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# SUSTAINABILITY OF COLLECTIVE SPACE

*A Case Study of five Unités d'Habitation by le Corbusier*

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## INTRODUCTION

The aim of this essay is to provide fruit for thought to designers and all types of activists engaged in the field of housing, to profoundly reconsider the role of collective space in their efforts to create sustainable living environments. Collective space is a material precondition for the formation of a stable community among residents. My hypothesis is that the possibility to provide a comparably high-quality living space for a given number of residents with a limited amount of resources depends on a successful socialization of the domestic space. Not only because a quest for density implies the question of collectivity per se, but because there is a variety of domestic needs most crucial to our wellbeing which can't be fulfilled individually, if not by a considerable expansion in size of private units. The increasing tendency towards bigger dwellings in countries representing a high degree of individualization and privatization seem to confirm this hypothesis. The possibility for a trade-off between quantitative and qualitative dimensions of residential structures through mutualization of living space is also central to le Corbusier's theory for collective housing, which is conceived as a unity of socialized services. The five Unités d'Habitation designed by the architect and realized between 1948 and 1967 are material manifestations of said theory and, by consequence, predestined objects of analysis to test my hypothesis. The methodology therefor chosen is elaborated below.

At first, the spaces provided for domestic use are to be identified for each building. While the interest devoted to the actual dwellings is limited to one cell of a similar type in each unit, the focus is set on spaces which do not belong to one particular household, but can be appropriated by the inhabitants as extensions of their private units. They are to be analyzed in regard to their location within the building, intended function and spatial qualities. Some types of collective spaces present within the buildings are not considered part of the domestic sphere

as of their inherently public nature. This is the case for example for the educational and commerce facilities. The interest devoted to said spaces is limited to the fact that their presence can stimulate collective activities, facilitate social relations, increase social cohesion and allow for a form of social control, which are all crucial factors to the functioning of collective space. In a second step we are going to look at the quantitative distribution of domestic space within the five buildings. By differentiating between different types of domestic space – in relation to their nature and the type of use they provide - we determine the effective amount of additional living space provided, in comparison to the one provided by the private units. From this we can develop the idea of a “cost” measure of the collective space provided in terms of additional  $m^3$ /apartment. The third step of the analysis is devoted to the more subjective use value of these collective spaces. We will try to determine how the quality of a living space for a single household is influenced by the presence of the additional spaces provided. To do so we take on a literal understanding of the term ‘logements prolongés’ as used by le Corbusier to conceptualize the role of collective space in his theory of collective housing. For each of the five Unités, one single family unit of a similar type is virtually extended to allow for the types of domestic activities which can take place in the collective areas, to be included in the private dwellings. The sum of extensions necessary to provide a similar quality of living space for its inhabitants as the building as a whole, lets us determine the additional use value provided through collective spaces. By comparing the thereby determined qualitative “gain” through collective space (in terms of use value) to the quantitative “cost” of collective space (in terms of additional  $m^3$  built) lets us deduct the relative efficiency of a residential model organized as a community to one based on an unarticulated agglomeration of single family households. Finally, these findings on the theoretical advantages of le Corbusier's collective hous-

ing model are confronted with the manifested reality of over half a century during which these structures have now been inhabited. Only then, will we be able to draw a conclusion on whether our initial thesis can be confirmed.

# PRESENTATION



Location: Marseille  
Commission: 1946 by MRU  
Construction: 1947-52  
Size: 137m long, 24m wide, 56m high  
Number of apartments: 326

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## MARSEILLE

After the devastating years of the second world war, France is facing a severe housing crisis. The Ministry for Reconstruction and Urbanization (MRU) is the state organ created for rebuilding the countries marginalized infrastructure. Despite the relative dispersion and heterogeneity of the destructed sites, their reconstruction is seen as an opportunity for experimenting new, essentially modern types of architecture which were meant to announce a new wave of economic and social progress. Among the most famous realizations of the time is the reconstruction of le Havre by the French architect Auguste Perret. Le Corbusier, who by his close relation to Claudius Petit had a strong ally within the MRU, is commissioned to build one of his previously conceptualized housing units called Unité d'Habitation in Marseille. After years of theoretical dealings with the problem, the commission by the state represents an opportunity to demonstrate how a new type of architecture is capable of radically improving the living conditions of the masses. The social project of the Unité d'Habitation implies a fundamental shift in the status of residential space. Ideas about a new essentially socialized form of housing, which in France have a long tradition dating back to the socialist utopias of the 19th century, had regained attention at the time. The quest for a universal public housing service was a guiding theme in the political efforts of Claudius Petit, who is credited for laying the ground stones for social housing in France. The official commission for the construction of the first Unité d'Habitation by le Corbusier is issued in August of 1945 by the MRU. The state financed construction of a residential building based on a new essentially socialist form of housing was facilitated by the communist rule of the city at the time.



Location: Rezé-les-Nantes  
Commission: 1949 by Maison Familiale  
Construction: 1953-55  
Size: 106m long, 19m wide, 52m high  
Number of apartments: 294

2

## REZE

The Maison Radieuse in Rezé is the second Unité to be constructed during the era of postwar reconstruction in France. The context of its commission differ however considerably from the experience in Marseille. Gabriel Chéreau is connected to le Corbusier by his legal work for the architect as his personal attorney. The young lawyer has been personally engaged in fixing the cities deplorable housing conditions. His proposals for the cities restructuring, which he made on his own initiative, were close to the modernist principles of the Athens Charter of 1933, which distinguished it from the more conservative proposals by the municipality. The organizational framework which led to the Unités commission was laid as early as 1911 with the formation of the Maison Familiale, a social housing cooperative. It is Gabriel Chéreau who convinces its members to seek for the participation of le Corbusier in their socially motivated efforts to counteract the cities widespread homelessness. The construction of a Unité was to serve as an example for a new, qualitatively superior form of social housing. The official commission is made in 1949 by the Maison Familiale. Contrary to Marseille, no state funds are provided for its construction except for the social housing credits which only allow to cover 85% of the determined costs. Consequently, a particularly innovative form of financing is established to cover the remaining 15% of the costs. The occupants themselves are to provide 15% of the costs of their dwelling. In return, they would become full owners of their apartment after 65 years of occupation. They were also guaranteed a possibility to change apartment type, in case their needs would change over time. In addition, the original form of financing not only guaranteed an egalitarian status between the inhabitants but facilitated the perception of the Unités living space as their collective good.

## BERLIN

The commission of the third Unité d'Habitation was initiated in the run up for the international building exhibition named INTERBAU which was held in Berlin in the year of 1957. The exhibition was devoted to the reconstruction of the Hansa Quarter, which had been completely destroyed during the second world war. With the participation of 53 architects from 13 different countries, the area was to become a symbol of progress after a dark period of cultural and moral decline. When le Corbusiers Project starts to take shape, it is however deemed too big for the already largely constructed area. A solution is finally found with the acquisition of a building site next to the Olympic Stadium, previously owned by the city. The construction is entirely state funded, which implied that costs had to be kept in checks. This led to numerous cutbacks in the project. The great number of collective facilities originally planned on for the rooftop have never been realized and neither was the commercial gallery within the building nor the underground parking-lot and public swimming pool on its east.



3

Location: Berlin

Commission: 1956 by Heilsberger Dreieck AG

Construction: 1957-59

Size: 142m long, 23m wide, 53m high

Number of apartments: 530

## BRIEY

Contrary to the postwar constructions in Marseille and Rezé, the commission of the Unité d'Habitation in Briey was initiated by the rapid expansion of the regions mining sector. For housing the ever increasing number of migrant workers, Georges-Henris Pingusson was commissioned in 1952 to plan a satellite town in the the middle of woods called Brey-en-Forêt, which was supposed to provide a collectively organized living environment for a total of 2200 people. In 1954 le Corbusier is called to collaborate in the master plan and to design a Unité d'Habitation which replaces one of the 3 residential buildings to be constructed on the site. Apart from the three housing blocks, the master plan features a series of commercial, recreational and educational facilities and a number of single family homes. As a consequence of the serious crisis which hit the regions industrial sector in the late 1950s, only the Unité and the single-family homes will be realized.



4

Location: Briey-en-Fôret

Commission: 1957 by Office HLM de Briey

Construction: 1959-61

Size: 110m long, 20m wide, 50m high

Number of apartments: 339

## FIRMINY

As in Briey, the planning of a satellite town called Firminy-Vert is related to the cities rapidly increasing population as a consequence of the booming metal industry. The program of the extension includes 1070 newly constructed social housing units for a total of 4150 inhabitants and a series of collective facilities. Le Corbusier is consulted by the mayor early on in the project and is commissioned for a number of projects, 4 of which will be realized. Among them is the cities stadium, the Maison de la Culture and a church. His contribution to the large amount of social housing units was to include the construction of three Unités surrounded by a number of complementary facilities. As a consequence of the crisis in the metal industry sector, only one Unité will finally be realized. The commission is made in 1959 by the office for social housing. The building represents the last of its kind, as le Corbusier passed away in 1965, 3 months after laying its ground stone. The construction will consequently be managed by André Wogensky, a long-time collaborator of le Corbusier who was already involved in the projects of the previous Unités.



5

Location: Firminy-Vert

Commission: 1957 by Office HLM de Briey

Construction: 1959-61

Size: 110m long, 20m wide, 50m high

Number of apartments: 339

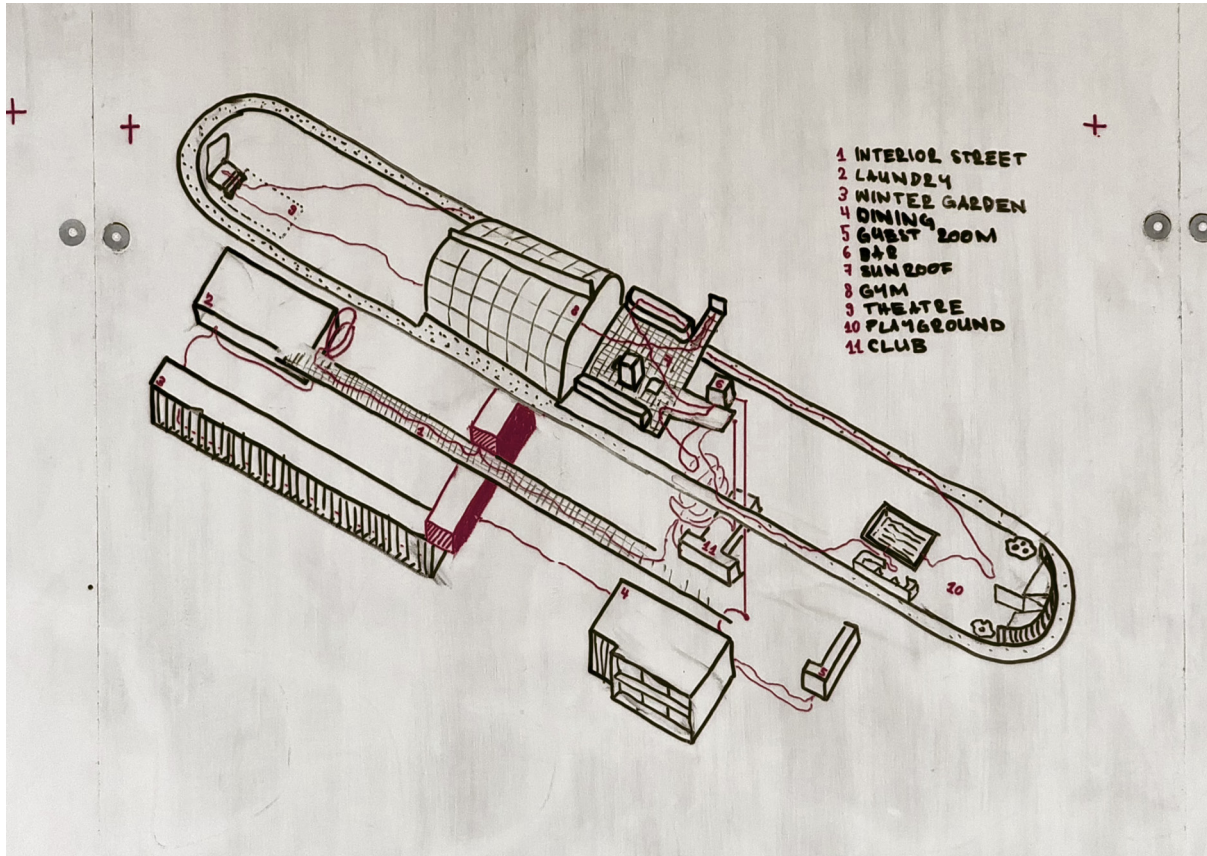
## MORPHOLOGY & SPACE

The aim of this chapter is to provide an overview of the specific spaces provided for domestic use. First, the main generalities of spatial organization which apply to all of the five Unités discussed in this essay are elaborated, followed by a more detailed discussion of the specifics of each project.

