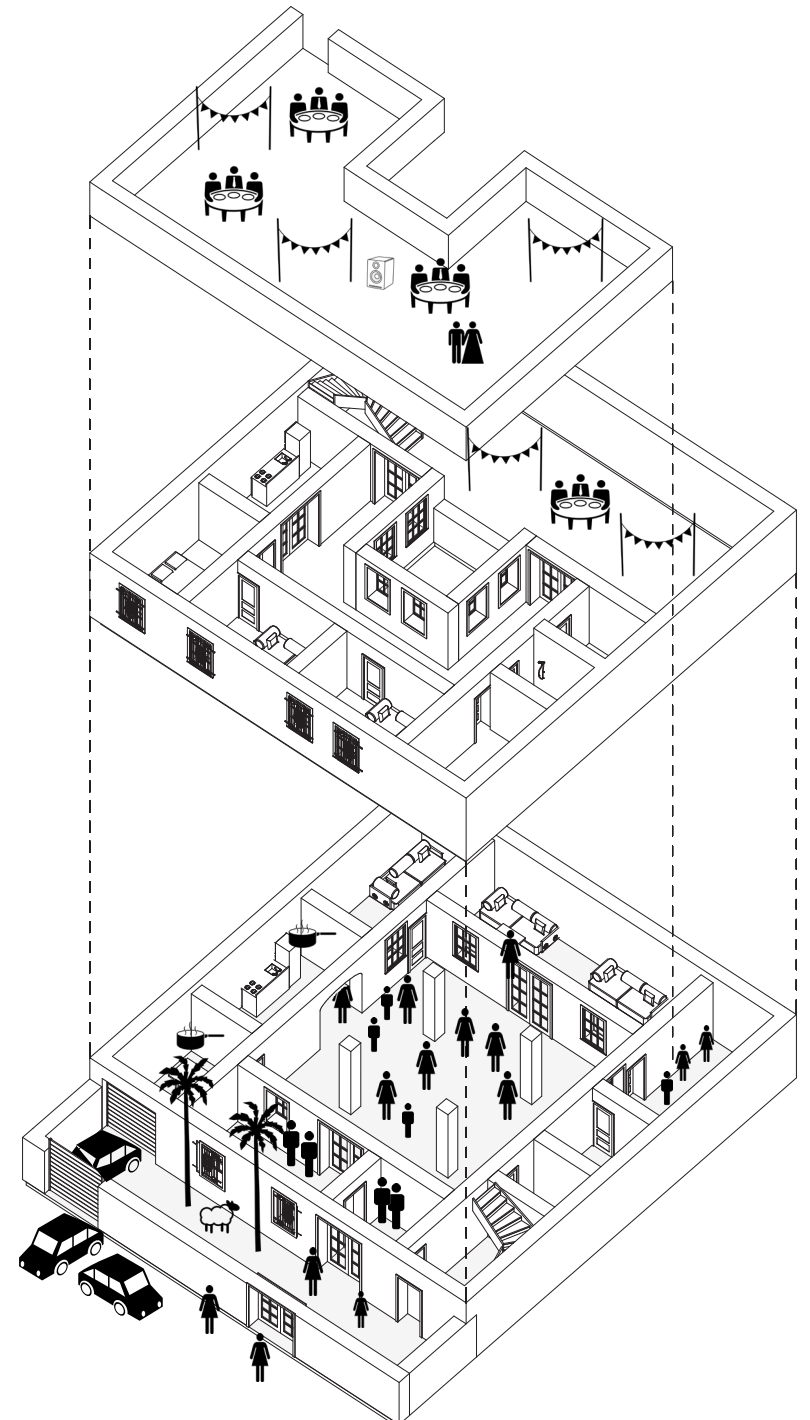


AVERAGE DAY

During everyday life the dwellers reside in all the rooms. Most rooms are used as bedrooms and the living room and patio are the places to reside in during the day. Outdoor spaces are used for daily household chores like hanging the laundry and cooking several dishes.

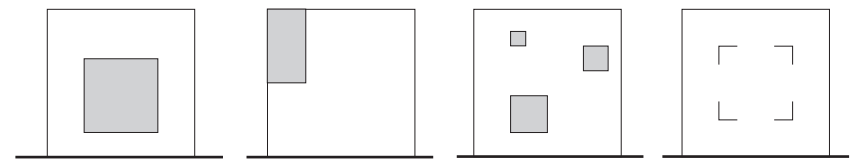
DURING FESTIVITIES

During family events like weddings, births and religious feast (Eid's) the family sometimes prefers to organise it in their own home. Men and women are usually separated in different rooms. The garage is used for the preparation of meals and the front-yard or garage to slaughter animals. The roof is occasionally used as an open space with decoration for these festivities when the house does not provide enough space. In some circumstances the family also uses the public space for this.

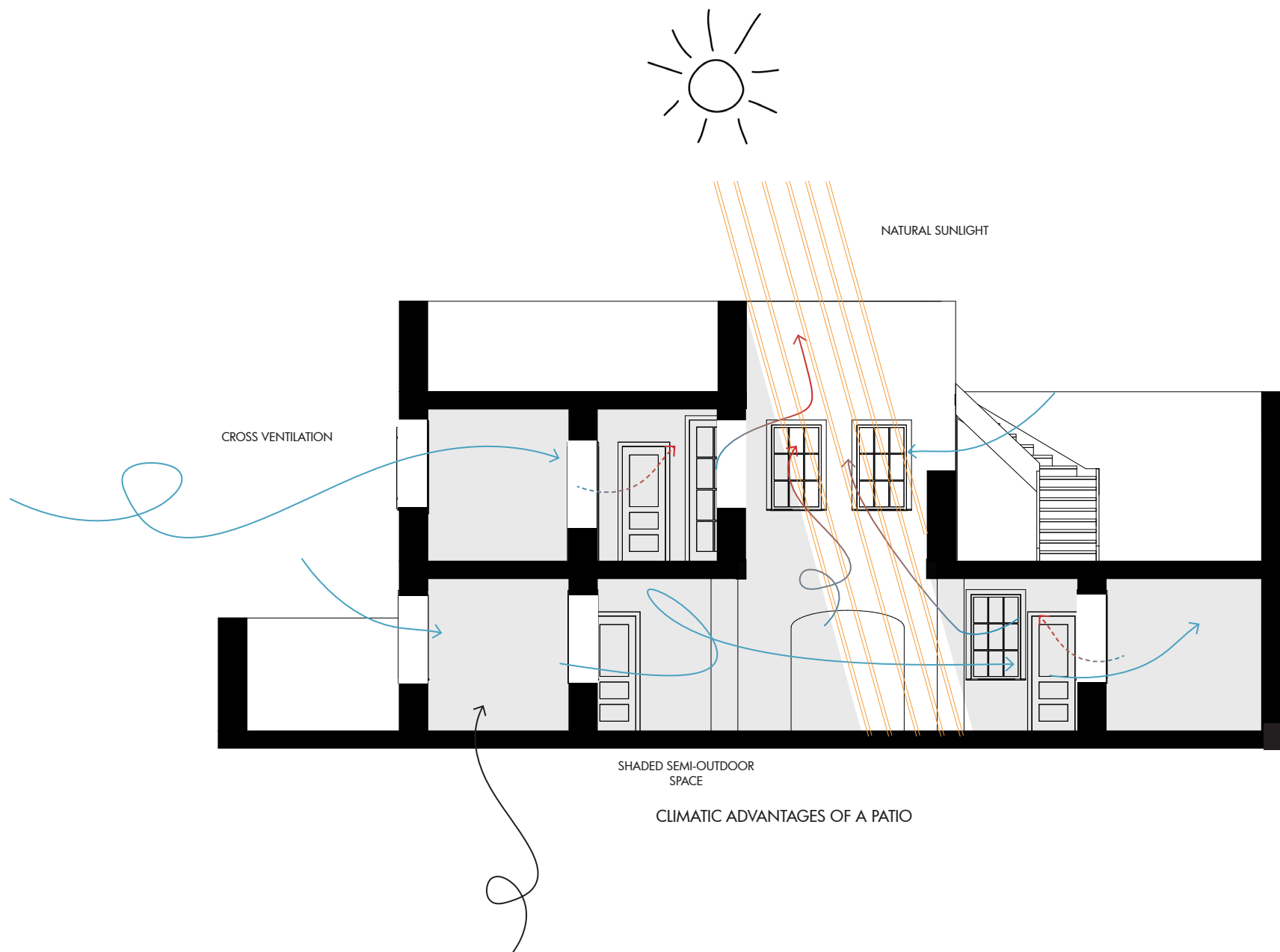


CLIMATE

Notwithstanding the fact that this type often has one free facade, the climate is regulated by adding a traditional patio in the center of the building. This patio is regulating the climate by allowing the air-flow to pass through the building. It also provides a shaded outdoor space, which creates an agreeable area in summer and winter.



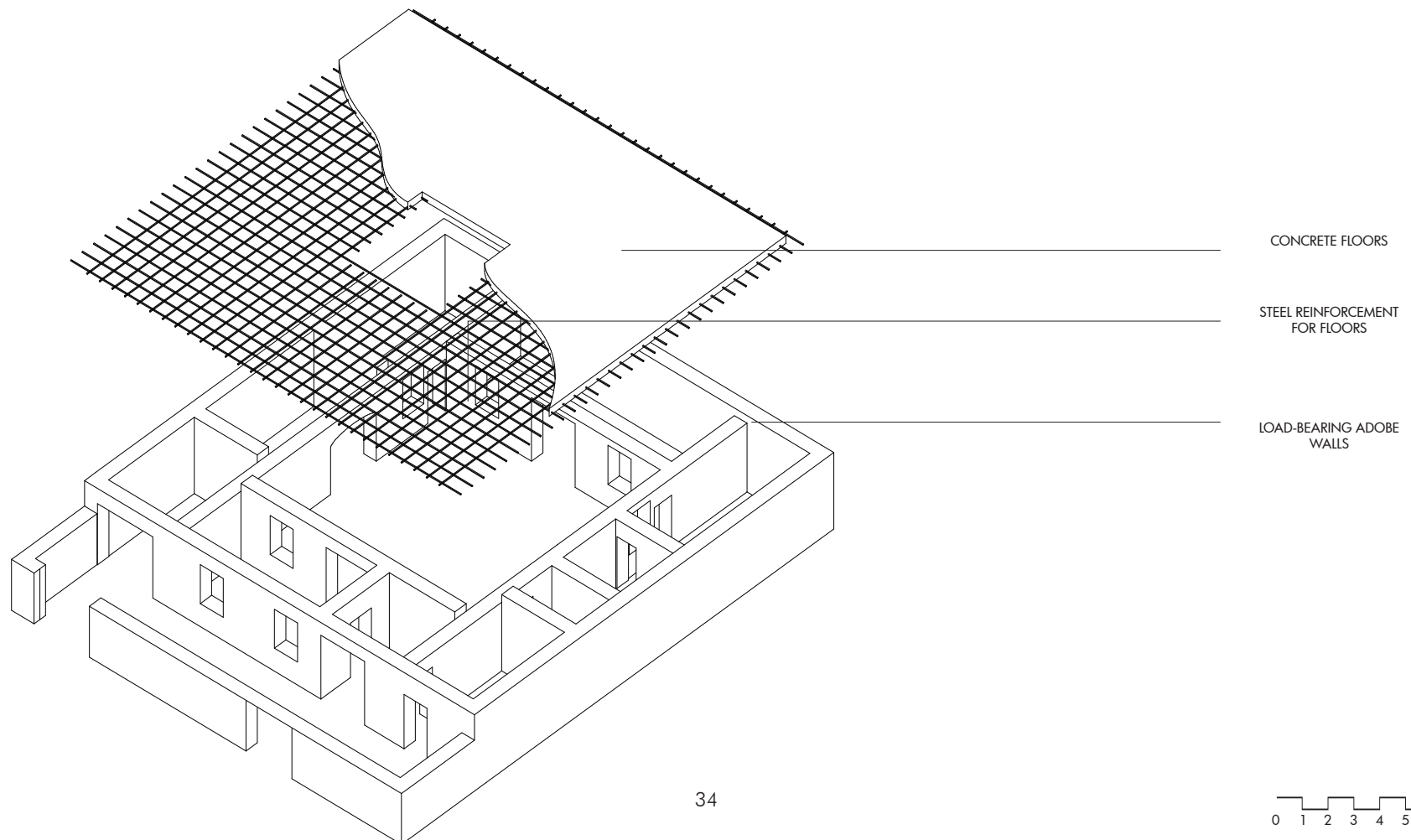
VARIATIONS OF PATIO'S



Air-conditioner installed in the 20th century, since windows were entering too much sun in summer months.

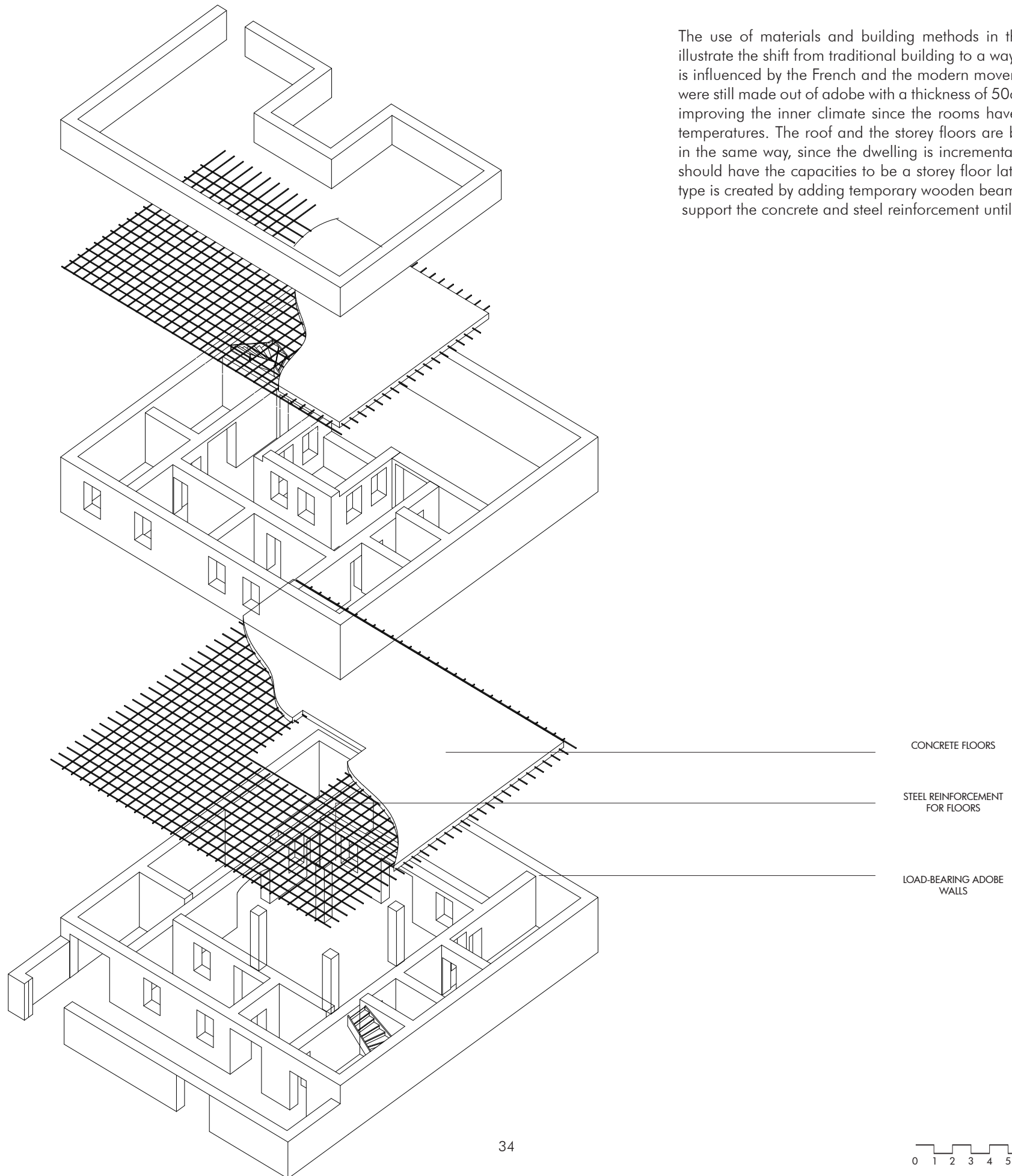
CONSTRUCTION

The use of materials and building methods in this type strongly illustrate the shift from traditional building to a way of building that is influenced by the French and the modern movements. The walls were still made out of adobe with a thickness of 50cm, which is also improving the inner climate since the rooms have more constant temperatures. The roof and the storey floors are both constructed in the same way, since the dwelling is incremental and every roof should have the capacities to be a storey floor later on. This floor type is created by adding temporary wooden beams as a ceiling to support the concrete and steel reinforcement until it has dried up.



CONSTRUCTION

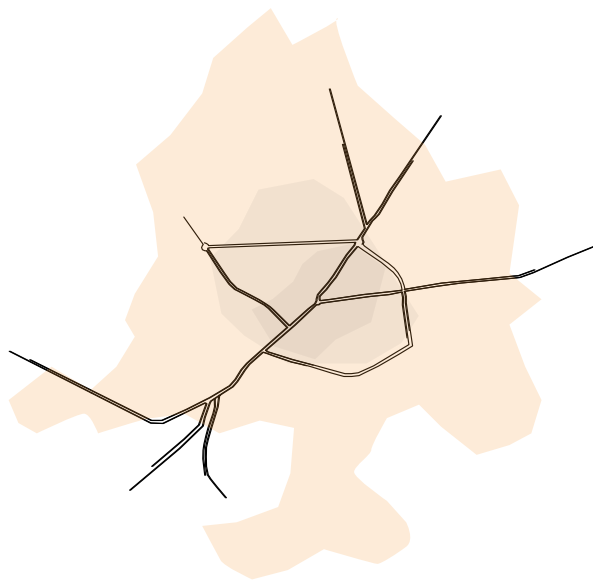
The use of materials and building methods in this type strongly illustrate the shift from traditional building to a way of building that is influenced by the French and the modern movements. The walls were still made out of adobe with a thickness of 50cm, which is also improving the inner climate since the rooms have more constant temperatures. The roof and the storey floors are both constructed in the same way, since the dwelling is incremental and every roof should have the capacities to be a storey floor later on. This floor type is created by adding temporary wooden beams as a ceiling to support the concrete and steel reinforcement until it has dried up.



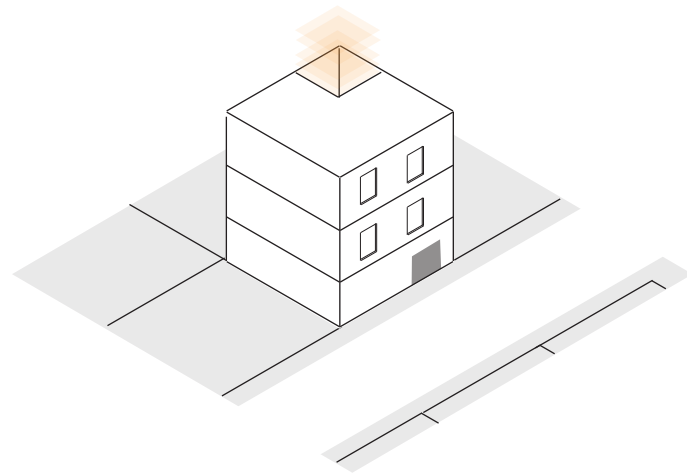
THE NEW ERA

1970 - PRESENT

In the 70s an increased amount of people in Morocco moved to cities to benefit the economic situation of the country. This period, new housing types bloomed that corresponded with the need for more density and left place for individual wishes. The blooming period of this lot divided housing took place and still develops today, mainly thought of by the people themselves as a solution for the increased informal settings that were found in these cities. From this moment on, the architectural discourse in Morocco has been taking place around this new type, years later project developers have merged themselves into this field, by creating huge housing projects that provide an affordable and easy way of constructing dwellings in the increasing urban settings.







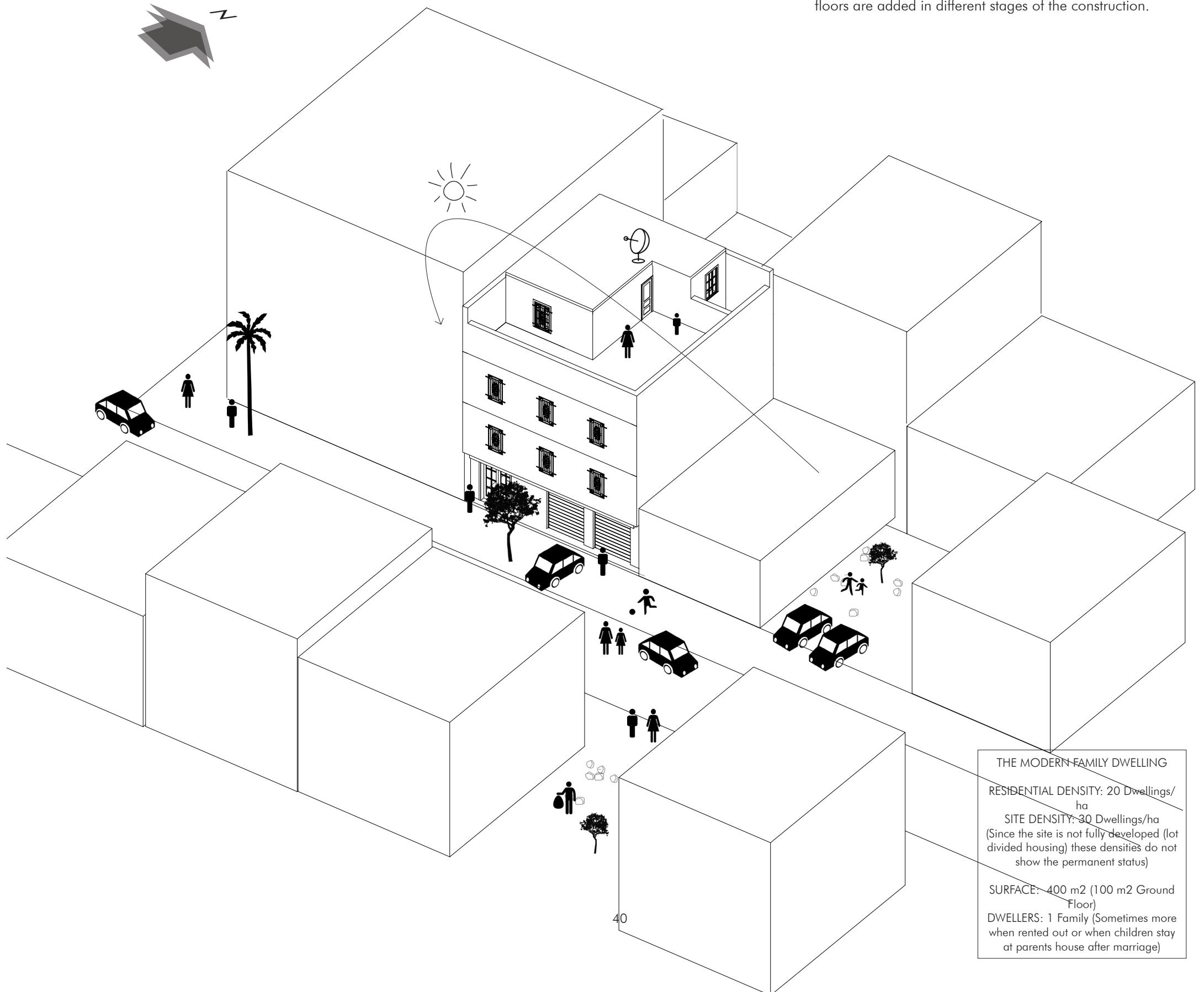


THE MODERN FAMILY DWELLING

In previous types we have seen that incrementality and change have always played a role in traditional architecture. This type bloomed in the 70s and 80s, providing answers for the growing cities in these periods and still maintaining the freedom of design and configuration. This type is based on an urban plan that consists out of a division of lots, just like in traditional housing, the dwellers have the possibility too choose their own location and dwelling size according to their own social and economical position. To maintain order in this type, the government provides a set of building restrictions, which are not always followed.

SITUATION

The dwelling is situated in between other dwellings owned by private parties. Living mostly takes place on the first floor and higher. The garage is widely used as an area for working purposes, from commerces to offices. The family buys a plot and decides in cooperation with construction workers and in rare cases architects what the configuration should look like. Depending on the budget of the dweller, floors are added in different stages of the construction.