### GENERALITIES

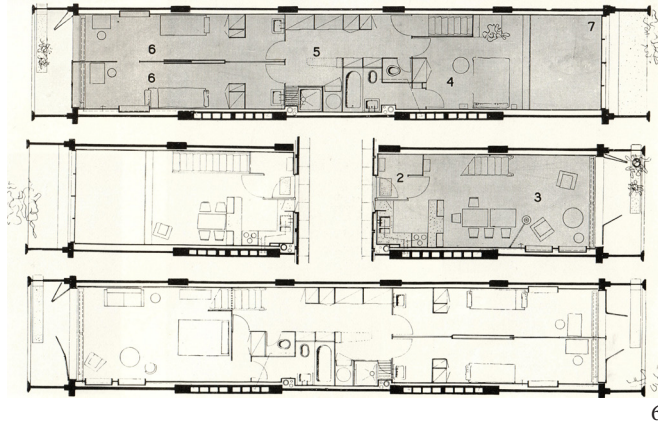
The five Unités present themselves as freestanding blocks surrounded by vast green space. They are strictly oriented on the north-south axis which, in addition to their size and relative isolation distinguishes them from the built fabric of their surroundings. This deliberate protrusion from the local context is to guarantee ideal natural illumination of the interior spaces during the day and over the entire year. The surrounding greenspace allows to organize the different flows of people and matter between the building and its broader geographical context and allows for a sort of collective privacy of the residents. Each surrounding is generally comprised of three different types of spaces. The park, which serves as a transitional space and provides an area for recreation. The paved areas of the different access streets and parking lots. The covered area under the actual building, which is a large open space characterized by the rhythm of the 'pilotis' which elevate the massive volume of the building and create a spectacular spatial continuity of the ground level. The open space of the 'pilotis' is interrupted only by the volume of the entry hall, which constitutes the only point of access to the entire building. Its location corresponds to the elevator tower which assures the vast majority of vertical circulation of goods and people within the building. The horizontal distribution is enabled by a series of T-shaped interior streets which are stretched over almost the entire length of the building, they are connected to the elevator tower and the emergency staircases and give access to the private units and other interior spaces. The sophisticat-

ed articulation between the duplex apartments and the interior streets permit that only one out of three levels is connected to an interior street, which is not purely a matter of efficiency. Le Corbusier makes use of the distributional system's rationality to make the streets more generous. They are much wider than strictly necessary which makes them more than just a functional element. The spatial configuration of the interior streets allows for a precise articulation between the scale of the building and the individual units. The additional space allows for a number of informal activities among residents of a street. They are to the building what the neighborhoods are to a city. Some of the leftover-spaces on the levels without streets are used as resident's clubs which are small collective spaces without functional specificity. More important collective spaces and services are grouped around horizontal galleries at the core of the building, which form poles of collective life within the building. The most spectacular types of collective spaces are generally found on the rooftop. The sculptural forms of chimneys, exhaust shafts and other technical infrastructures create a surreal landscape of unique spatial quality in which a variety of collective spaces is created. Most of it is devoted to recreational activities from theater to sports centers to sunroofs and playgrounds, often found in connection with nursery schools. The scale of these spaces is in accordance with the size of the buildings population. They also fulfill important civic functions within the units, as these are the spaces which are designed to allow the Unité's entire population to assemble.



## MARSEILLE

### Apartment



Type E is the most frequent apartment. They are meant to accommodate families with up to four children. The small vestibule at the entrance provides just enough space to hang your coat and take off your shoes. The kitchen to the right is equally modest. There's just enough space for an oven, a small worktop, a sink and some room for storage. Its functional layout is designed for one cook who has everything within reach. The plates are handed through the famous *passe-plats* unit to the dining table next to the stairs. The living room is characterized by its generous double height. The impressive double height glazing wall allows for the sunlight to reach far into the core of the 24 m deep apartment. The sunshade above the balcony mitigates radiation and exposure. The staircase leads to a space which simultaneously serves as distribution, storage and space for housework. The parents' bedroom is a mezzanine with an outside view across the double height living room and a private bathroom. The two parallelly arranged children's bedrooms are facing in the opposite direction and have an elongated functional layout. Each room provides space to wash, sleep and study for up to 2 kids. Part of the partition can be used as a chalkboard and slides open to create a small area for play. In addition, the two rooms share a single height balcony. Another particularity of the apartments is the comparably low ceiling

which is set, with exception of the double height living room, at exactly 226 cm. Here again the efficiency of the choice is not without careful consideration of the use value. The measure is derived from le Corbusier's *Modulor*, a system of measure based on the proportions of the human body. The height of the ceiling is exactly enough for an - at the time comparably tall - adult to fully stretch his or her arm.

### Interior Streets



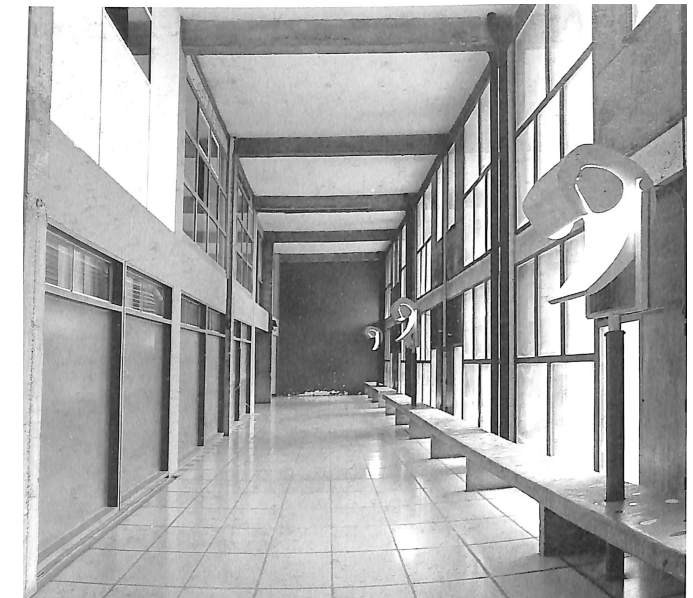
The seven interior streets are located on the 2nd, 5th, 7th, 8th, 10th, 13th and 16th floor. The 126 m long dark spaces at the core of the building are visually divided by the sunlight flooding in through the platforms of the elevator tower, which also constitute the main access points to these spaces. The two emergency staircases towards the ends of the streets provide shortcuts to the north- and south-ends of the other streets. Like the central staircase next to the elevators, the glass partition separating them locally illuminate the streets with indirect diffuse sunlight. Their generous width of 296cm is visually underlined by a low ceiling of only 226cm, contributing to their ambiguous character between domestic and public life. The exposed-aggregate concrete cladding of the walls and the dark stone slabs of the floor create an urban atmosphere

of diffuse darkness of which the individually colored and artificially illuminated entry doors of the apartments stick out in remarkable contrast. The protruding volumes of the organically shaped delivery boxes and the light sockets take on an almost symbolic meaning of domesticity.

### Laundry

A series of collective services and commercial facilities are grouped in the spaces around the northern parts of the 3rd and 4th street. A collective laundry room is situated at the north end of the 4th street. The east facing space provides a nearby laundry service open to all inhabitants.

### Winter Garden



The northsides of the 3rd and 4th street are connected by a 42 meter long double height space which serves as a collective winter garden. The sunlight coming in through the wall to wall glazing on the west side is mediated by southwest facing vertical sunshades. The room is furnished with a long concrete bench. Four organically shaped lamps designed by Xenakis, three of which are



piercing the concrete bench, illuminate the space at night. At its south end a small public washroom and another small concrete bench are situated. East to the winter garden there are small shops which make use of the space as an indirect light source and additional sales floor.

### Depot

Next to the winter garden, on the east side of the building a double height space which originally served as a collective food storage facility and featured its own refrigeration plant is situated. The goods were delivered daily to each apartment via the delivery boxes, which allowed to penetrate the domestic space without physically accessing it, so nobody had to be at home at the time of delivery. Refrigerated or deep-frozen goods were delivered into the separate insulated ice boxes underneath the protruding delivery boxes.

### Dining



9

The collective dining on the 7th street is another uniqueness of the Unité. The double story facility features a bar, sanitary facilities and a large dining area which includes a 12 m long balcony and an L-shaped gallery surrounding the large double height space at its center. The fine metal cage around the freestanding spiral staircase and the wooden and marble cladding of the walls are among the highlights of its noble interior.

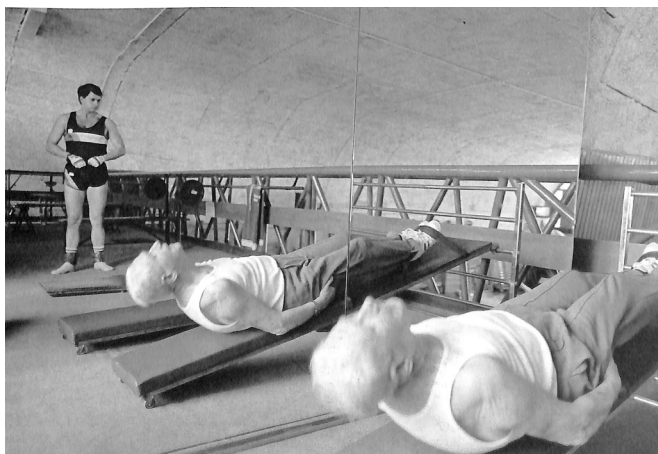
### Guestrooms



10

South of the elevators on the 3rd street, there are 8 pairs of guestrooms. Their size and layout is similar to the children's bedroom, except for their individual showers and balconies and their independent access. Each pair of guestrooms shares a common vestibule which features a toilet and storage room. At the entrance, the absence of the delivery box indicates their temporary occupation.

### Gym

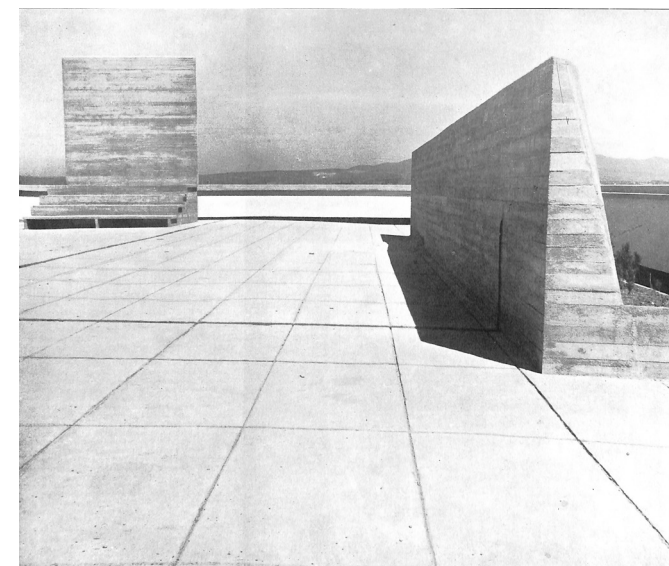


11

Among the collective facilities on the rooftop a spacious sports center can be found. The gymnasium constitutes the biggest interior space of the building. Its free spanning vault tapers towards the north. The complex com-

position of the concrete shell includes ventilation shafts which culminate in the longitudinal crest of the structure. The space is framed by a storage space in the north and a gallery in the south. The space is accessed directly from the elevator through a narrow central corridor which also serves the changing rooms to its east and two secondary spaces to its west. The gap between the secondary volume next to the elevator tower and the main vaulted structure gives access to a 300 m long running track along the outer edge of the rooftop.

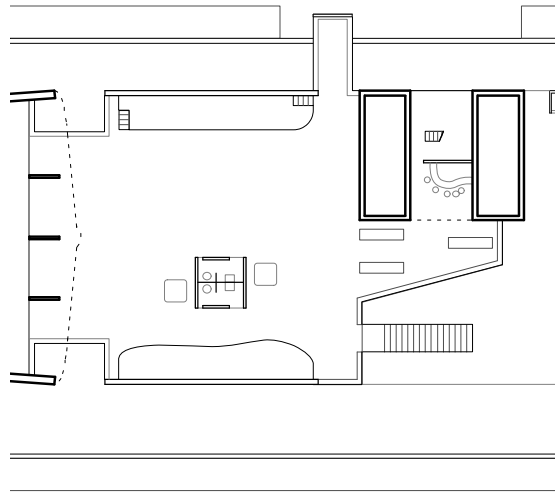
### Open Air Theatre



12

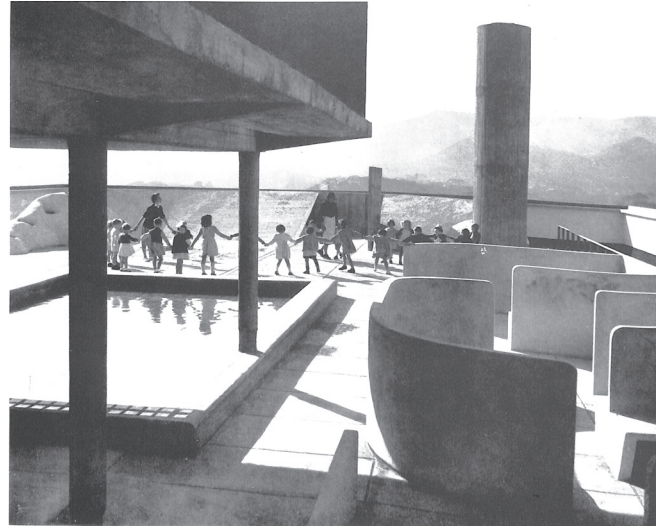
The remaining space on the north end of the roof terrace is intended to serve as an open-air cultural facility. The space is framed by the backside of the elongated plantations on the east, the gym on the south and an open-air theatre stage with a large rectangular backwall on the south. These elements serve as windscreens and contribute - together with the sculptural plasticity of the tall exhaust shaft - to a poetic mineral landscape which contrasts the fragile silhouette of the surrounding topography.

## Sunroof



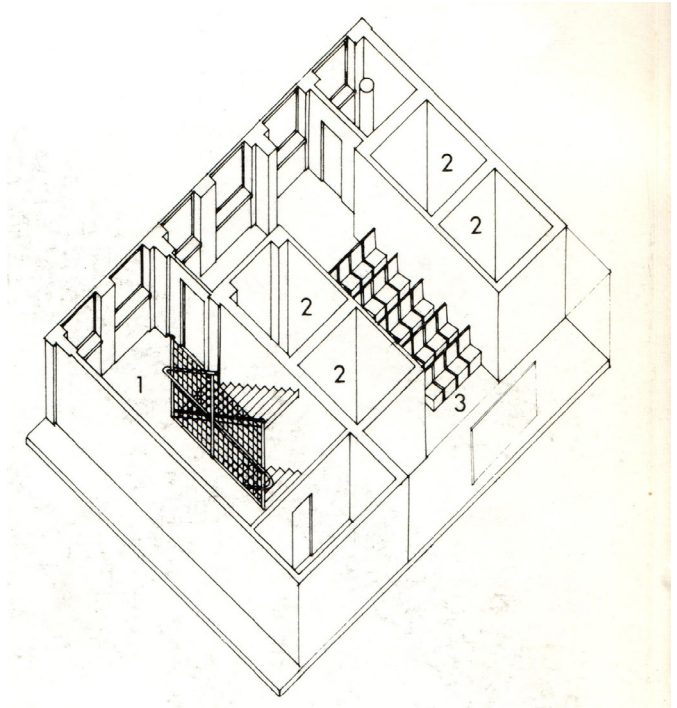
The flat roof of the sports centers secondary volume can be accessed by an exterior landscape next to the roof terraces main access from the elevator tower. It features a small volume with sanitary installations flanked by two open-air showers. The large concrete sunbeds on its east- and west-sides are protected from wind by their concrete backwalls. The trapezoid terrace in front of the elevator tower is furnished by a series of concrete benches and connected to a small semi-interior space which was originally meant to host a bar counter. The projecting small balcony on the east is the only place with a clear intention for a panoramic view of the landscape. Its modest size allows for a certain privacy. The layout and program of the sunroof are remarkably similar to the famous solariums of le Corbusiers private villa projects. This seems to confirm the inherently domestic nature of the place.