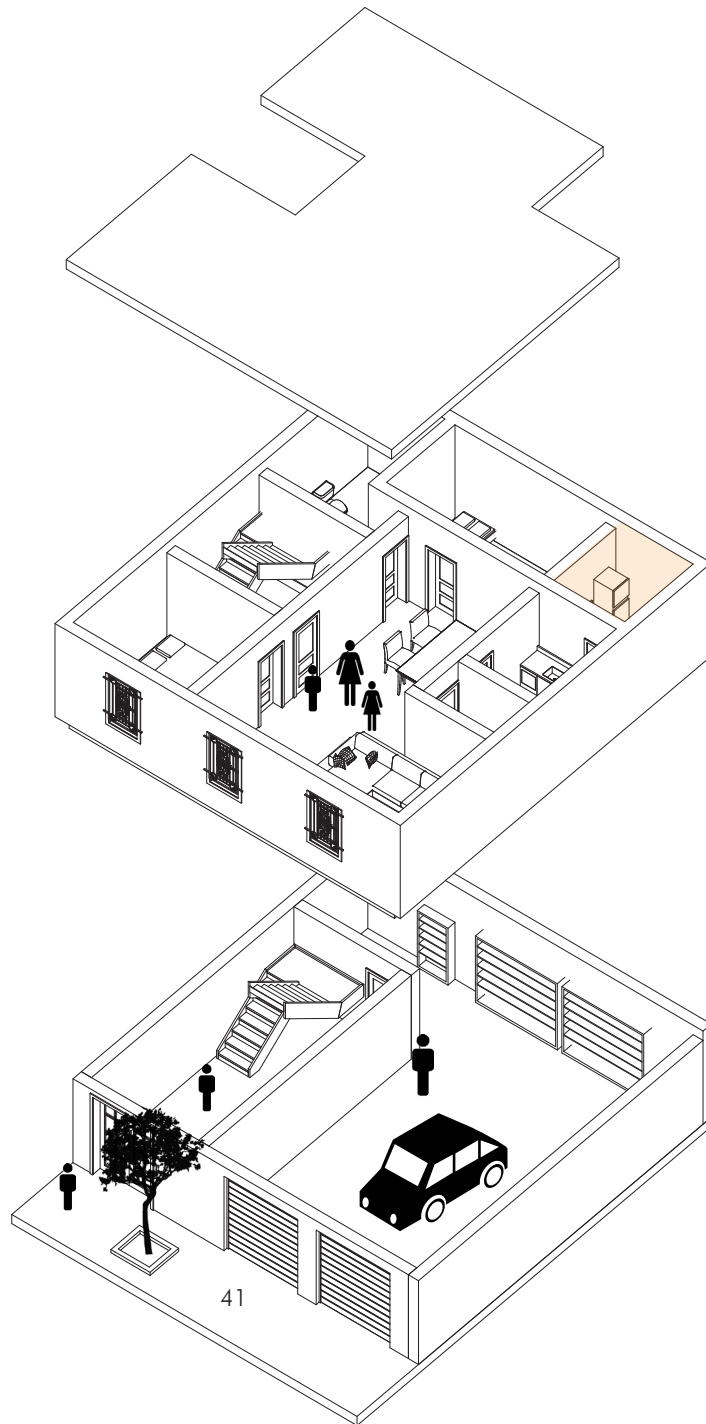


THE MODERN FAMILY DWELLING
RESIDENTIAL DENSITY: 20 Dwellings/ha
SITE DENSITY: 30 Dwellings/ha
(Since the site is not fully developed (lot divided housing) these densities do not show the permanent status)
SURFACE: 400 m² (100 m² Ground Floor)
DWELLERS: 1 Family (Sometimes more when rented out or when children stay at parents house after marriage)

CONFIGURATION

PHASE I

The dwelling is inhabited by one family, living happens mainly on the first floor, the ground floor is used as a garage and in some cases as living room since this floor has a better accessibility. The family buys a plot and decides in cooperation with construction workers and in rare cases architects what the configuration should look like. Depending on the budget of the dweller, floors are added in different stages of the construction. In this case the dweller starts with the ground floor and first floor, and then moves in.



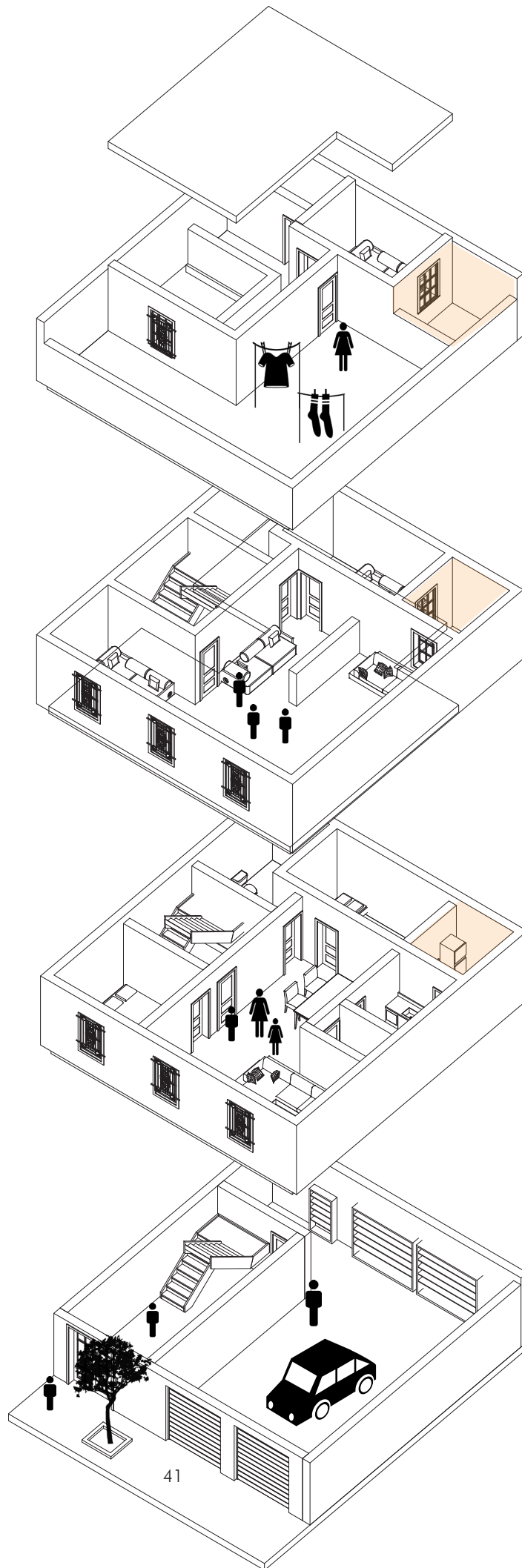
CONFIGURATION

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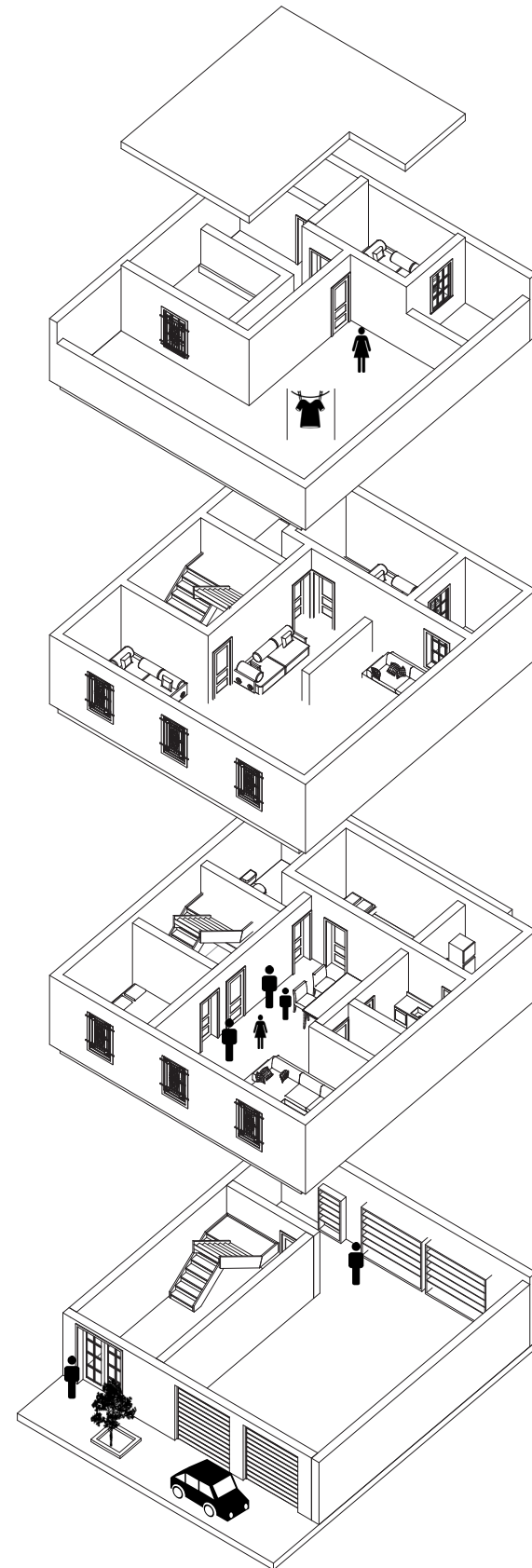
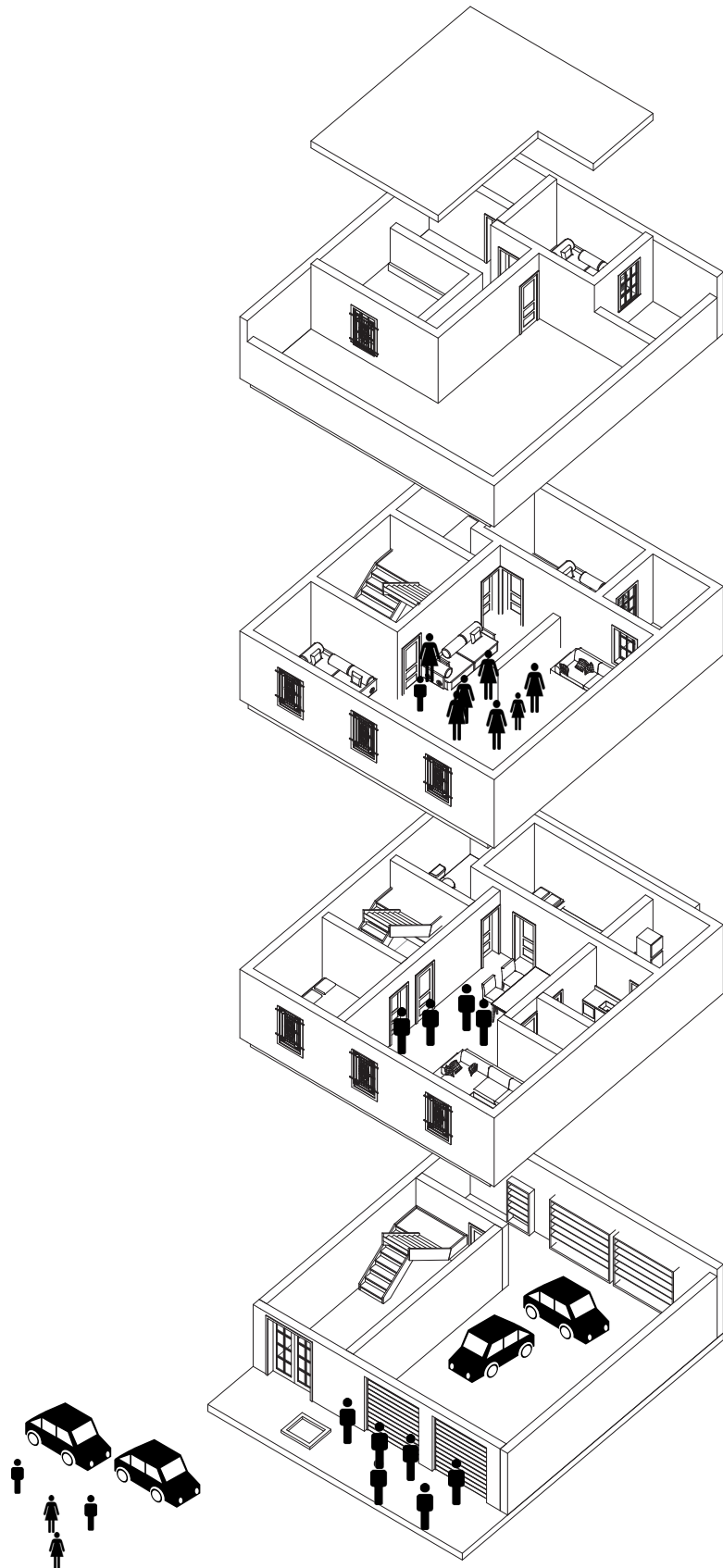
PHASE II

After the completion of the ground floor and the first floor the construction starts of the upper floors. If the budget of the dweller allows it, this happens right after the first phase. The upper floors are usually left unused on regular days, ready to use when the children get older or family members come to visit. The upper floor is mostly used to do laundry and to provide space for workers that help in the household.



AVERAGE DAY

During everyday life the dwellers reside mostly on the first level. The garage can be used as store by the dwellers themselves or rented out, if not it usually functions as storage and in particular cases as living room. Outdoor spaces are used for daily household chores like hanging the laundry and cooking several dishes, which are in this case the roof and the patio (who is connected to the kitchen). The room on the roof is usually reserved for workers that help with household chores, providing them their own privacy and utilities.



DURING FESTIVITIES

During family events like weddings, births and religious feast (Eid's) the family sometimes prefers to organise it in their own home. Men and women are usually separated in different rooms. The free living rooms are used to divide both man and women in separate rooms. If this is not sufficient, the public space is used for expansion.

CLIMATE

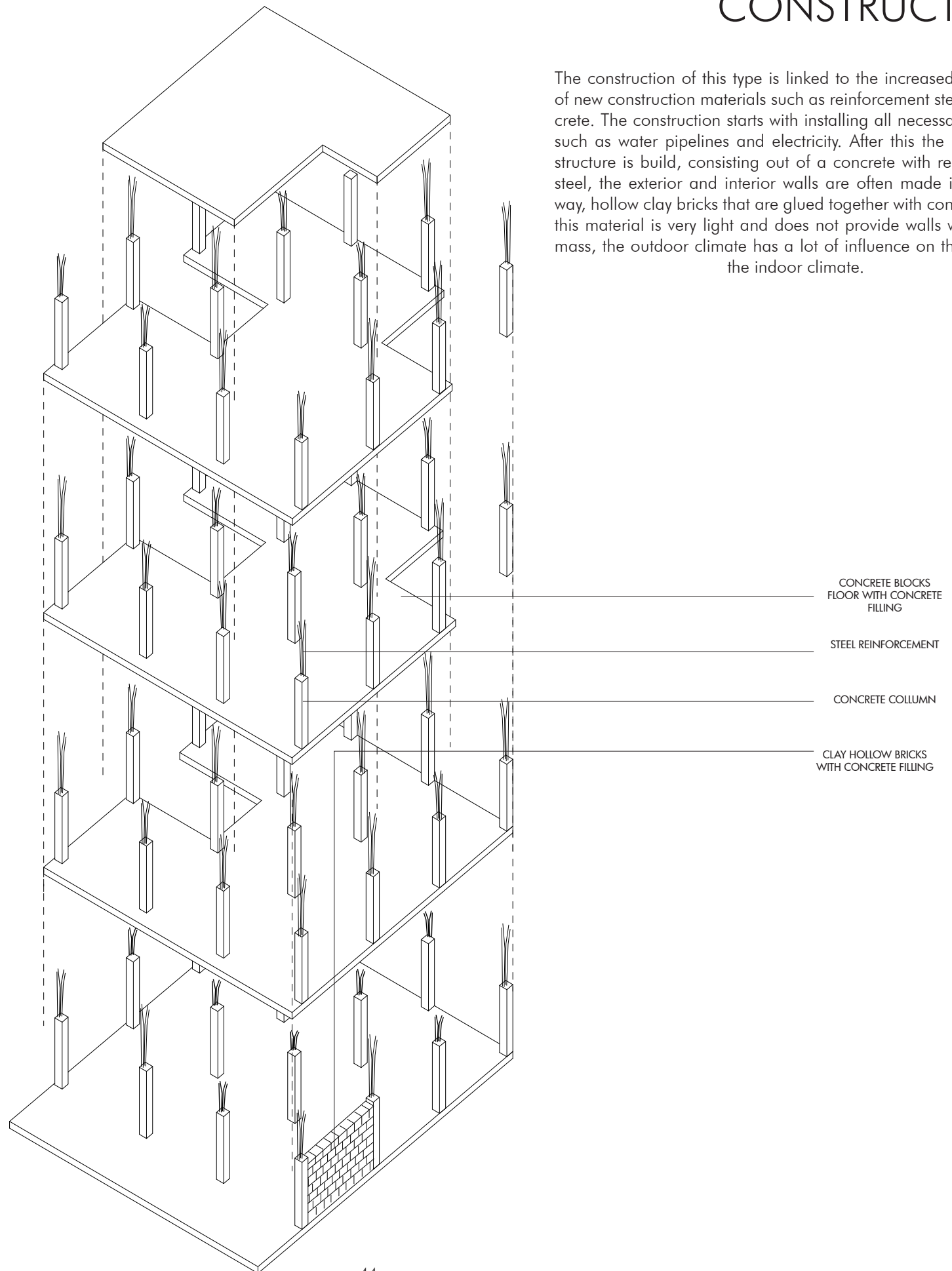
This type has different configurations and orientation depending on the plot that has been built on. It often has a patio, mostly because the dwellers copy the way the traditional buildings were configured. In this case, the patio is linked to the kitchen and therefore functions as a natural way of

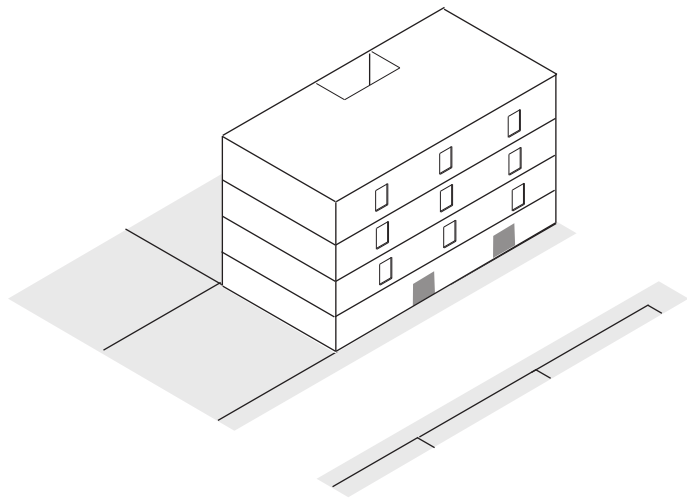


PATIO FOR EXTRA NATURAL LIGHT IN ONE-FACADE DWELLING

CONSTRUCTION

The construction of this type is linked to the increased availability of new construction materials such as reinforcement steel and concrete. The construction starts with installing all necessary elements such as water pipelines and electricity. After this the main frame structure is build, consisting out of a concrete with reinforcement steel, the exterior and interior walls are often made in the same way, hollow clay bricks that are glued together with concrete. Since this material is very light and does not provide walls with a lot of mass, the outdoor climate has a lot of influence on the quality of the indoor climate.





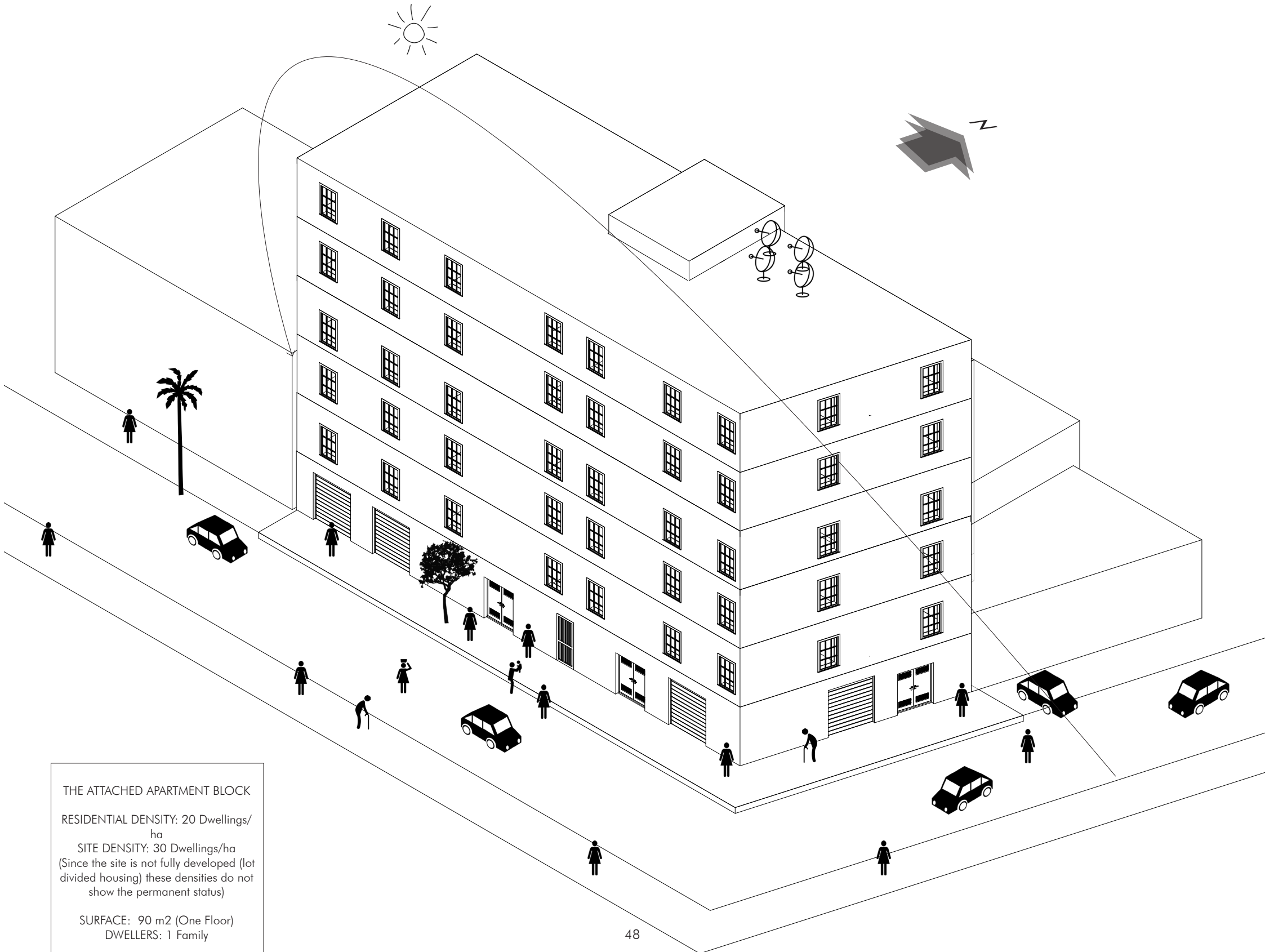


THE ATTACHED APARTMENT BLOCK

Since cities are growing there is a need for dwellings that answer the need for a higher density. Apartment buildings should provide an answer to this by stacking different dwellings vertically. These projects are being created in all shapes and sizes and are built on plots that are owned by an individual that sells or rents the apartments, or they are a part of a large scale investment and are being reproduced on one site. This type is mainly interesting for the immigrants since they are not attached to a large house, and additional security during their time away. Since there is a broad variation in sizes, it is also an interesting place for lower incomes and unusual family compositions.

SITUATION

This type is found in the city center but also on the outskirts of the cities, the size and configuration of the dwellings depends on the location and the size of the lot, since this is very varied in most cities there is no standard type. The exact position of the apartment building also influences the configuration and the placement of stairways and elevators.



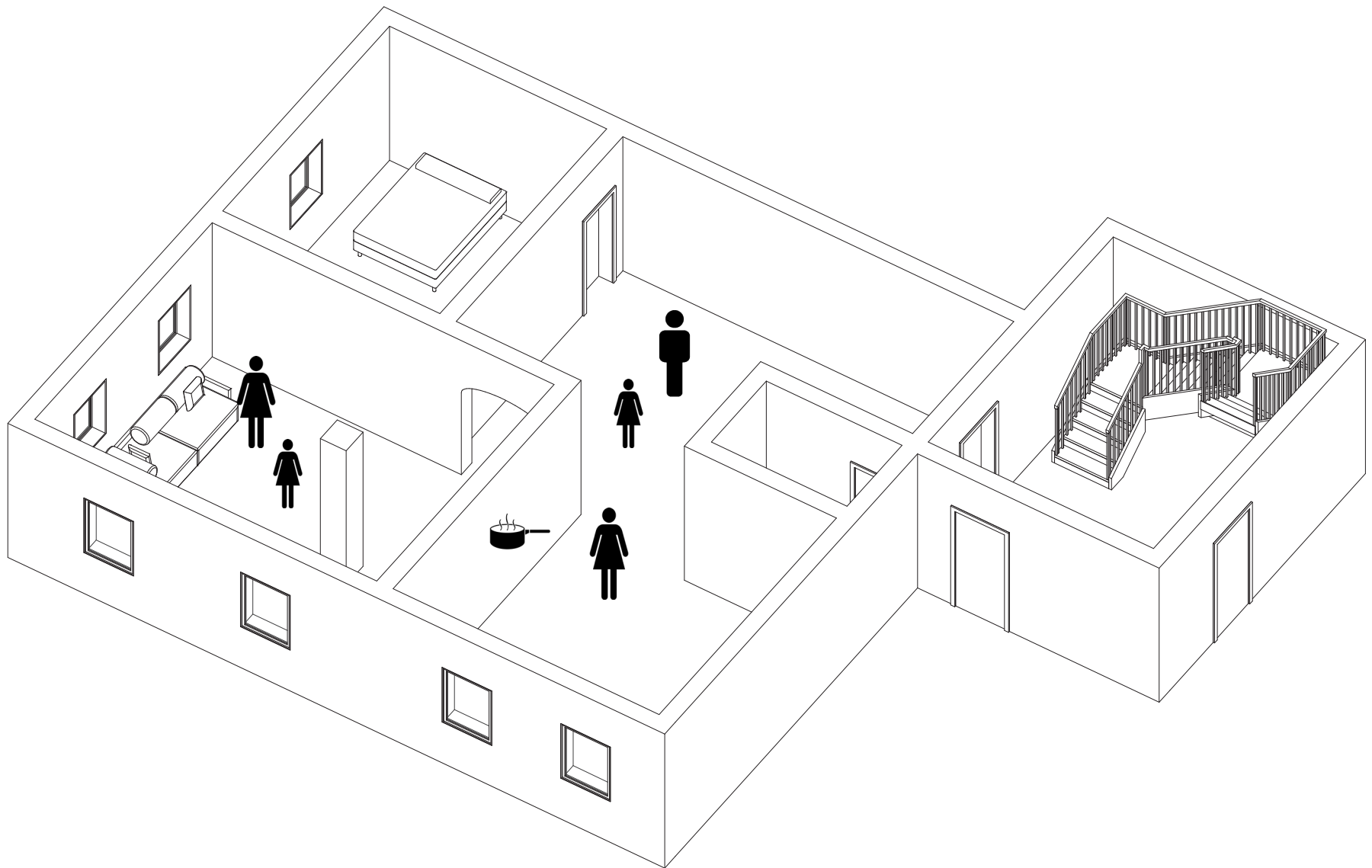
THE ATTACHED APARTMENT BLOCK

RESIDENTIAL DENSITY: 20 Dwellings/
ha
SITE DENSITY: 30 Dwellings/ha
(Since the site is not fully developed (lot
divided housing) these densities do not
show the permanent status)