## Playground



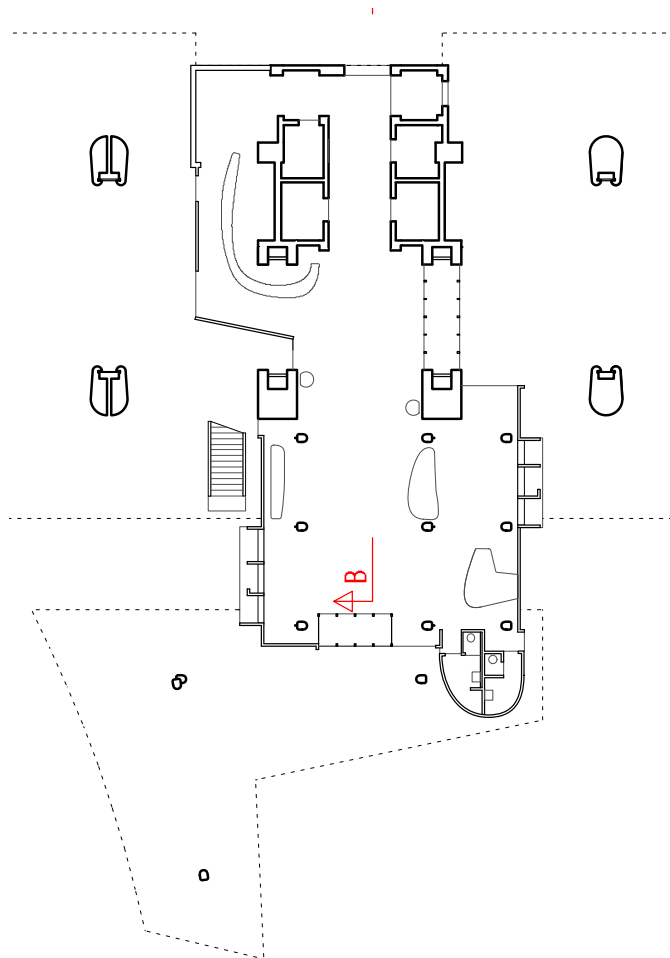
The southern end of the roof terrace is equipped with a playground. The programmatically rich area features sanitary facilities, plantations, a concrete bench, artificial concrete rocks, a solarium, and, at its center, a rectangular paddling pool. It is partly covered by an elevated construction which serves as a daycare facility and is connected to the nursery school on the 17th floor underneath by a concrete ramp. The inclined concrete surfaces in the south act as gentle limitations of the play area and create a visual continuity with the surrounding landscape.

## Clubs



9 smaller collective spaces are located on levels without interior streets. Their layout corresponds to the access platforms of the elevator tower, under and above which they are situated. They are accessed directly from the central staircase and are intended to be used for collective free time activities by residents sharing a common interest. On the original floorplans they are often designated as youth clubs, which fills the gap of age-specific activities between the playground for the kids and the solarium for the adults.

## Entry Hall



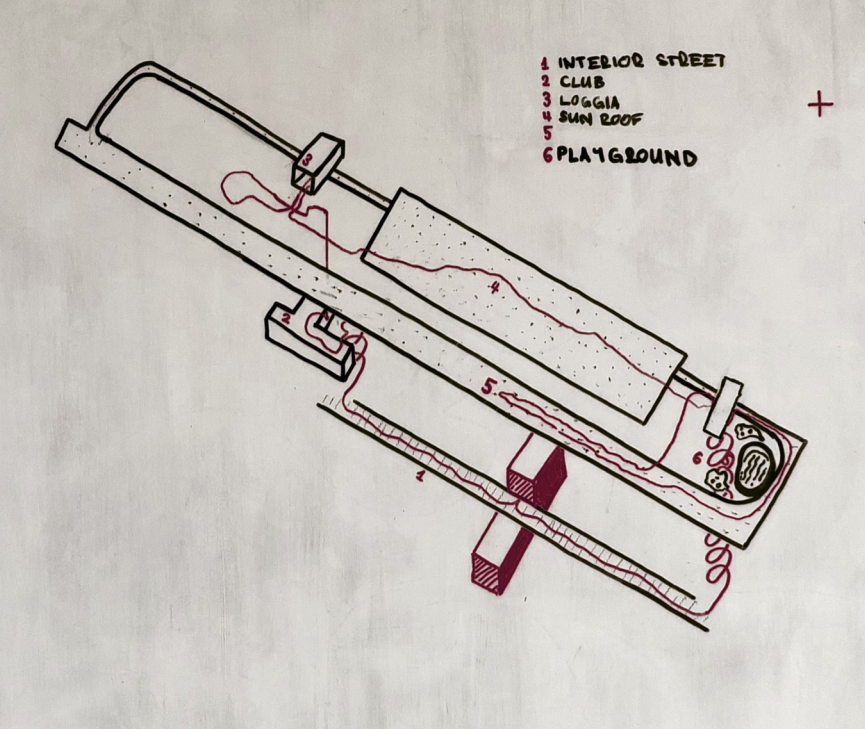
The hall of the Unité d'Habitation in Marseille is everything but a faceless point of access. It is a sophisticated articulation between the public network of the city and the domestic life of the Unité, between the organic surroundings of the park and the mineral world within the building. It is composed by two staggered volumes with meticulously square layouts. The first one corresponds to the footprint of the elevator tower and features a reception desk and space available to wait for the elevators. It can be accessed from the southern part of the pilotis

through an over 5 m wide fully glazed entrance seal, the functional design of which is emblematic for the brutalist character of this service-oriented part of the entry hall. The second square on the other hand seems to escape the rigidity of the buildings structural grid and protrudes from the buildings footprint. The nine free standing columns evoke the classic spatiality of a peristyle hall and contribute to the noble character of the space. Their differential spacing opens up to a passage leading from the access door to the elevators. On each side of this passage, different types of carefully designed concrete benches provide comfortable seating. The light entering through the colored glass bricks of the two claustrae are further contributing to the domestic character of the place. The flooring was originally made of irregularly shaped dark stone slabs, which created a continuity to the exterior access area on the west, which is covered by a pavilion like concrete porch. Its L-shaped form articulates the hotel like driveway on its northside and the pedestrian access on its west side.

## Surroundings

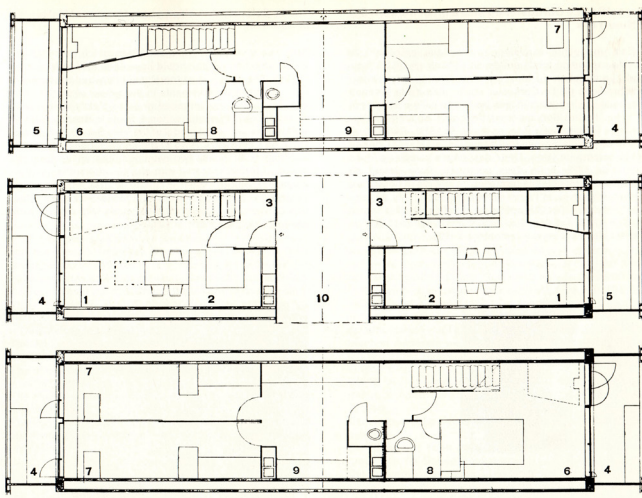


The generous surroundings of the Unité are connected to the Boulevard Michel by two main points of access. The largest part of the area is serving as a collective greenspace with different types of plantations divided by pedestrian pathways. The open area under the building is characterized by the organic shapes of the 15 pairs of massive concrete pillars. Part of the area south of the elevator tower is paved in the same type of flooring as the entrance hall and features a similar type of furniture .



## REZE-LES-NANTES

### Apartment



16  
Type E is also the predominant apartment layout in Rezé. Despite being considerably smaller, they are designed to accommodate the same number of people. The general organization of the floorplan is largely identical to their southern predecessors. However, the considerably reduced width of the building (19 m compared to the 24 m in Marseille) results in a number of differences. The double height of the living room is reduced to a small trapezoidal void in front of the stairs. There are no lavabos in the kid's bedrooms and all the family members share the same sanitary facilities. These economies result in a comparably large access area at the center of the upper floor, which allows it to be used as a small workspace.

### Interior Streets

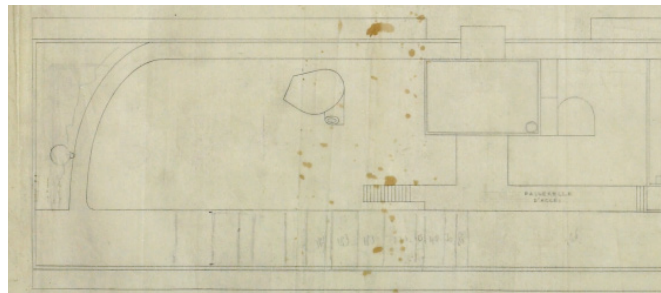


17  
The six interior streets are located on the 2nd, 5th, 8th, 13th and 16th floor. The dimensions of their cross-section are identical to the ones in Marseille, despite the comparably slim volume of the building. The rough mineral surface of the wall's quarry stone cladding absorbs even more light than their exposed-aggregate concrete counterparts in Marseille. Whereas the volumes of the delivery-boxes do not protrude the space of the streets, each pair of entrance doors is framed by suspended wooden boxes which contain the gas meters.

### Clubs

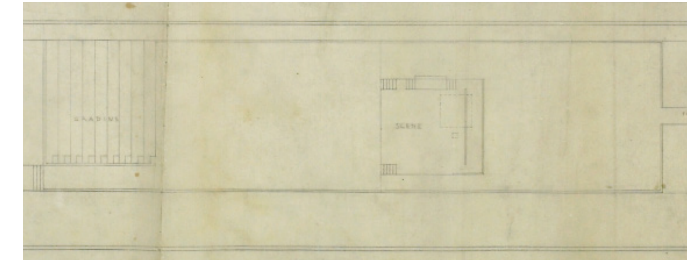
The Unité features a total of 11 clubs. Their access, location and spatial configuration is identical to the ones in Marseille.

### Roof Terrace



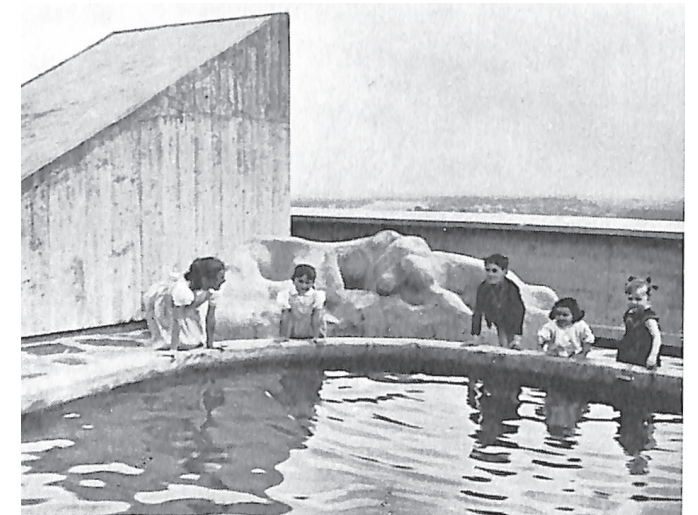
The open space on the northern end of the rooftop serves as a collective terrace for the inhabitants. It is however only very sparsely furnished. The plantations on its north are barely enough to protect it from the heavy Atlantic winds.

### (Open-Air Theatre)



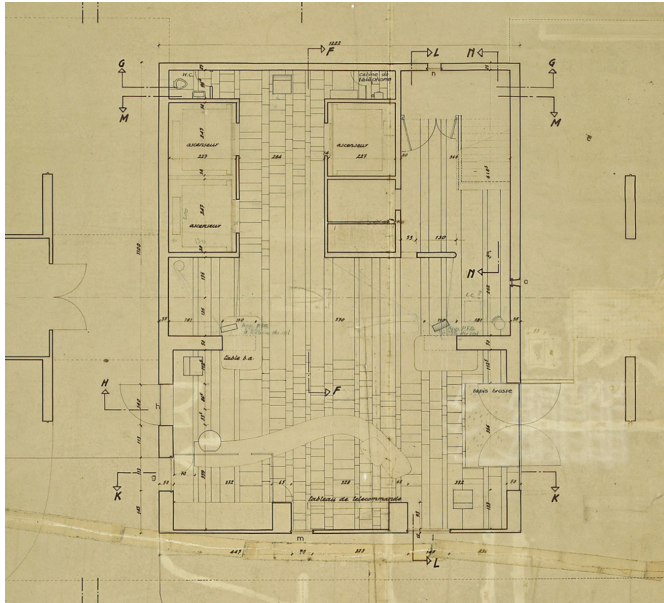
19  
South of the elevator tower which constitutes the main point of access to the rooftop is a single-story rectangular volume which contains the various spaces of the nursery school. The access staircase to its rooftop remains without use, as the open-air theater which should have been located there was never realized.