SURFACE: 90 m² (One Floor)
DWELLERS: 1 Family

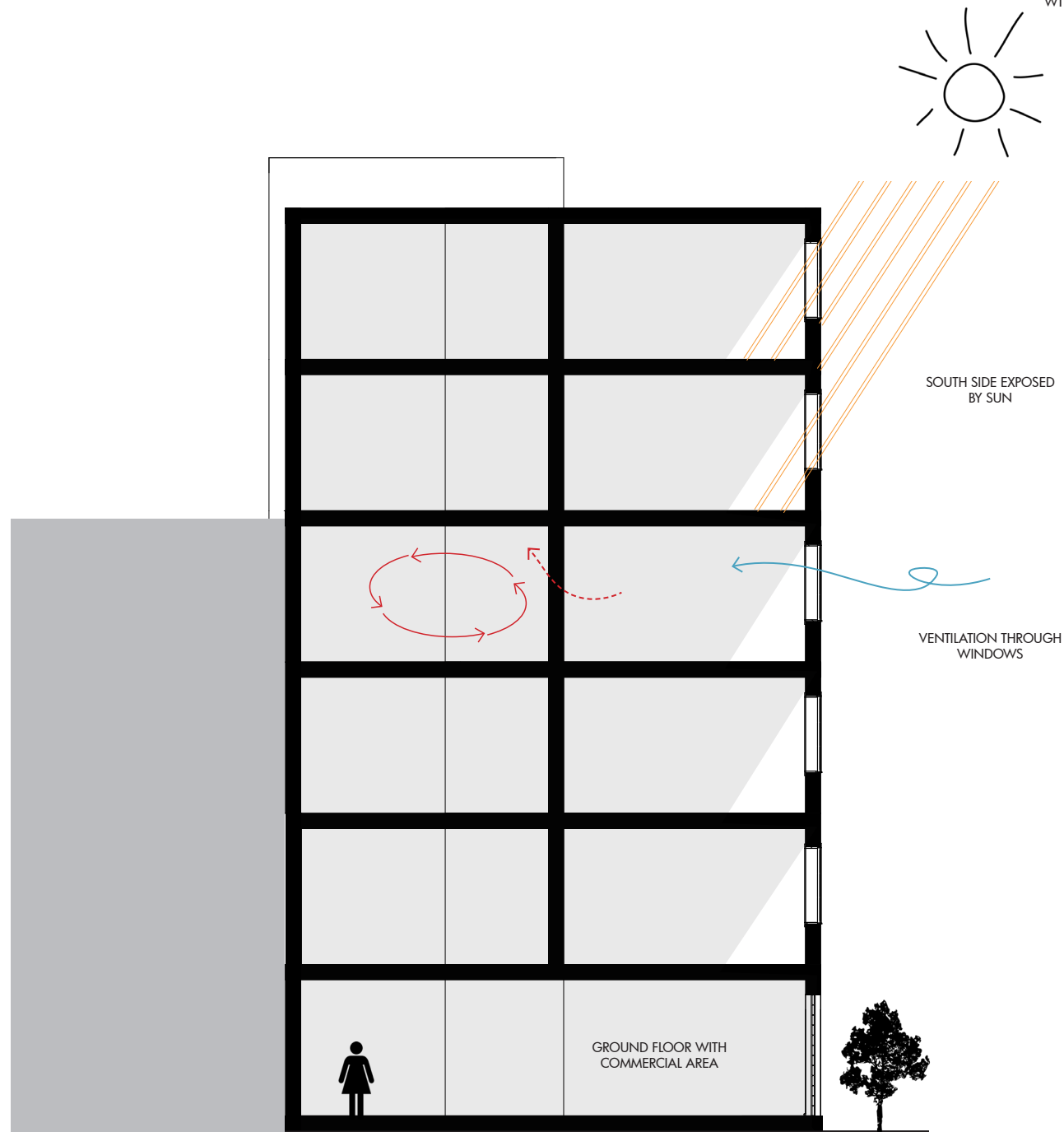
USE & CONFIGURATION

The dwelling is usually inhabited by one small family or one/two person households, mainly immigrants since this type does not require security provisions and needs less maintenance. The traditional configuration of a patio in the center of the dwelling is not visible in this type, nevertheless the interior is still traditional in most situations, regarding the interior and the decorations. The apartments are accessible through one main staircase which has a common entrance on the ground floor.



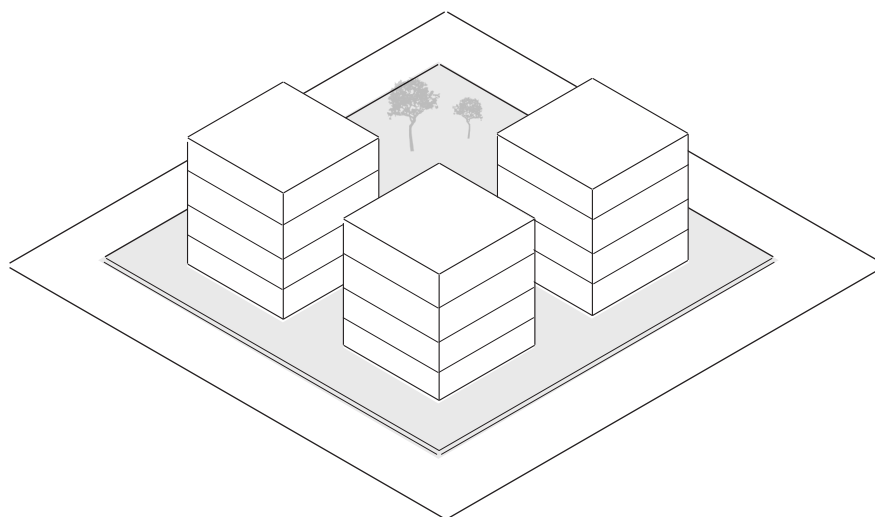
CLIMATE & CONSTRUCTION

Climate aspects have not been the main design decision to determine the configuration or the position of the dwelling. Therefore the inner climate is highly depending on the situation, in this case the high of the apartment provides a good natural ventilation of the living room, when the windows are opened on summer days. Nevertheless, the high amount of windows is not preferable on cold winter days and windless summer days.



POSSIBLE CLIMATE ISSUES APARTMENT BUILDINGS

The construction in general takes place on the same way and with the same materials as the previous type. The main framework consists out of concrete columns with reinforced steel and the walls are filled up with clay hollow bricks, occasionally with openings to provide space for windows and doors.



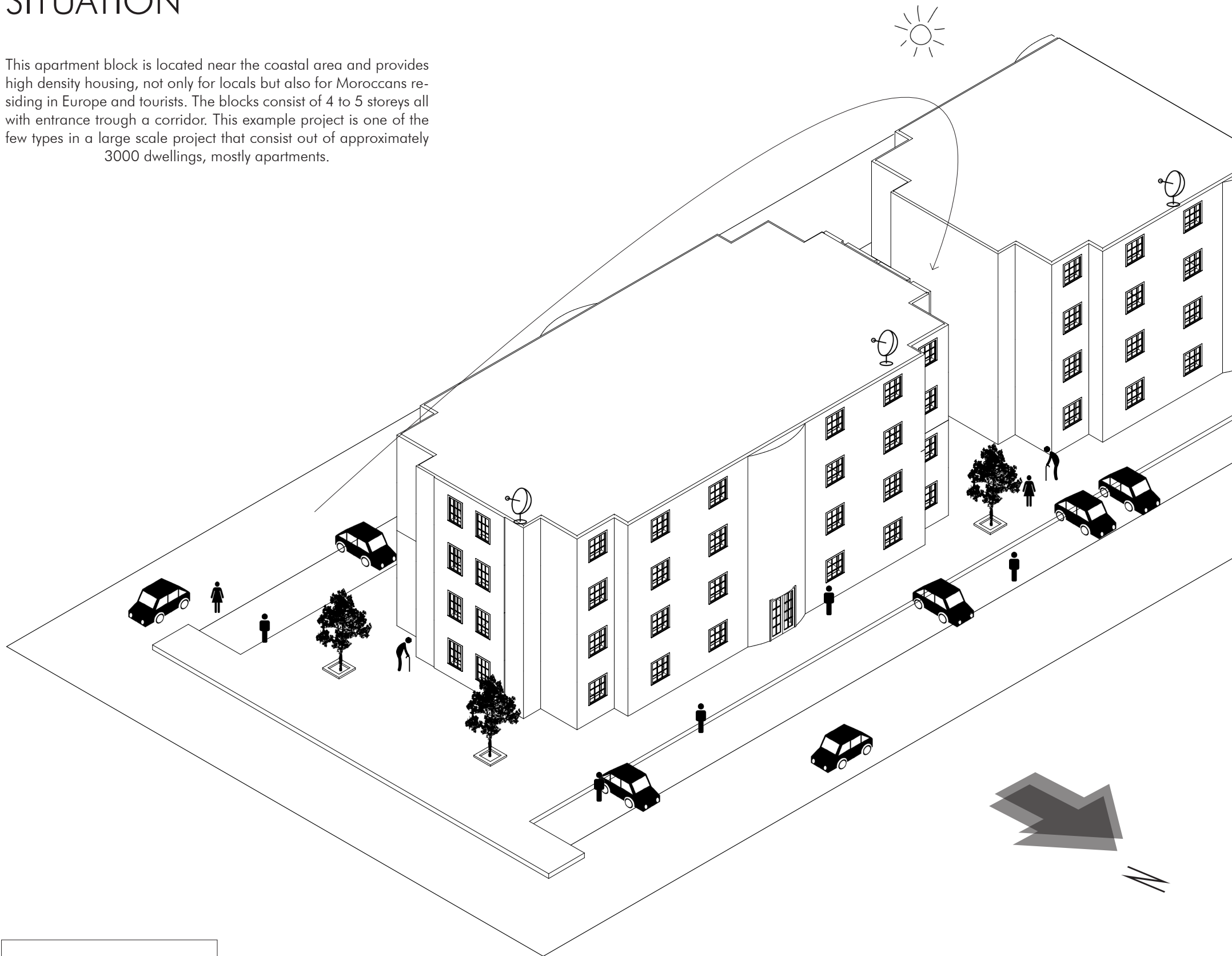


THE DETACHED APARTMENT BLOCK

The large scale housing projects are apartment blocks, usually constructed in large amounts and on large sites on the outskirts of towns. This type is often developed by the project developers and build in large quantities. Since this type provides a higher density and affordable apartments, it is very popular especially under the Moroccan immigrants, wishing to spend their free days in their home country. Even though this type succeeds in providing low cost housing and a higher density, public space remains often undeveloped and the configuration usually refers to 'European' dwellings without reference to Moroccan culture. These projects are financed by large companies and unlike the other housing types, have no place for individuality and personal infill.

SITUATION

This apartment block is located near the coastal area and provides high density housing, not only for locals but also for Moroccans residing in Europe and tourists. The blocks consist of 4 to 5 storeys all with entrance through a corridor. This example project is one of the few types in a large scale project that consist out of approximately 3000 dwellings, mostly apartments.



THE DETACHED APARTMENT BLOCK

RESIDENTIAL DENSITY: 136 Dwellings/
ha
SITE DENSITY: 190 Dwellings/ha

SURFACE: 60 - 95 m2
DWELLERS: 1 Family
Building Height: 4/5 Floors

53

VARIATION LESS FLOORS

RESIDENTIAL DENSITY: 100 Dwell-
ings/ha
SITE DENSITY: 140 Dwellings/ha

SURFACE: 54 - 74 m2
DWELLERS: 1 Family
Building Height: 3 Floors

VARIATION ONE FLOOR

RESIDENTIAL DENSITY: 40 Dwellings/
ha
SITE DENSITY: 46 Dwellings/ha

SURFACE: 63 m2
DWELLERS: 1 Family
Building Height: 1 Floor

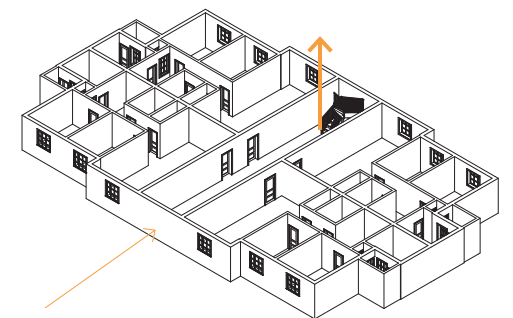
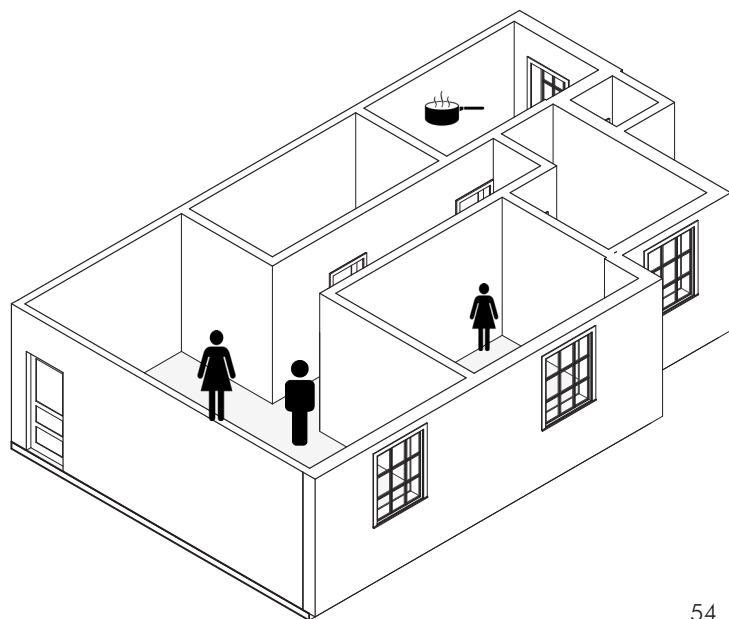
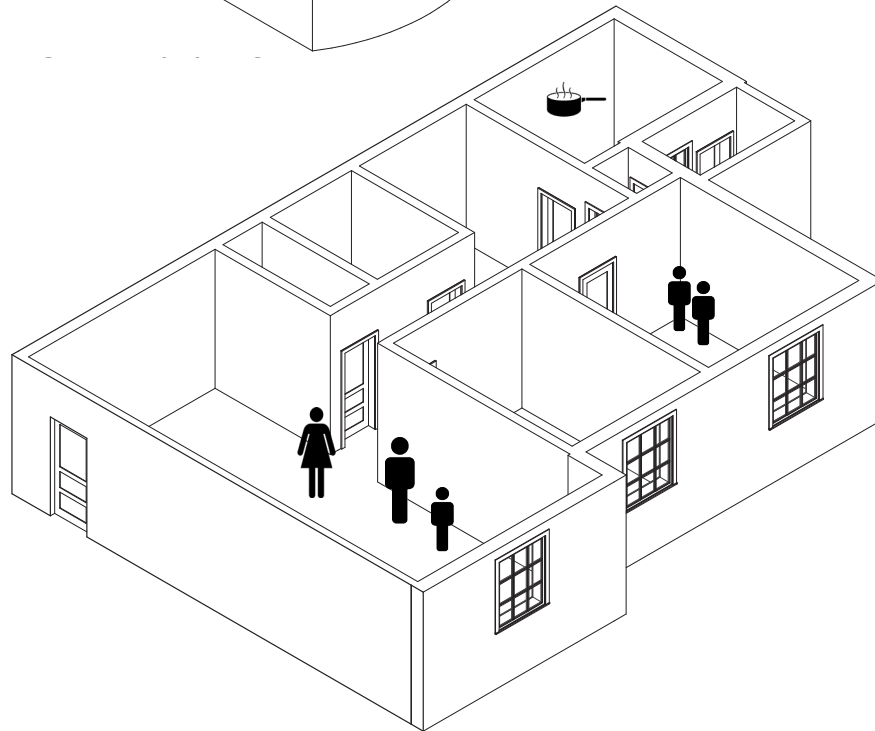
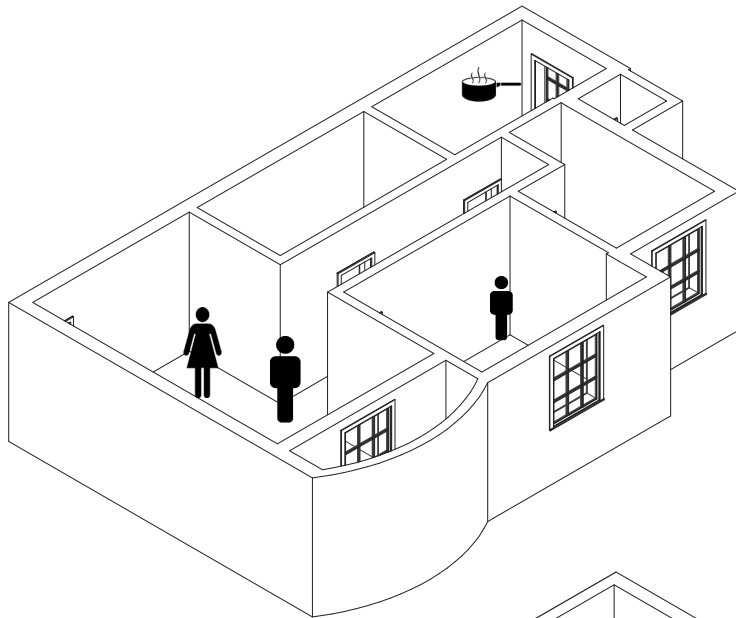
VARIATION BIGGER DWELLINGS

RESIDENTIAL DENSITY: 140 Dwell-
ings/ha
SITE DENSITY: 195 Dwellings/ha

SURFACE: 84 - 211 m2
DWELLERS: 1 Family
Building Height: 6 Floors

CONFIGURATION & USE

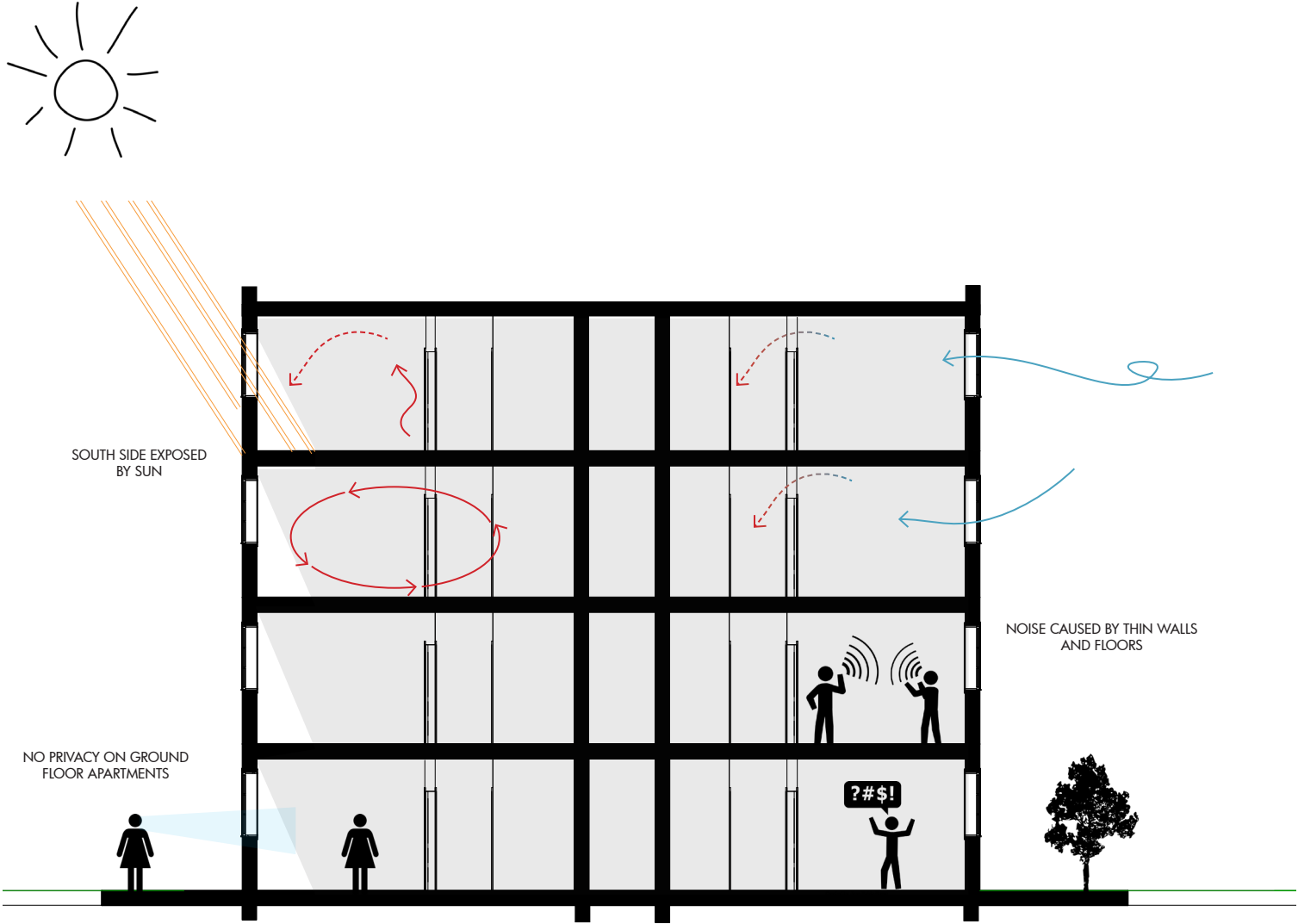
These three apartments are a part of the building block with surfaces from 70 to 100 m² and 2 to 4 rooms. Their configuration is mainly similar, the entrance is directly linked to the living room, connected to a small hallway that brings the dweller to the other remaining rooms. The floor plan is not based on traditional use, there is no patio and no traditional configuration since all visitors directly get in contact with the main living room. Open spaces are limited to semi-covered balconies or openings next to the kitchen.



ACCESS TO THE DIFFERENT APARTMENTS

CLIMATE

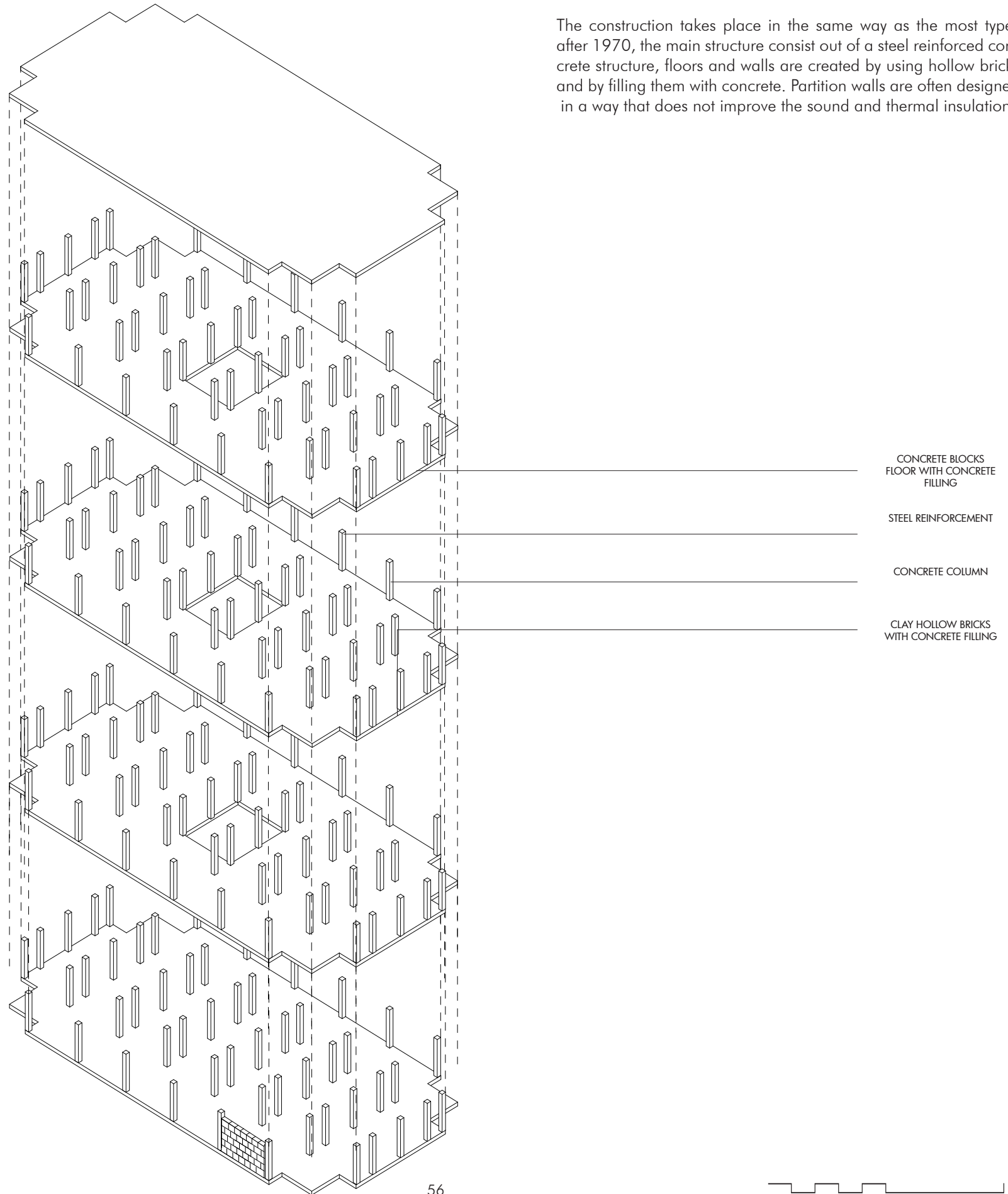
Regardless of the position or the orientation towards the sun, the building configuration stays the same. One prototype is reproduced in several climatic conditions, resulting in a building type that has insufficient relation with the environment. This in combination with the infrastructure, which is often insufficient developed, results in problematic issues, such as floodings and damaged façades.