### Playground



A playground is located next to the school at the southern end of the rooftop. The comparably small area features a paddling pool, artificial concrete rocks and an inclined concrete surface which covers its direct access through the buildings southern emergency staircase. Alternatively, the playground can be accessed from the paved pathway along the outer edge of the rooftop.

### Entry Hall



21

Up until the final phase of the project, the floorplans of the entry hall show a similar layout to the one in Marseille: Two articulated rectangular volumes, one of which protrudes from the buildings footprint, as well as an exterior access area covered by an irregularly shaped concrete slab and connected to a driveway. The realized project however only features the more functional part of said layout, its location corresponding to the buildings elevator shafts. The eastern part of the hall nevertheless provides a certain degree of domesticity. This is mainly due to the organically shaped lamps (previously seen in Marseille's winter garden), as well as the two pieces of concrete furniture which are located near the two supports of

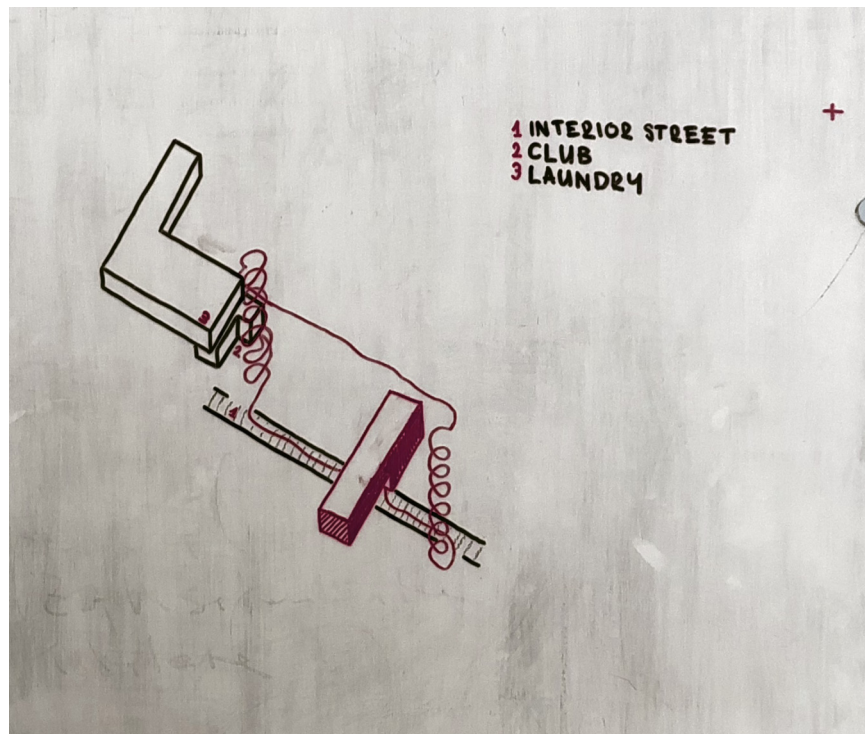
the concrete frame structure between the reception in the west and the vertical distribution in the east.

### Surroundings



22

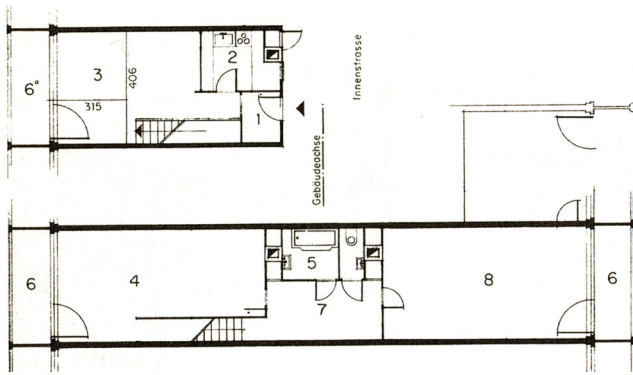
The surroundings of the Unité previously belonged to the nearby Château de la Bauvardière. The location of the building is such that much of the parks original quality is maintained. Among the elements preserved are many of the old trees, as well as the large pond, part of which takes up the northern part of the open space under the building. While the motorized access is disposed around the northern end of the building, pedestrians access the building directly from the east side, by crossing the pond on a small concrete bridge. The reflections of the buildings lamellar supports in the dark water create a captivating scenery to the pedestrians approaching the building.



## BERLIN

Unlike its French counterparts, the construction of the Unité d'Habitation in Berlin did not receive an exemption from general building regulations. In addition, Le Corbusier only delivered the plans for its execution, while construction management was outsourced to local professionals. These particular circumstances have resulted in a number of major deviations in the buildings execution. The ceiling height of 250 cm (instead of 226 cm) is among the most prominent of these deviations.

### Apartment



23

The distribution among the different apartment typologies is remarkably different from its French predecessors. As the German contractors expected the buildings population to be in accordance with the countries general demographic constellation – large number of small households as a consequence of the devastating war years – only 85 of the 530 apartments were of type E. They provide the biggest floor area of all the types E constructed, which is partly due to the absence of any double height space and the consequently bigger parental bedroom. None of the bedrooms features separate sanitary installations and there is one large bedroom instead of the two elongated childrens bedrooms of the previous projects. The apartment was meant to accommodate families with 3 to 4 children.

### Interior Streets



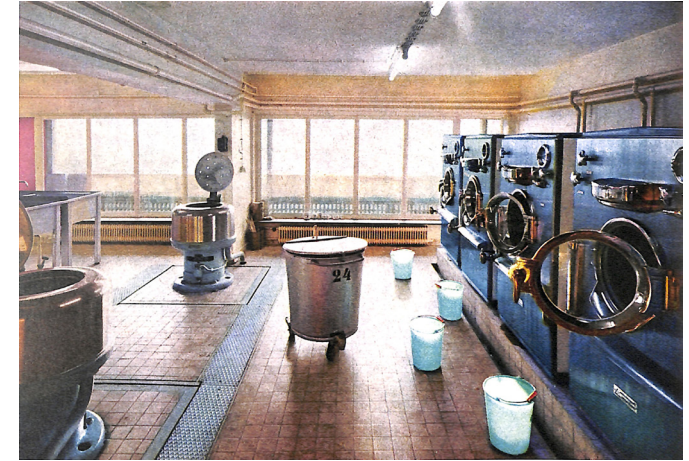
24

The interior streets are also remarkably different from ones we have previously seen. The ten distributional spaces are located on the 2nd, 3rd, 5th, 7th, 8th, 9th, 10th, 13th, 16th and 17th floor. The ceiling is made out of grey corrugated sheets featuring regularly spaced fluorescent tubes behind thin slices of a transparent version of the same corrugated sheet. When looking down the streets, the light emitted by the fluorescent tubes fuse into a continuous surface, the diffuse radiation of which resembles a dense blanket of fog, a feature typical for the region. The white plastered walls interrupted by the colored apartment doors and installation shafts further contribute to the homogeneity of the space. Each street has two specific colors: one for the installation shafts and one for the entrances. The elevator platforms constitute the only source of daylight.

### (Clubs)

Contrary to the other Unités, the spaces underneath and above the elevator platforms are not of collective use, but rented out to small business owners.

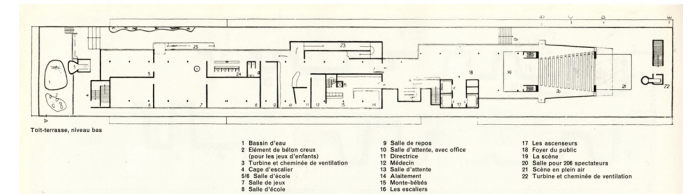
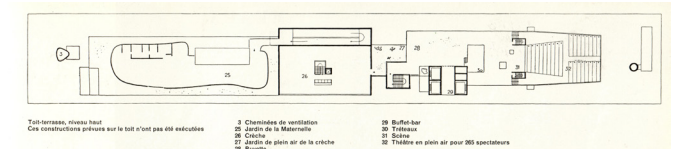
### Laundry



25

The laundry room is amongst the most remarkable collective spaces in the building. Despite its functional affectation, it is spectacularly located: On the 17th floor next to the elevator, which provides it with one of the best views of all the spaces in the Unité

### (Rooftop)



26

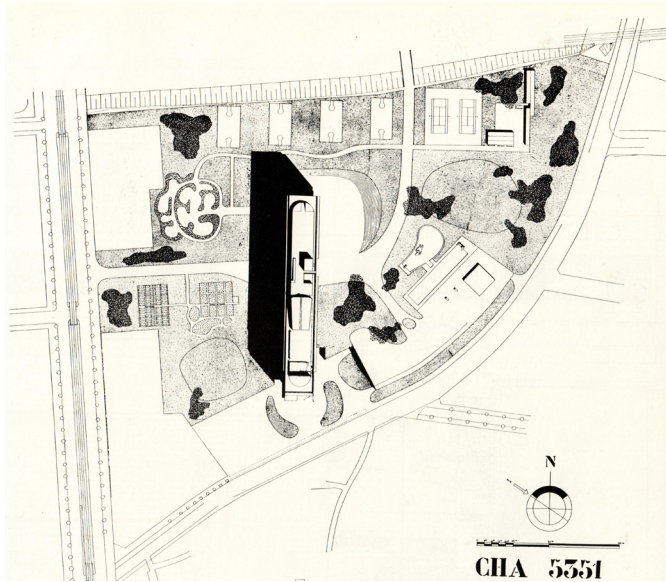
The Rooftop was supposed to host a series of collective services comparable to the ones found in Marseille. The limited budget however did not allow for their realization.



## Entry Hall

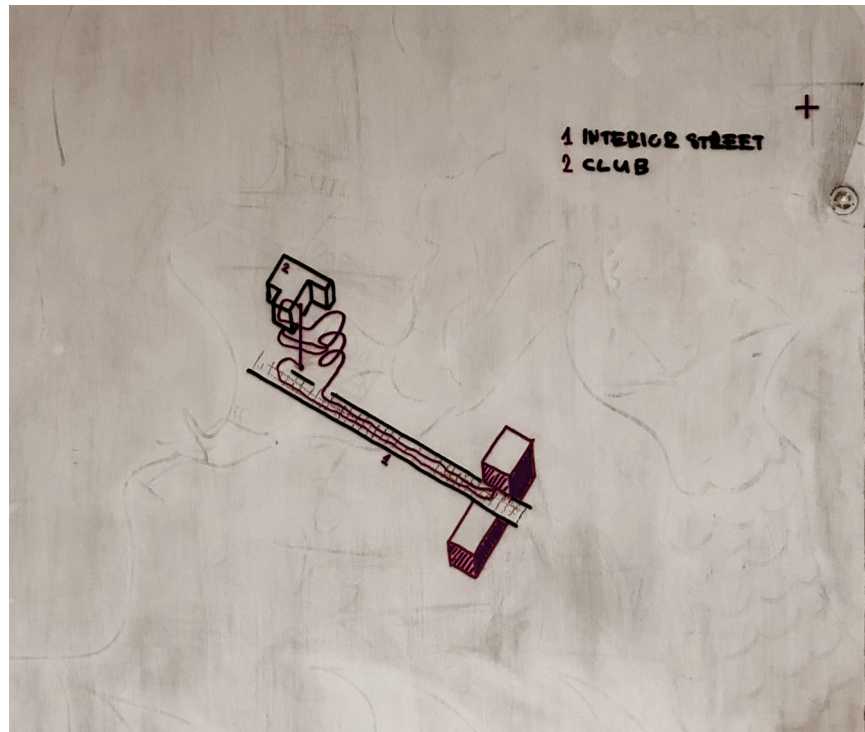
The entry hall is of similar proportions as the one in Rezé. It is accessed through a fully glazed vestibule which separates the hall from the commercial facilities on its southern side. Its sparse interior lacks the domesticity which characterizes the entrances of the previous projects.

## Surroundings



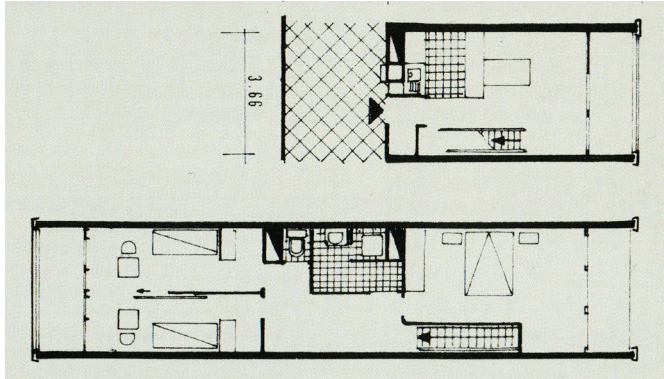
27

In addition to the entry hall, the space underneath the building is occupied by a fully glazed volume including commercial facilities and a second larger construction containing different types of technical facilities. The park features an L-shaped building on its northeastern edge which was meant to be used as a youth center.



## BRIEY-EN-FORET

### Apartment



28

Type E is the most common apartment in Briey. Its dimensions are similar to the ones in Rezé but the double height in the living room is much larger. The therefore sacrificed floor area of the parents' bedroom is regained by moving the bathroom to a more central position (a solution similar to the one in Berlin).

### Interior Streets



29

The six interior streets are located on the 2nd, 5th, 8th, 10th, 13th and 16th floor. The color scheme of the walls and the openings resemble the one in Berlin. The illumination however is assured by a similar type of organi-

cally shaped light sockets as in Marseille and Rezé. The secondary staircases are very narrow and are located at each of the three endings of the T-shaped spaces.

### Clubs

The Unité features a total of 11 clubs. Their location and access is similar to the projects previously discussed. However, as there are only 2 elevators in Briey, the spaces are wider and provide more natural light.