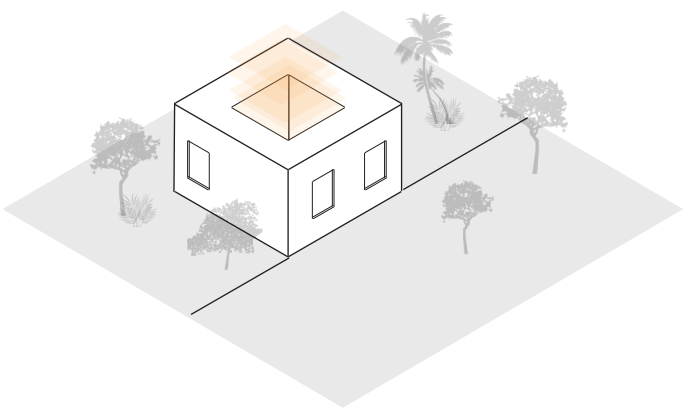


CLIMATE AND TECHNICAL ISSUES APARTMENT BLOCKS

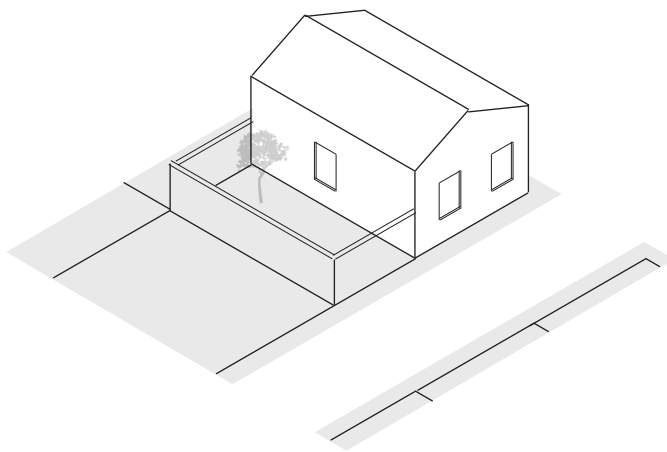
CONSTRUCTION

The construction takes place in the same way as the most types after 1970, the main structure consist out of a steel reinforced concrete structure, floors and walls are created by using hollow bricks and by filling them with concrete. Partition walls are often designed in a way that does not improve the sound and thermal insulation.

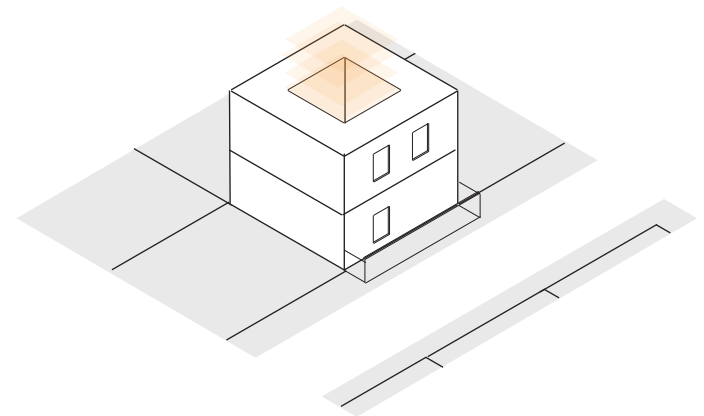




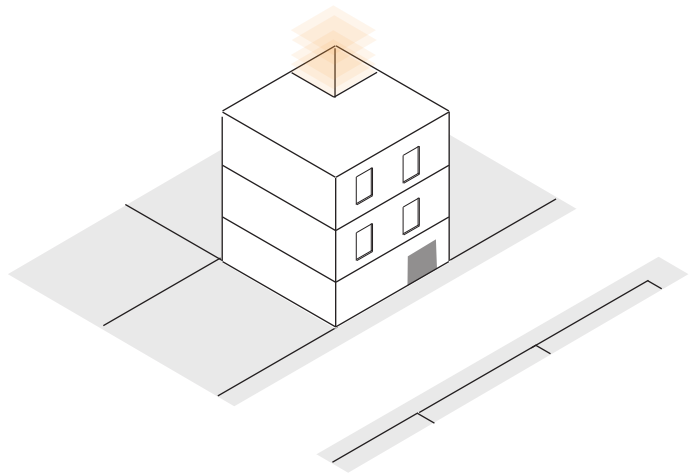
THE RURAL VERNACULAR
DWELLING



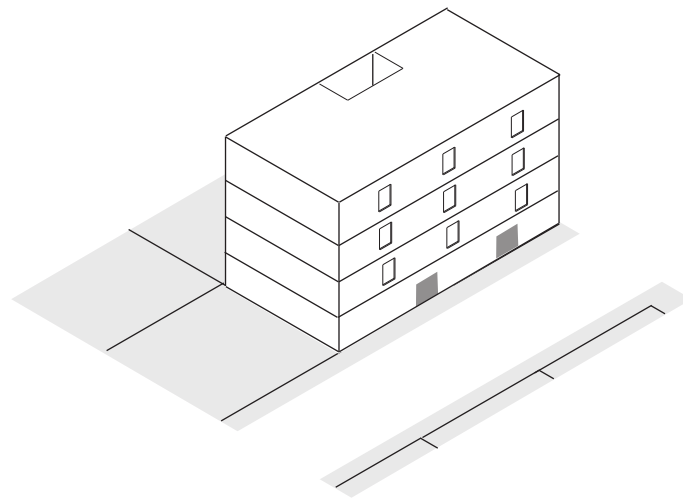
THE COLONIAL FAMILY
DWELLING



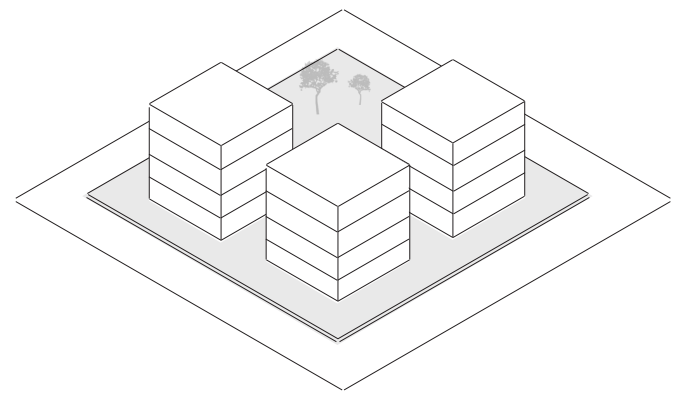
THE TRADITIONAL
FAMILY DWELLING



THE MODERN FAMILY HOUSE



THE ATTACHED
APARTMENT BLOCK



THE DETACHED APARTMENT
BLOCK



URBANIZATION IN BERKANE

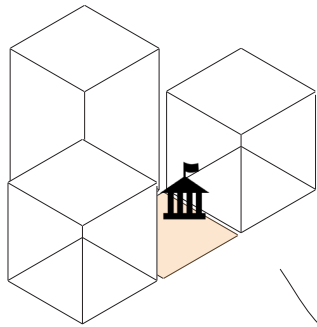
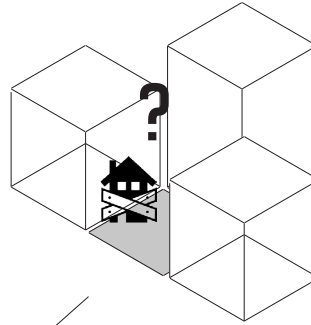
Throughout the years the dwelling types have been influenced by different factors and changed as a consequence of adapting to the changing living environment and socio-political status of the country. These changes were not only limited to the dwelling types, but also influenced the way cities grow and how this affected their public spaces. This diagrammatic explanation of the way urbanization takes place in the city Berkane, should give a brief insight about the general problems we see today in average to small cities in Morocco and how this influences the built environment.



EMPTY LOTS IN THE CITY CENTRE

Since the city is growing, unbuilt and **ABANDONED LOTS** are becoming more valuable. Since **2002**, the municipality made a new rule that these plots become their property if they are left unplanned for **40 YEARS**. The municipality uses these abandoned lots to construct **GOVERNMENTAL** public buildings and dwellings for **CIVIL SERVANTS**.

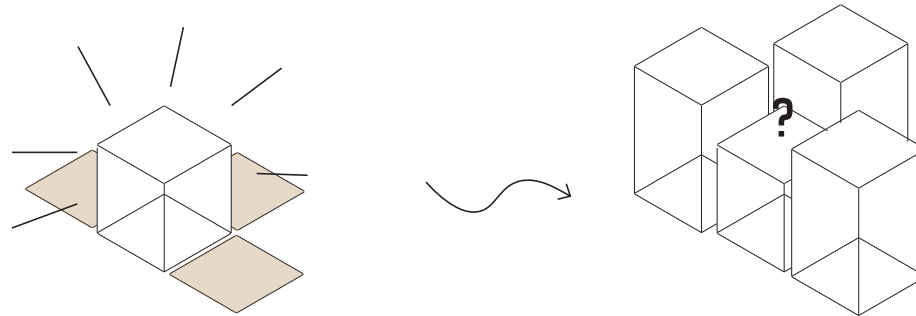
No change for the past
40 years?



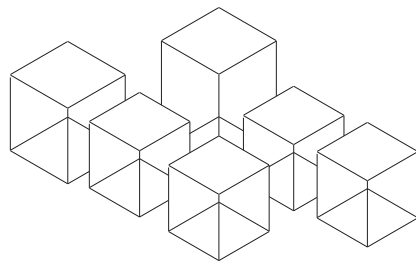
Place for governmental buildings!

DENSIFICATION IN THE CITY CENTRE

URBANISATION is taking place in two ways, the first one is the urbanisation of the **CITY CENTRE**, free lots are being used and one-storey dwellings & historical buildings are being replaced for 4 storey and higher apartment blocks. This **INCREASE IN DENSITY** should make place for new dwellers of the city.

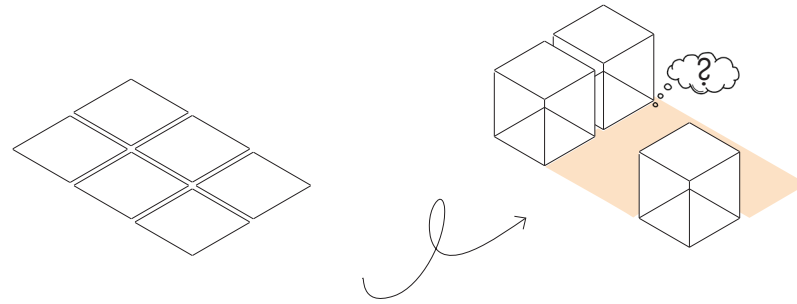






The second type of urbanisation is the **EXPANSION OF THE CITY BORDERS**, new projects are becoming more frequently each year and fill the suburban areas up with **APARTMENT BLOCKS** and empty lots.

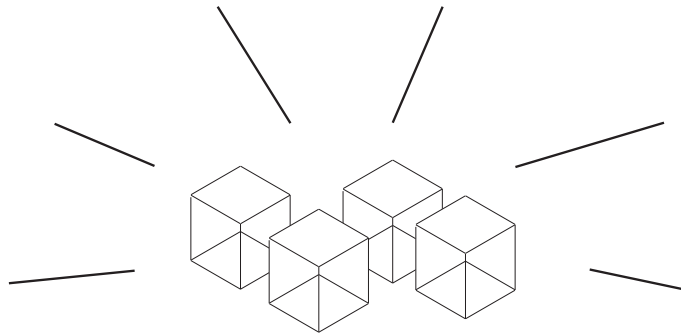




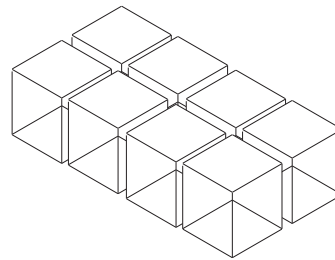
The **EMPTY LOTS** in the suburban areas are being sold depending on the land owner, by time the lots get occupied and **GROW IN DENSITY** since people can build according to their own preferences, mainly depending on their **ECONOMICAL STATUS** in combination with **FAMILY GROWTH**.