### Entry Hall

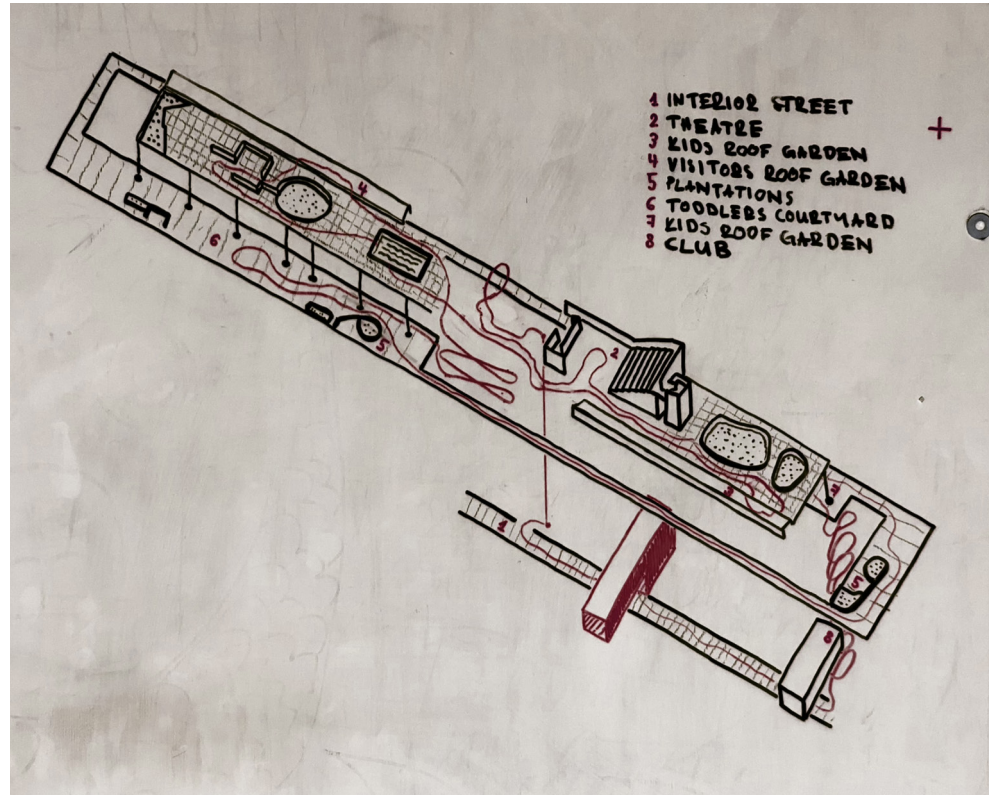
The entry hall is almost identical to the one in Rezé.

### Surroundings



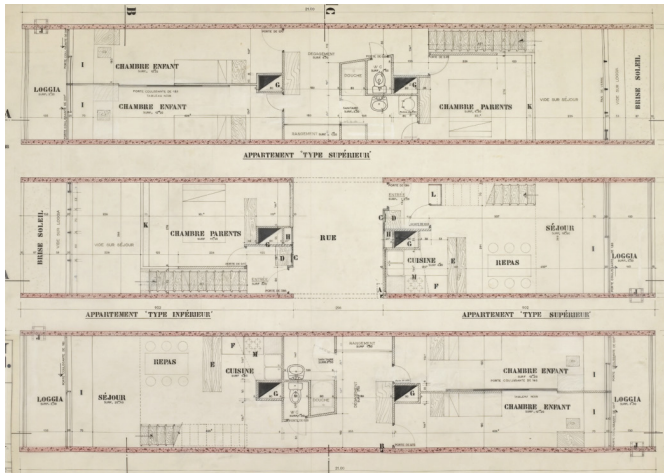
30

The Unité is surrounded by a vast forest. The only facilities provided is the Unités parking lot and a small deforested area.



## FIRMINY-VERT

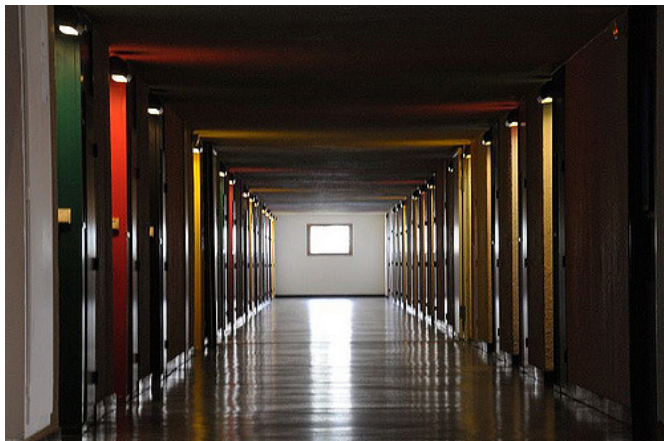
### Apartment



31

The Unité in Firminy is the one with the biggest variety of apartment typologies. About a fifth of them is of type E. Despite being 10 m<sup>2</sup> smaller their layout is almost identical to the ones in Marseille. The biggest difference being the absence of individual sanitary facilities in the bedrooms.

### Interior Streets



32

The interior streets are located at the 2nd, 5th, 7th, 9th, 11th, 13th and 16th floor. Their interior is similar to the ones in Briey (white plastered walls, vertical installation shafts etc.). The color scheme however retakes the polychromy of the earlier projects, which results in a higher individualization of the many entrances. One of the secondary functions of these spaces was to provide a space where the smallest members of the families could play in safety and in reach of their parents. For these kids, the individually colored doors provide important visual references to locate their family's apartment. In Firminy, the entrance to a specific apartment is either the first, second or last door of a specific color on the left or right side, north or south of the elevator. The spaces most particular features are the openings which provide direct sunlight on the northern and southern ends of the streets.

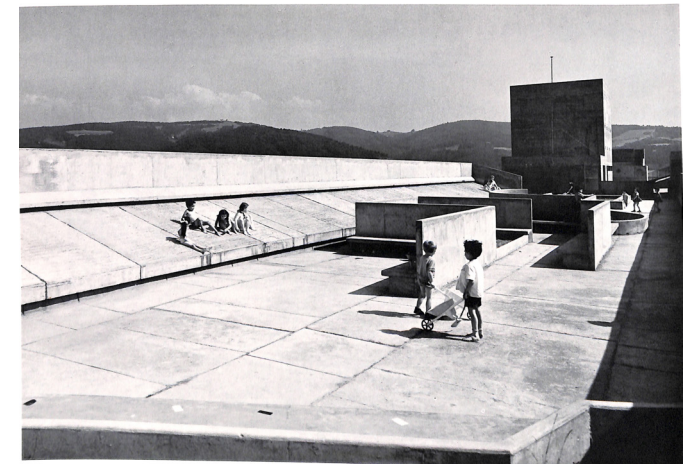
### Clubs

In addition to the 10 clubs located in the elevator tower, the Unité features 10 more spaces of the same function which are located west of the southern emergency staircase on the levels with no interior street.

### Open-Air Theatre

The 18th and 19th level of the Unité features the biggest nursery school complex ever designed by le Corbusier. The facility includes a series of outside spaces which are only accessible from within the school. The rooftop of the southern side of the 19th floor however is freely accessible from the central staircase. It features, among others, an open-air theatre of ample proportions with bleachers and an interior foyer located behind the stage.

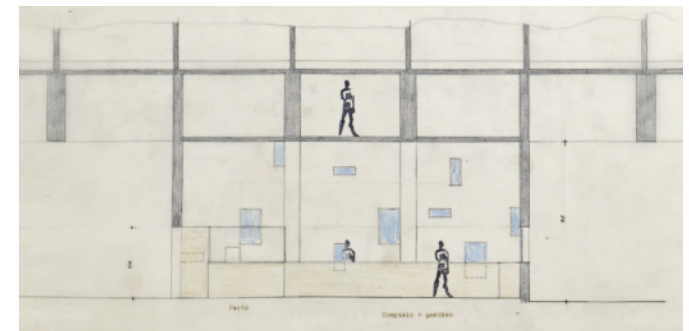
### Roof Terrace



34

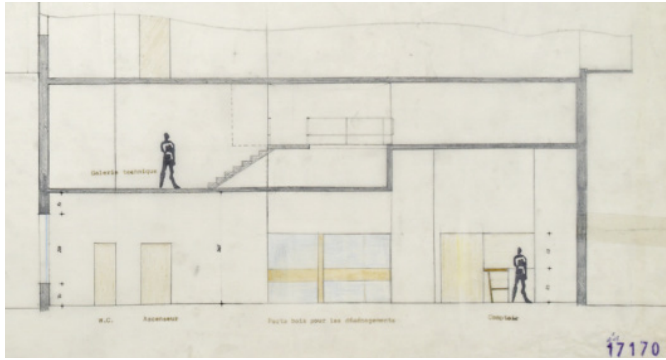
South of the theatre is a roof terrace which features plantations and a large solarium, the inclined surface of which embraces the surrounding landscape in a way that makes it an integral part of the architecture.

### Entry Hall



33

35



36

The Unité is detached from Firminy Vert, located on top of a nearby hill. The small plane on top is furnished by a series of curved concrete benches and a circular playground

The space of the entry hall differs from its predecessors by the simplistic elegance of its design. The structural elements, the dark stone slabs on the floor and the reception counter are all strictly orthogonal to each other. The only exception being the organically shaped lamp next to one of the pillars. The fully glazed entrances are in the main axis of the building at opposite sides of each other, which creates a visual continuity between the southern and northern parts of the open space underneath the building. The varying height of the ceiling differentiates between the most functional parts on the eastern side, and the reception area on the western side of the space.

#### Surroundings



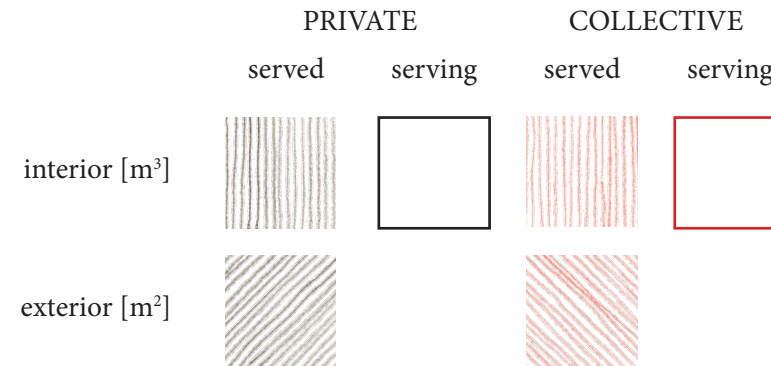
37

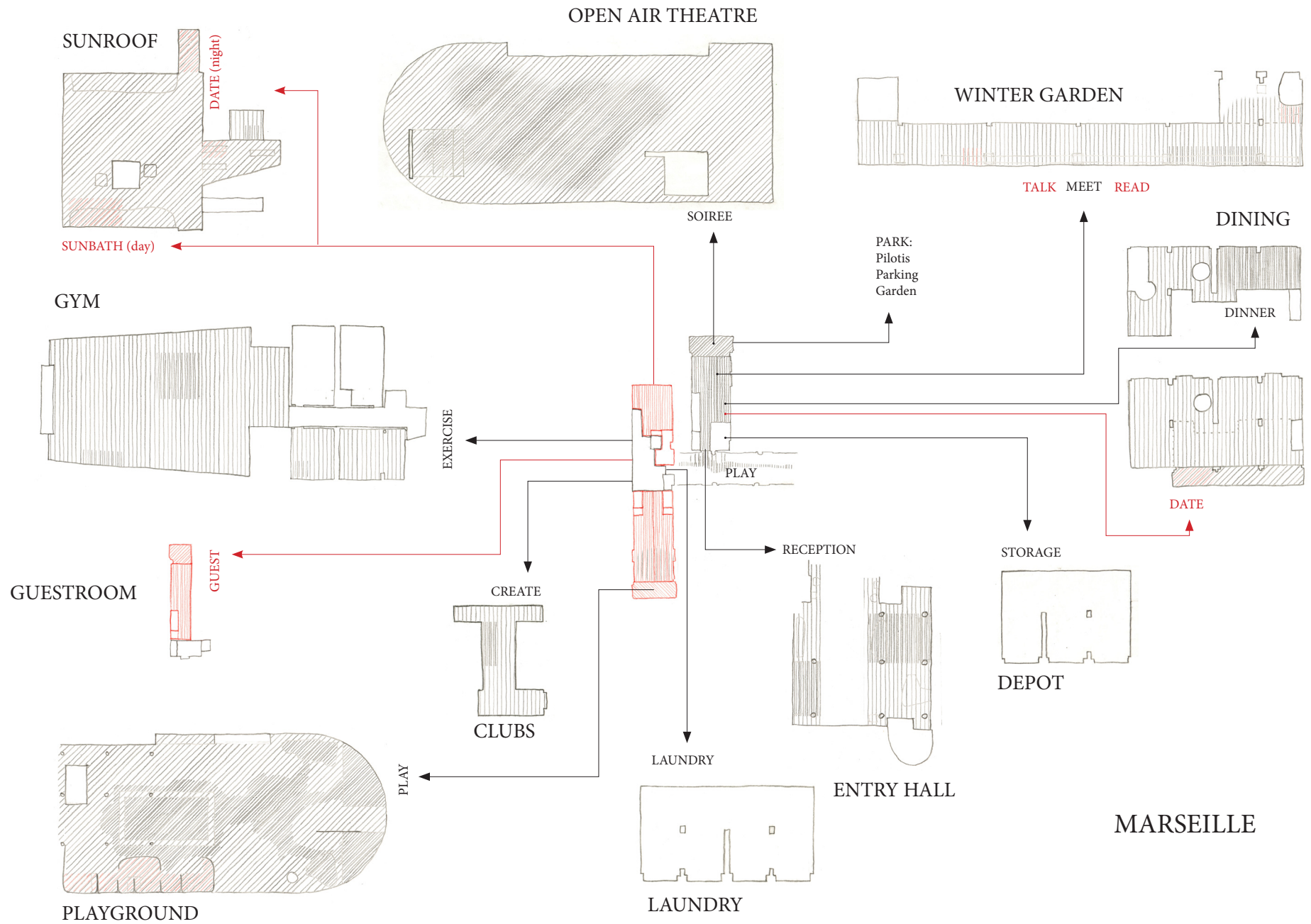
# INVENTORY

After having analyzed the morphology and spatial configurations of the domestic space offered by the five Unités d'Habitation by le Corbusier in chapter one, chapter two provides a quantified analysis of said spaces. As in chapter one, the analysis of the private dwellings is limited to one specific apartment typology - commonly referred to as being of type E - which is common to all five buildings analyzed in this essay. The goal of this chapter is to determine the amount of additional domestic space provided by the collective facilities. The part of the spaces without clear relation to the collective nature of the building are not taken into account. In some cases, this distinction is easy to make, as the spaces are explicitly attributed to one specific domestic function. In other cases, the distinction seems less obvious as the domestic function is rather implicit. Such is the case for example for the building's distributional elements like the interior streets or the entry hall. Clearly, any type of residential building needs some sort of access point on the ground floor, as well as an internal distribution to reach the apartments. At the same time, we have seen that the design of these spaces is of such nature that they can additionally be used for a number of domestic activities. The functional ambiguity of these spaces is recognized in the analysis by only considering the parts of these spaces which exist exclusively for the sake of providing additional domestic space for collective use of the inhabitants. The generous width of the interior streets for example is almost twice the 150cm necessary to allow the passage of people entering and exiting the apartments. The provision of the additional 146 cm can therefore only be explained by the designers' intention to provide a space where kids can play and neighbors can meet.

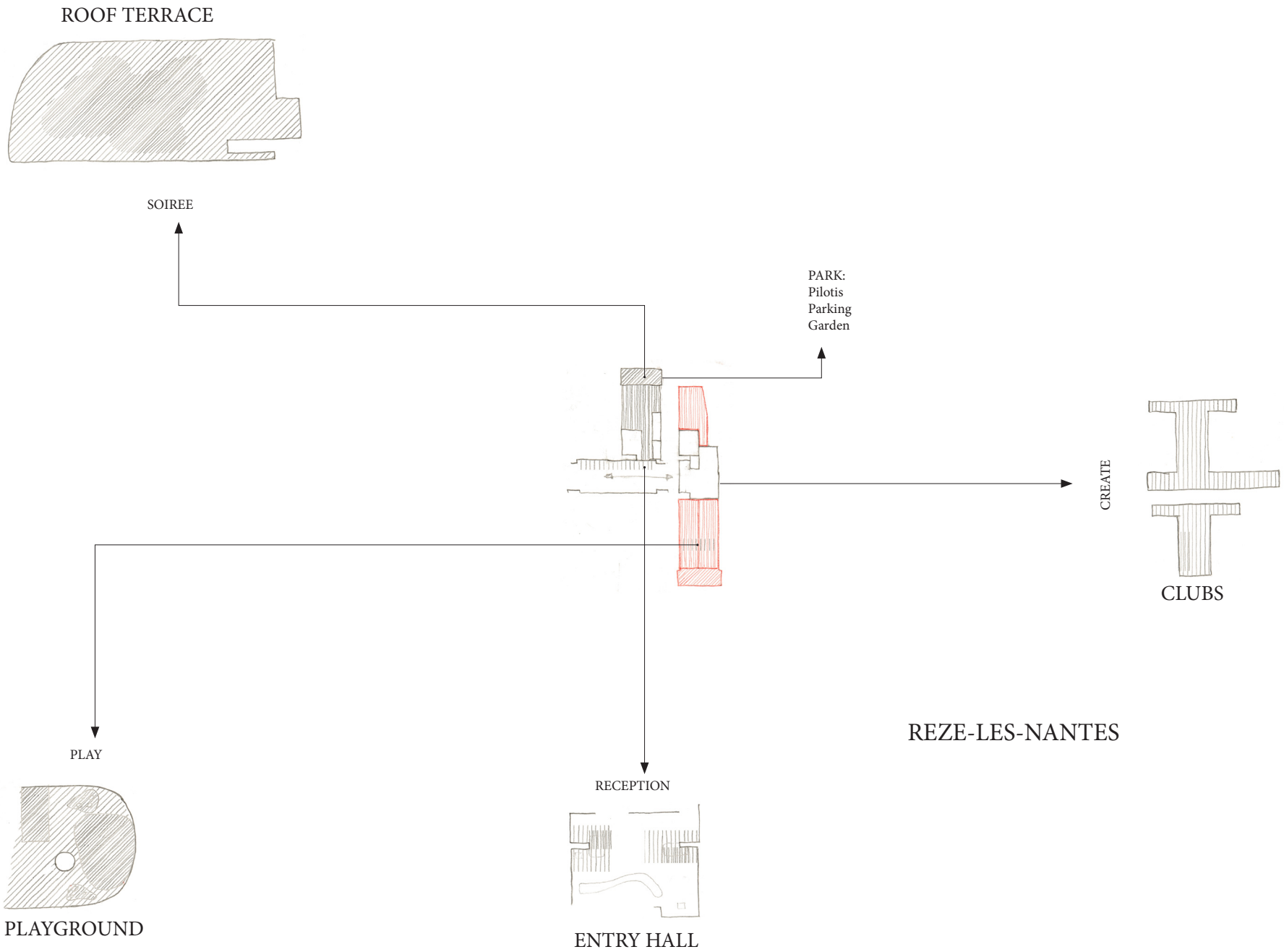
The following inventories provide an overview of the quantitative distribution of domestic space within the five buildings. A distinction is made between private and collective spaces (use), between served and serving spa-

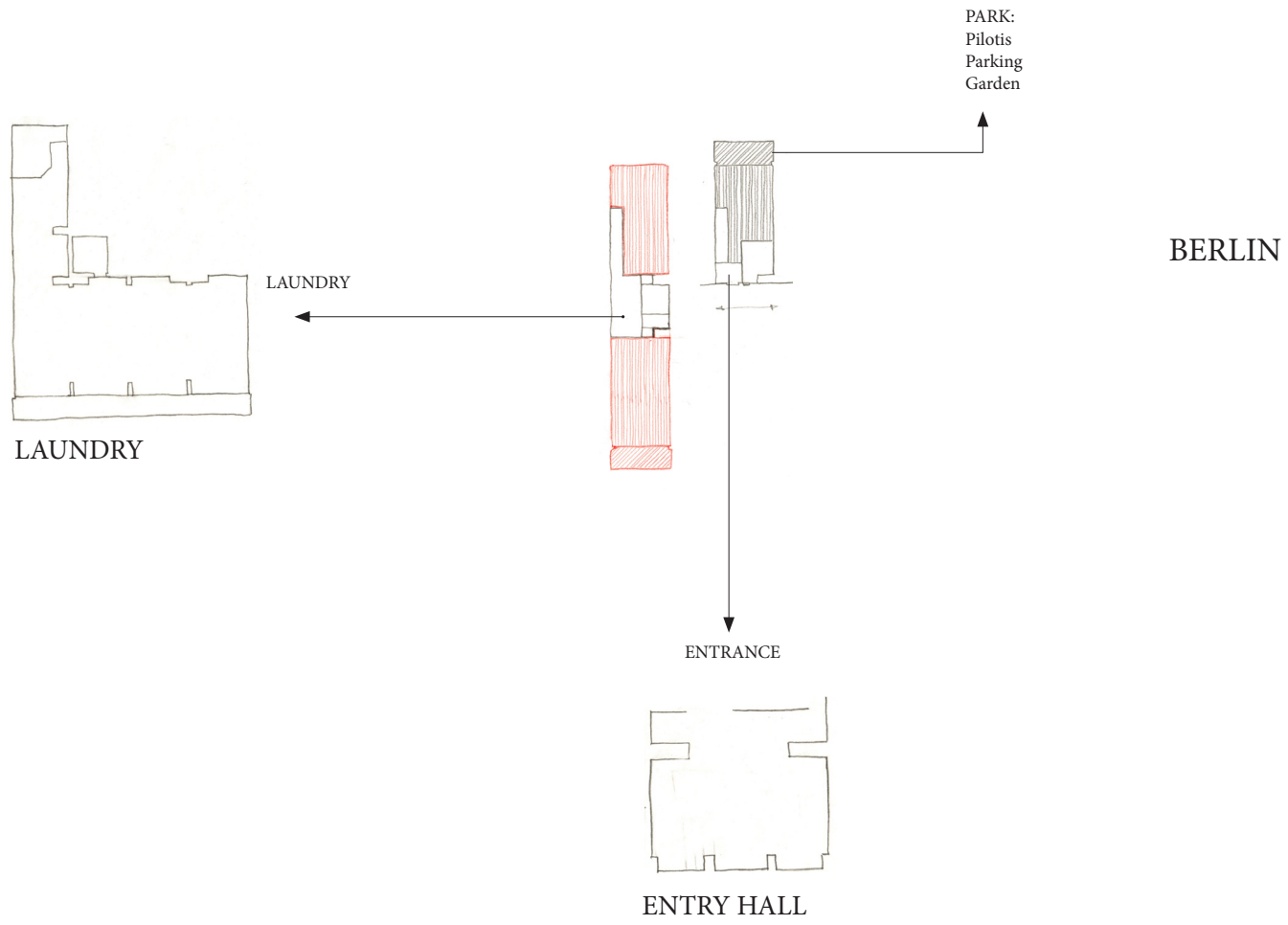
ces (function) and between interior and exterior spaces (location). In addition, a summary is provided for each building, indicating the "cost" of collective space per family compared to the "cost" of their individual apartment. The amount of collective space has therefore been weighted by a coefficient obtained by dividing the number of family members of one apartment by the population of the entire building.