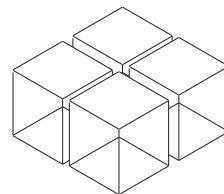
APARTMENT BLOCKS



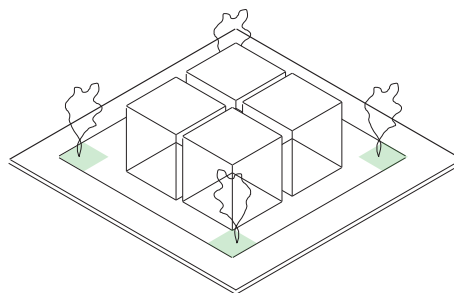
CONSTRUCTION AT ONCE



UNITY IN FLOORPLANS & STYLES

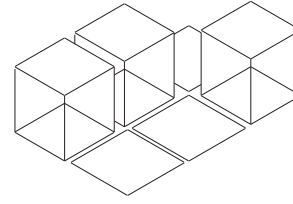
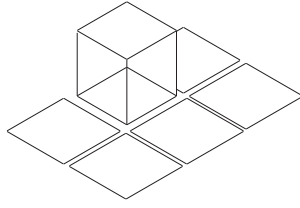


NO INCREMENTALITY

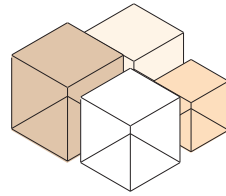


DESIGNED PUBLIC SPACES

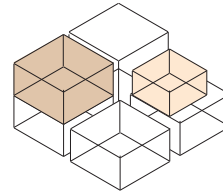
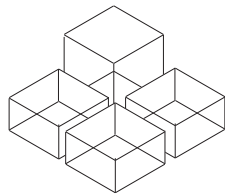
LOTS



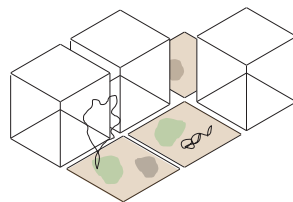
CONSTRUCTION UNREGULATED IN PHASES



DIVERSITY IN FLOORPLANS & STYLES



INCREMENTALITY



UNDESIGNED PUBLIC SPACES



PUBLIC SPACES



Public spaces in Berkane can be divided in two categories, the first one is clearly visible and is mainly found in the city center, the formal public spaces. These kind of spaces can be found in the shapes of public squares next to the main roads, but also in shapes as playgrounds in more residential areas. The second type is less easy to define and therefore informal public spaces, the reason why these exist is mainly because there is a major lack of public spaces in the town and people tend to create these spaces themselves. This usually takes place on areas directly linked to the dwelling like the road or empty lots next to the dwellings. These places are usually temporary, like a marketplace on the street next to a mosque or kids playing on the road until there is traffic. Since these places are created spontaneously, they show the need of the people in terms of public spaces.

The roads play a huge role in the architectural discourse, the variation between these roads and their relation with the built environment is shown in the following drawings.

CURRENT SITUATION

EXISTING INNER CITY



50 x 100 site

EXISTING URBANIZING AREAS

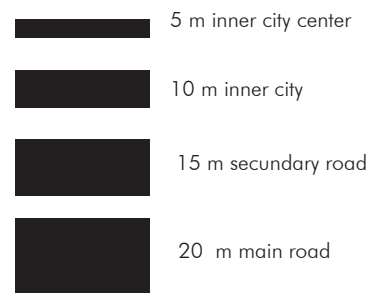


20 x 100 (lots of variation) site

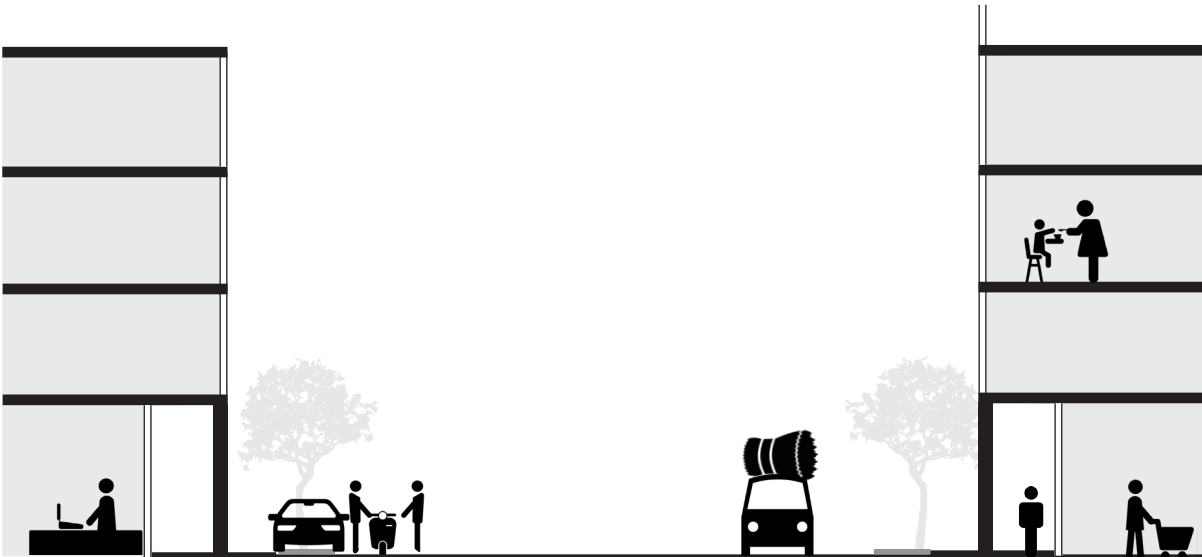
AVERAGE LOT SIZES



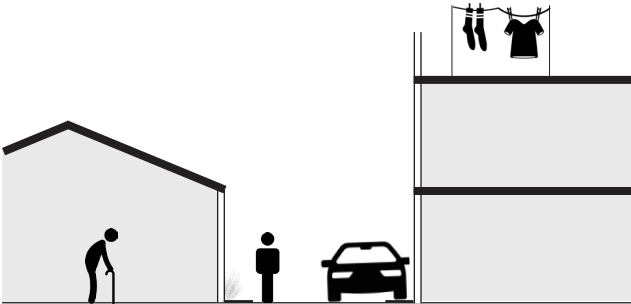
AVERAGE ROAD SIZE (with pavement)



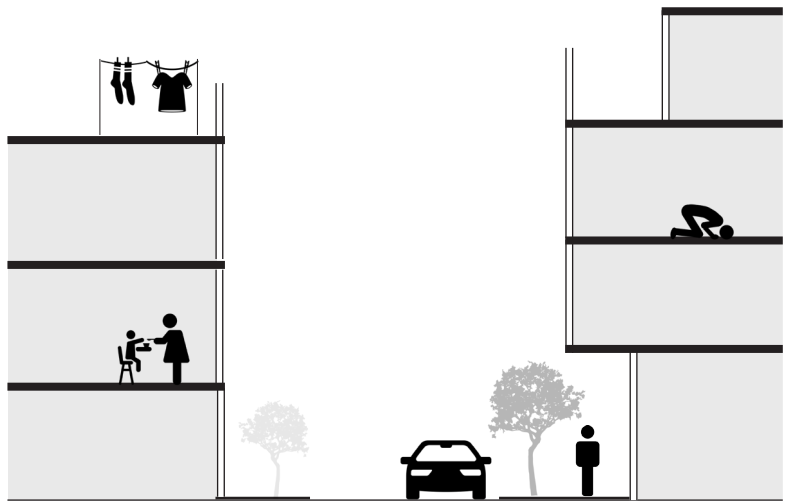
STREET SECTIONS EXISTING ROADS



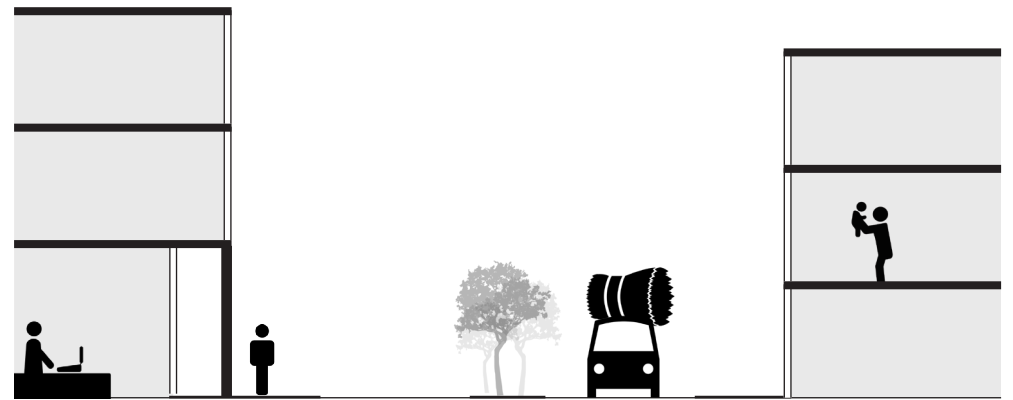
20 m main road



5 m inner city center

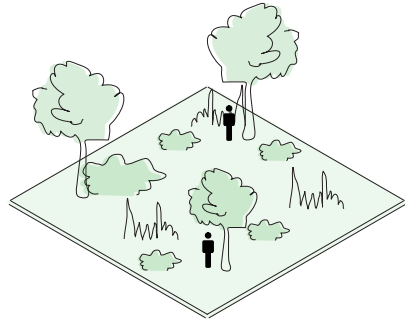


10 m inner city road

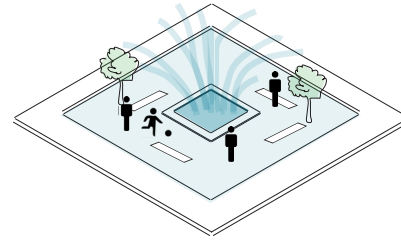


15 m secondary road

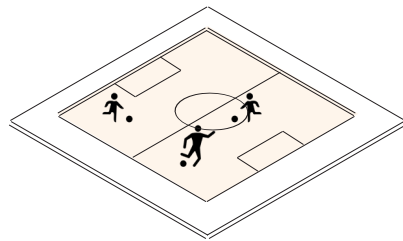
PUBLIC OPEN SPACES – FORMAL



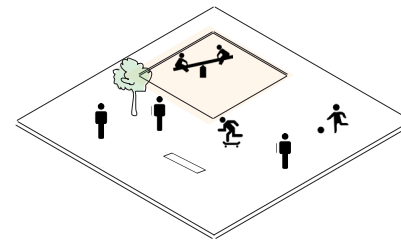
OPEN GREEN SPACE



SQUARE

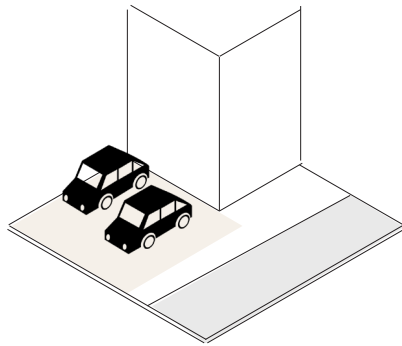


SPORTS FIELD

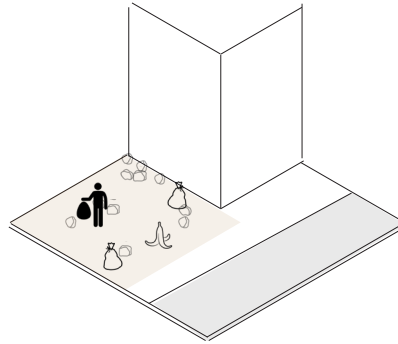


PLAYGROUND

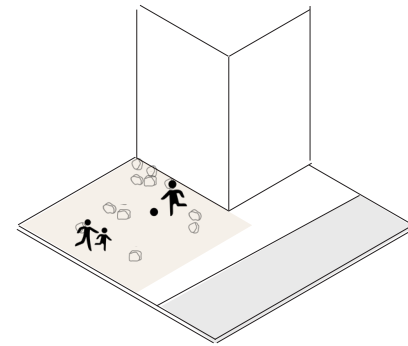
PUBLIC OPEN SPACES - INFORMAL



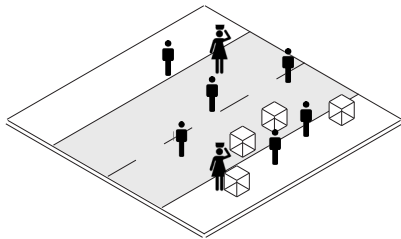
EMPTY LOT - PARKING



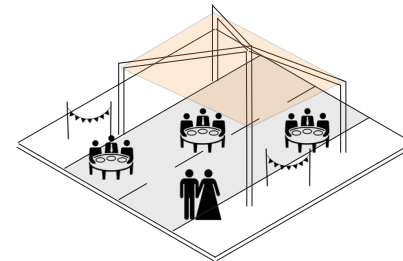
EMPTY LOT - DUMP



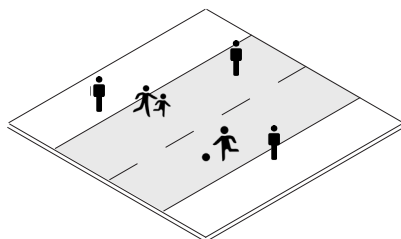
EMPTY LOT - PLAYGROUND



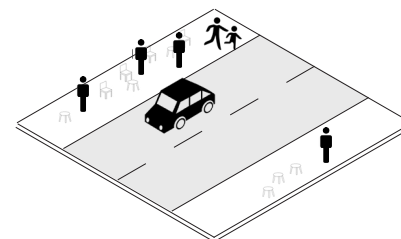
ROAD - MARKET



ROAD - FESTIVITIES



ROAD - SPORTSFIELD



ROAD - SQUARE

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Recent pictures by the author (Salima Benaïssa)

Colonial pictures by (former) inhabitants of Berkane

Special thanks to Berkane Logement for providing information about the current housing market and to the municipality of Berkane for providing digital documents of the city Berkane.