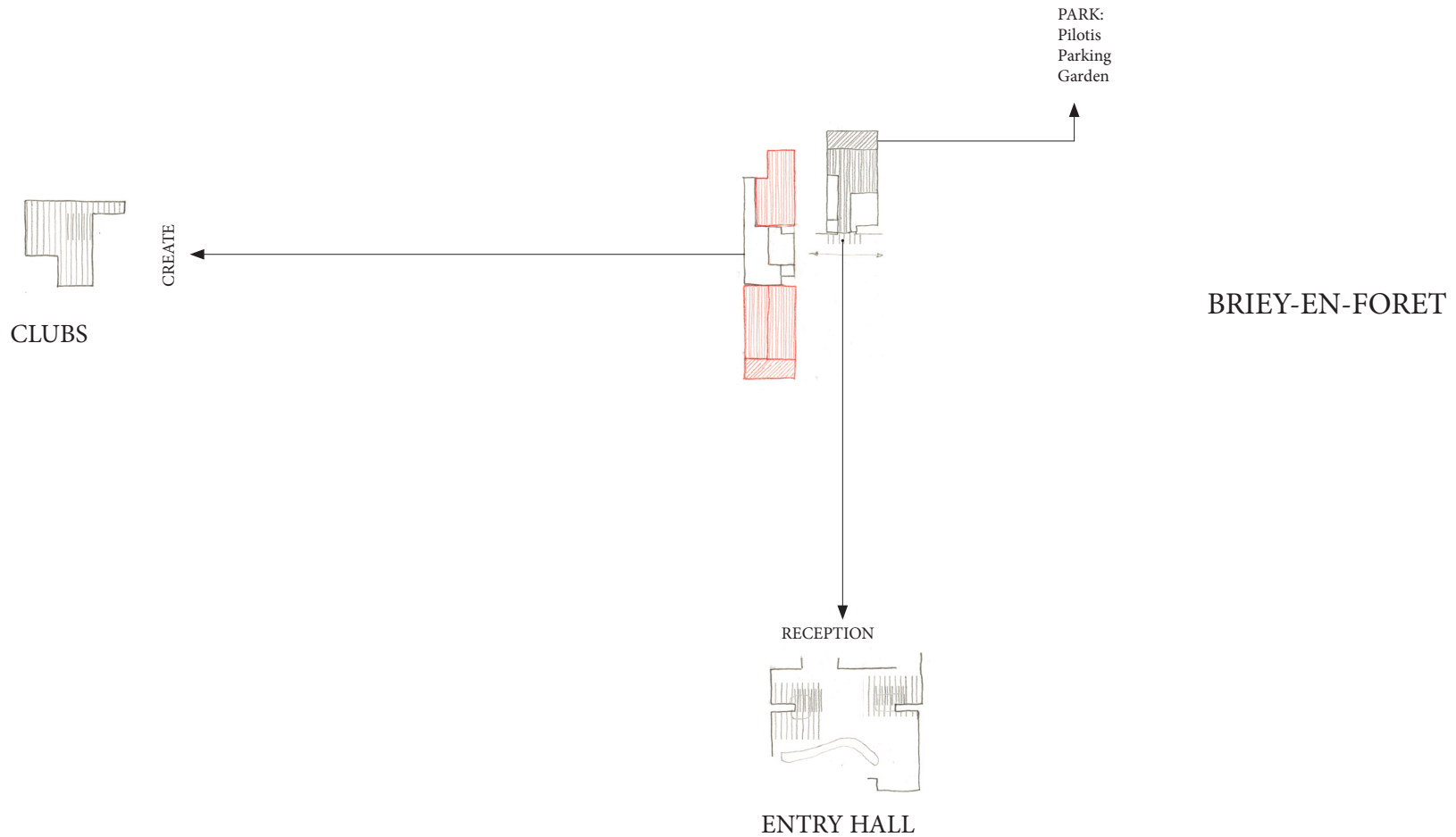


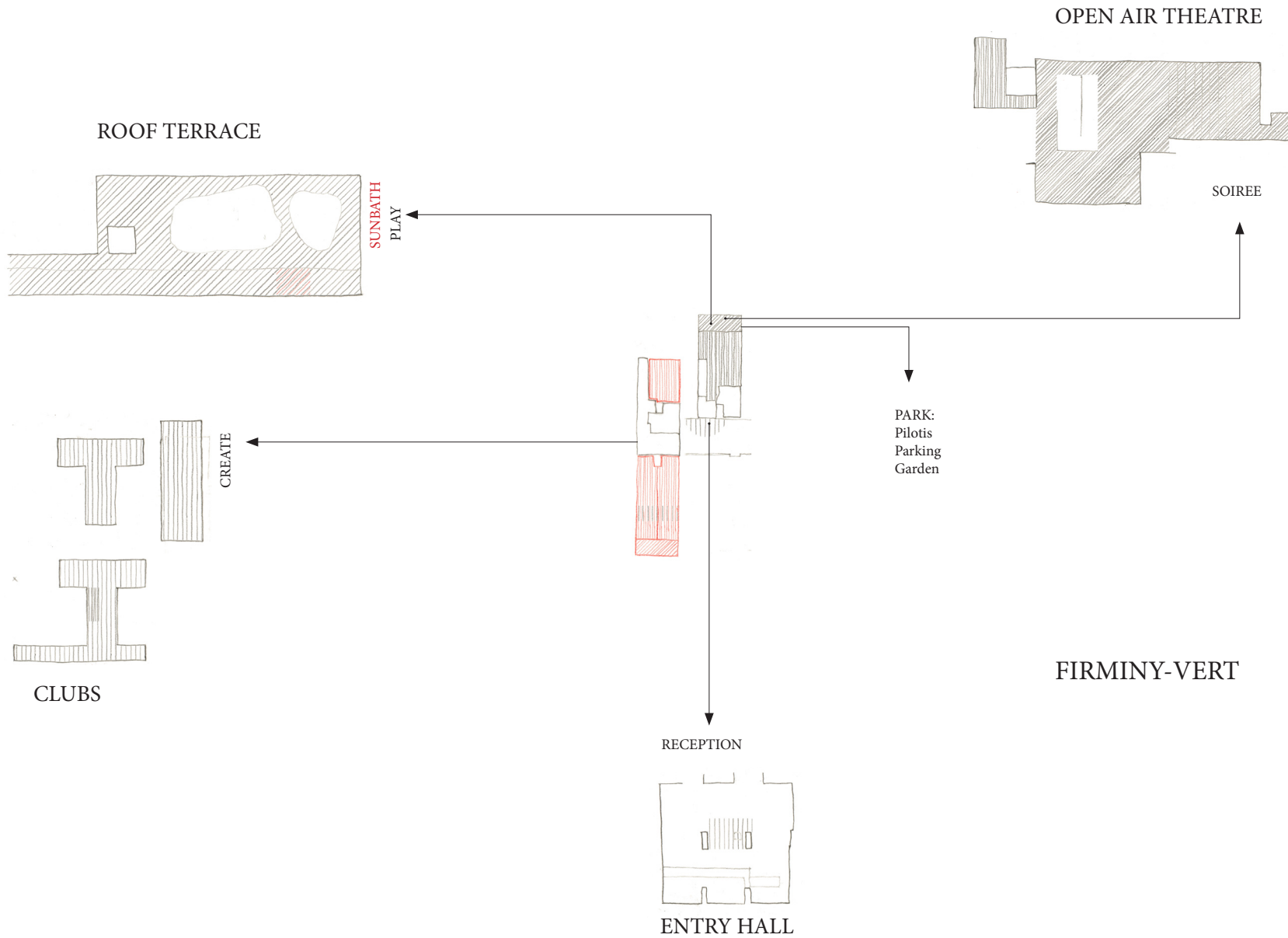












	Facility	Use	Usable Space					
			PRIVATE			COLLECTIVE		
			served		serving	served		serving
			int.	ext	int.	int.	ext	int.
m3		m2	m3	m3	m2	m3		
MARSEILLE	<b>APARTMENT BUILDING</b>	dwelling	90	6	20	81	6	63
		Interior Streets	1.4	0.2	0.3	15.4	7.6	14.6
		Laundry						10.4
		Wintergarden				2.8		1.1
		Depot						1.7
		Dining				2.2	0.1	0.2
		Guestrooms	1.4	0.2	0.3			0.4
		Gym				4.8	3.6	0.6
		Open-Air Theatre				0.0	1.7	
		Sunroof				0.1	0.8	0.0
		Playground				0.0	1.5	0.1
		Clubs				4.3		
		Entry Hall				1.3	0.0	0.2
		<b>PARK</b>	garden/parking					136.5
REZE	<b>APARTMENT BUILDING</b>	dwelling	79	6	0	39	6	69
		Interior Streets	0.0	0.0	0.0	4.2	1.6	10.6
		Clubs				3.9		
		Roofterrace					1.1	
		Playground					0.5	
		Entry Hall				0.3		
		<b>PARK</b>	garden/parking					96.7
BERLIN	<b>APARTMENT BUILDING</b>	dwelling	143	6	0	51	6	78
		Interior Streets	0.0	0.0	0.0	0.1	0.0	17.4
		Laundry				0.1		15.9
		Entry Hall				0.1		1.6
		<b>PARK</b>	garden/parking					430.4
BRIEY	<b>APARTMENT BUILDING</b>	dwelling	73	5	0	43	5	58
		Interior Streets	0.0	0.0	0.0	3.1	0.0	9.9
		Clubs				2.8		
		Entry Hall				0.3		
	<b>PARK</b>	garden/parking					1057.2	
FIRMINY	<b>APARTMENT BUILDING</b>	dwelling	84	5	0	65	5	69
		Interior Streets	0.0	0.0	0.0	6.6	1.4	11.2
		Clubs				6.4		10.7
		Open-Air Theatre				0.1	0.6	0.4
		Roof Terrace					0.8	0.0
		Entry Hall				0.2		
		<b>PARK</b>	garden/parking					390.4

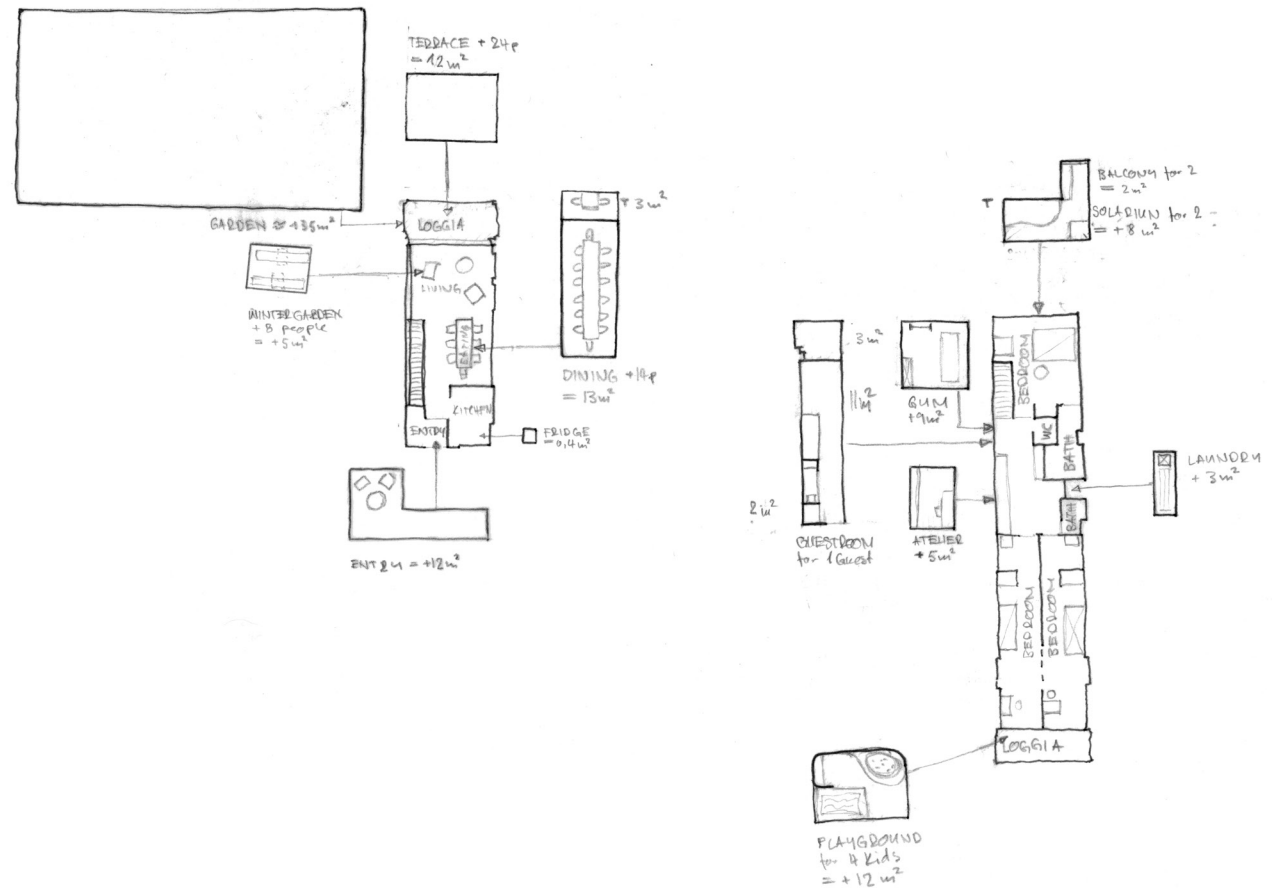
As we can see in the figures and tables above, the interior streets constitute a large part of the collective space provided. Especially in the case of Berlin, where their number had to be significantly increased to serve the large number of small apartments. The comparably large amount of space dedicated to these primarily distributional elements also indicates an intention by the designer to provide a coherent spatial sequence from the scale of the building up to the individual dwelling space. The seemingly luxurious collective facilities in Marseille on the other hand seem almost modest when judged by the amount of additional space demanded. The additional expense for Berlins comparably inefficient distribution for example is about the same weight as the gym or the dining and winter garden together. From this we can see, that the qualitative improvement for the inhabitants does not only depend on the quantity of collective space provided but is also determined by the types of use which they provide.

## USE VALUE

After the quantitative analysis in chapter two, we are now going to analyze how the quality of living space of a single dwelling is influenced by the surrounding presence of different types of collective spaces. The qualitative dimension of domestic space is understood in terms of use value, which represents the type of activities a space allows for. To determine the additional use value provided by the collective spaces, we are going to undertake a virtual extension of a single-family unit to allow the types of use provided by the collective spaces to take place within the apartment. It is difficult if not impossible to compare the richness and generosity of the Unités surroundings to the use value of an individual garden. An attempt has nevertheless been made to reimagine them at the scale of the individual household. But given the vagueness of such a comparison, they are not included in the following cost/benefit analysis

## MARSEILLE

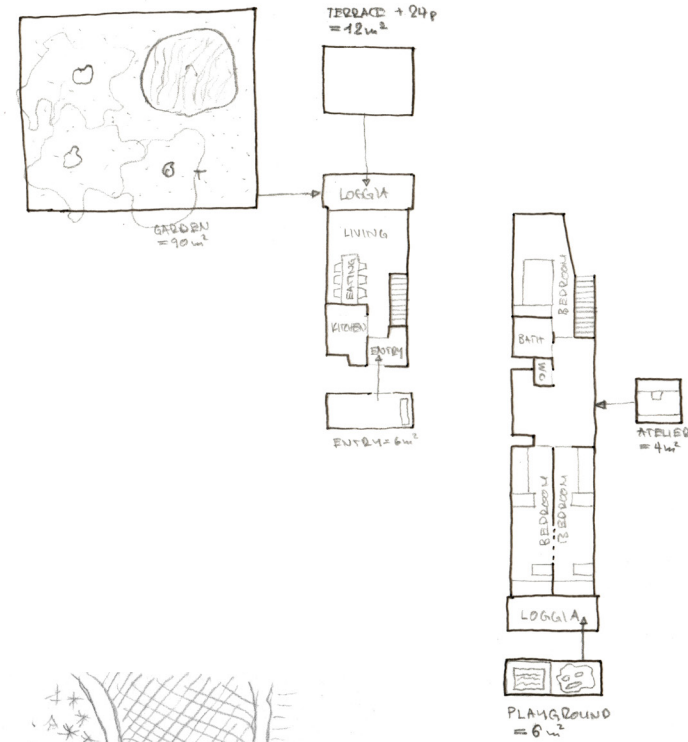
The western part of the entry hall is designed to accommodate outsiders without having to let them penetrate the more intimate spaces of the private units. The public telephone and sanitary facilities provide all the comfort necessary. The generously designed interior streets constitute a similar type of buffer zone. As we have seen they are supposed to provide, among others, a place for small children to play in safety. If those same activities were to take place in a private home, it would require an entrance space much larger than the 3m<sup>2</sup> of the Unités' apartments. The small size of storage space in the kitchen is compensated by the collective depot from which goods are delivered daily. Its use value corresponds to a small pantry. The collective dining provides space for residents to hold larger family dinners and allows parents to occasionally eat in private. Without a separate dining room, it is hard to imagine those same functions taking place within the apartments. To host 14 people, this space would need to be at least 13m<sup>2</sup> in size. The collective winter garden on the 3rd street provides space for larger informal gatherings during the day. If those were to take place in the apartment, the small living room would have to be extendable via a private winter garden. A double height space of 5m<sup>2</sup> would allow to host up to 8 people. The open-air theatre on the rooftop allows to have festivities with hundreds of people participating. The 6m<sup>2</sup> balcony of the apartments isn't even enough to host a solid birthday party. If packed, a terrace of 12m<sup>2</sup> would allow to host 24 guests. 3m<sup>2</sup> is the space necessary to wash and dry the clothing of a medium sized family. A private playground for up to four kids which allows for a comparable variety of activities would need to be at least 12m<sup>2</sup> in size. For allowing the inhabitants to be creative in their living space, as do the numerous clubs, the apartments would need to feature a separate workspace. The guestrooms on the 3rd street allow people to have guests overnight, despite the fact that the small size of their apartments does not allow them to accommodate additional people. If it we-



ren't for those guestrooms, the apartments would need to have their own guestroom. The gym on the roof is among the most remarkable facilities provided. A private space which allows people to do exercise regularly would need to be at least 9m<sup>2</sup> in size and 3m high. Contrary to the kids' bedroom, the one of the parents does not feature an outside space. In return, the collective sunroof provides a generous space for sunbathing, relaxing and looking at the landscape. A private terrace of comparable use value would be about 10m<sup>2</sup> in size.

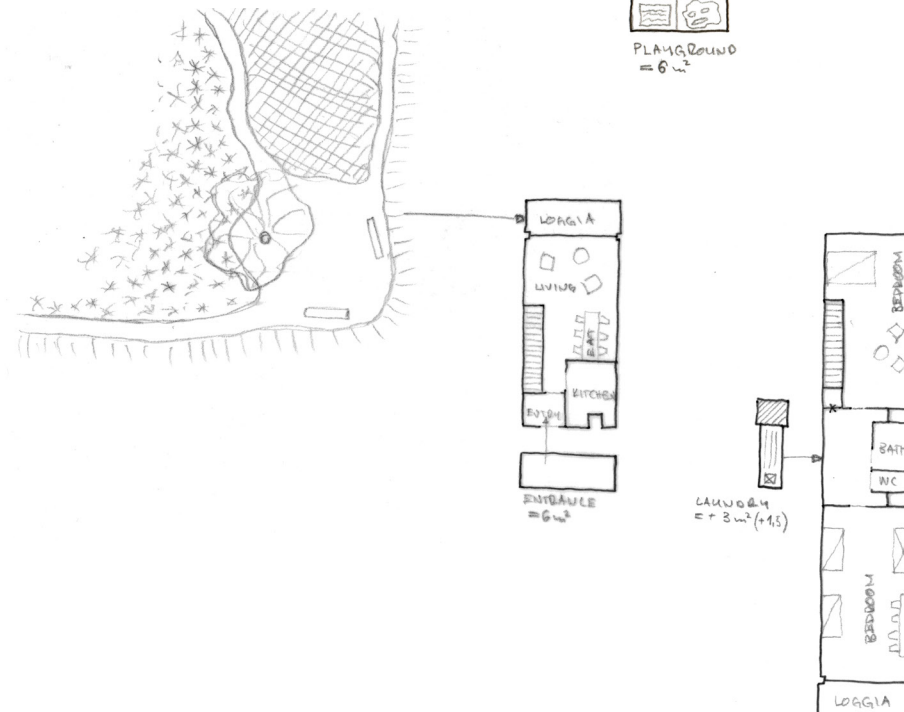
## REZE

As we have seen, the reception area of the entry hall is much smaller than in Marseille. In the reconstruction figured above, the corresponding area has therefore been reduced accordingly. The large freely accessible terrace on the rooftop has been reimagined as an additional terrace for the apartments. Given the comparably smaller size of the clubs, the proposed workspace has been reduced accordingly. The variety of activities provided by the private playground are comparable to the facilities on the rooftop.



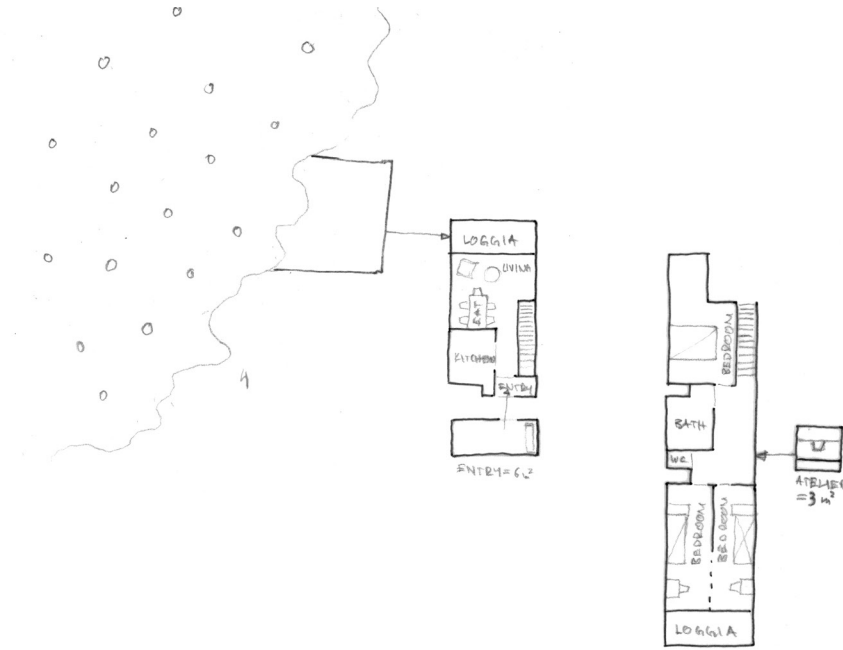
## BERLIN

As has been previously mentioned, the entry hall in Berlin provides little to no space for domestic activities. But given the comparably under-occupied street spaces, the size of the proposed entrance space is still comparable to Rezé. The remarkable qualities of the collective laundry room have been reinterpreted as an individual laundry facility at the scale of the apartment.



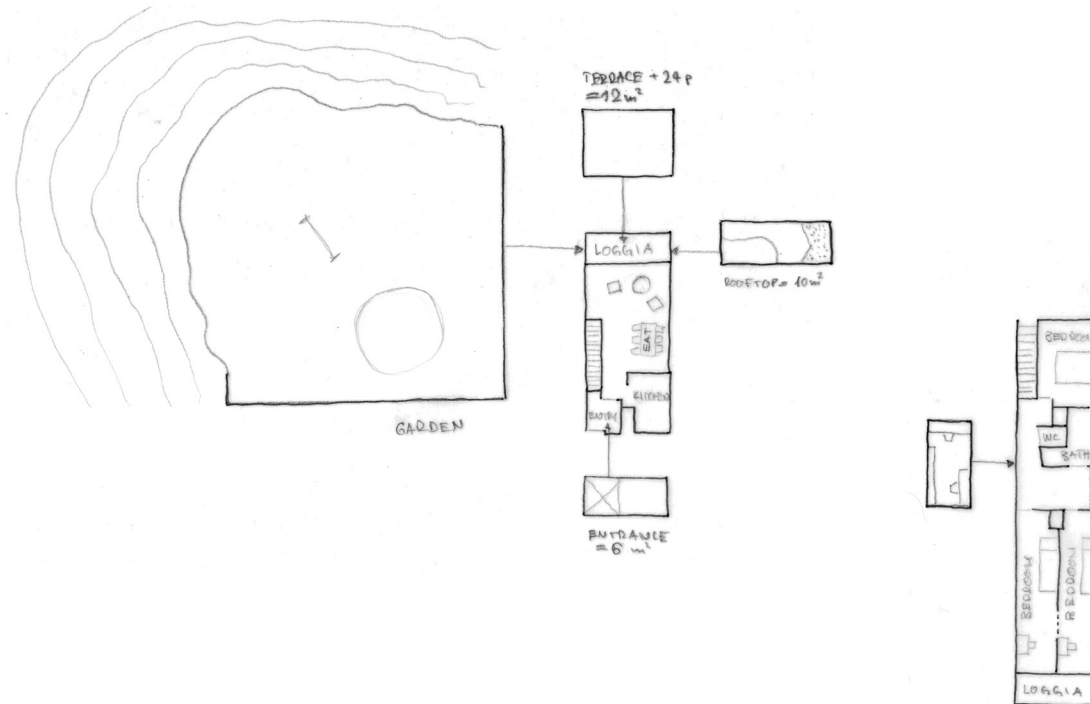
## BRIEY

Given their almost identical layout, the entry halls of Briey and Rezé have been attributed the same use value. The particularly small size of the clubs has been translated into an individual workspace of tiny proportions.



## FIRMINY

The entry hall in Firminy does not provide any seating. Its remarkable spatiality has nevertheless been recognized by suggesting a vestibule with a double height ceiling in front of the entrance. The open-air theatre has been attributed the same use value as the one in Marseille. As the roof terrace does not provide the privacy of the solarium in Marseille, it is reimagined as an additional collective terrace, with a small area for sunbathing next to a flowerpot. Given the additional clubs next to the northern staircase, Firminy provides considerably more space for creative activities than any other Unité. The additional use value thereby provided is recognized by proposing a bigger workspace.





MARSEILLE	Collective	Private	cost	benefit	profit
	Entry Hall + Streets	Entrance	11.63 m3	27.12 m3	15.5 m3 133%
	Laundry	Laundry	1.14 m3	6.78 m3	5.6 m3 497%
	Wintergarden	Wintergarden	2.79 m3	23.50 m3	20.7 m3 741%
	Depot	Reduit	1.75 m3	2.26 m3	0.5 m3 29%
	Dining	Dining Room	2.17 m3	29.38 m3	27.2 m3 1257%
			0.06 m2	3.00 m2	2.9 m2 4540%
	Guestrooms	Guestroom	1.43 m3	24.86 m3	23.4 m3 1640%
			0.79 m2	3.00 m2	2.2 m2 280%
	Gym	Gym	5.38 m3	27.00 m3	21.6 m3 402%
			3.56 m2		3.6 m2 -100%
	Open-Air Theatre	Terrace	1.74 m2	12.00 m2	10.3 m2 590%
	Sunroof	Solarium	0.86 m2	10.00 m2	9.1 m2 1062%
			0.08 m3		0.1 m3 -100%
	Playground	Playground	1.48 m2	12.00 m2	10.5 m2 711%
			0.08 m3		0.1 m3 -100%
	Clubs	Atelier	4.27 m3	11.30 m3	7.0 m3 165%
			<b>30.70 m3</b>	<b>152.20 m3</b>	<b>121.5 m3 396%</b>
			<b>8.57 m2</b>	<b>40.00 m2</b>	<b>31.4 m2 367%</b>

BERLIN	Collective	Private	cost	benefit	profit
	Entry Hall + Streets	Entrance	15.92 m3	15.00 m3	0.9 m3 -6%
	Laundry	Laundry	1.56 m3	7.50 m3	5.9 m3 381%
			0.1 m2	1.5 m2	1.4 m2 1718%
			<b>17.48 m3</b>	<b>22.50 m3</b>	<b>5.0 m3 29%</b>
			<b>0.1 m2</b>	<b>1.5 m2</b>	<b>1.4 m2 1718%</b>

BRIEY	Collective	Private	cost	benefit	profit
	Entry Hall + Streets	Entrance	10.20 m3	13.50 m3	3.3 m3 32%
	Clubs	Atelier	2.82 m3	6.78 m3	4.0 m3 140%
			<b>13.02 m3</b>	<b>20.28 m3</b>	<b>7.3 m3 56%</b>

FIRMINY	Collective	Private	cost	benefit	profit
	Entry Hall + Streets	Entrance	10.92 m3	17.51 m3	6.6 m3 60%
	Clubs	Atelier	6.40 m3	18.08 m3	11.7 m3 183%
	Open-Air Theatre	Terrace	0.60 m2	12.00 m2	11.4 m2 1905%
			0.12 m3	m3	0.1 m3 -100%
	Roof Terrace	Rooftop	0.83 m2	10.00 m2	9.2 m2 1105%
			<b>17.44 m3</b>	<b>35.59 m3</b>	<b>18.2 m3 104%</b>
			<b>1.43 m2</b>	<b>22.00 m2</b>	<b>20.6 m2 1441%</b>

REZE	Collective	Private	cost	benefit	profit
	Entry Hall + Streets	Entrance	10.95 m3	13.50 m3	2.6 m3 23%
	Clubs	Atelier	3.90 m3	9.04 m3	5.1 m3 132%
	Roof terrace	Terrace	1.10 m2	12.00 m2	10.9 m2 993%
	Playground	Playground	0.48 m2	6.00 m2	5.5 m2 1152%
			<b>14.84 m3</b>	<b>22.54 m3</b>	<b>7.7 m3 52%</b>
			<b>1.58 m2</b>	<b>18.00 m2</b>	<b>16.4 m2 1041%</b>

The cost/benefit analysis above compares the amount of space necessary for a certain type of use to be provided individually (benefit) - as determined by the virtual transformation of the apartments above- to the amount of space necessary to provide the same type of use collectively (cost) -as is the case in the realized projects. The difference between these numbers indicate the relative efficiency (profit) of a residential model organized as a community compared to one organized as an agglomeration of individual households. We can see that even the most modest additional individual facilities can easily add up to volumes and areas much larger than the ones provided by collective facilities. Among the collective spaces provided, the interior streets seem to be the least efficient. This is partly due to the fact that they are particularly dispersed within the entire building, so that they have to be compa-

rably over dimensioned, as people are always just able to make use of one specific part of them. In addition, the 50 % of their space which have been assumed to be provided in addition to their primary function as distributional elements might be a bit overstated. In the end of the day, it is hard to imagine an over 100 m long corridor serving a large number of apartments to be only 150 cm wide, even if it would theoretically be sufficient for people to pass by each other comfortably. However, it is fair to state that overall, the efficiency of collective space in providing additional use value is remarkable. In the following, a variety of possible explanations are elaborated. First it is to be noted, that many of the uses provided by the collective facilities are rather of occasional nature compared to the uses provided by the apartments. Such is the case for example for the collective dining room, the solariums, the

guestrooms, the gym or the (different types of) rooftops. This means that, if provided individually, such facilities will typically be under-occupied for most of the time. If organized collectively, however, it is possible to largely increase the use value per unit of space provided, under the condition that the different parties depending on the same facility are not too numerous and are sufficiently coordinated so that they do not obstruct each other. In other cases, the fact that multiple people might want to use the same facility at the same time is not conflicting, but rather increasing its use value. Such is the case for example for the playgrounds (for obvious reasons) or for the clubs, as the presence of people sharing the same interests and skills might further stimulate productivity. By taking advantage of such beneficial relationships, it seems like the living space provided by an Unité is more than

# EXPERIENCE

## MARSEILLE

During the first years after the buildings delivery, the facilities on the rooftop are at the core of collective life. Especially the big hall of the gym, which constitutes the Unité's largest interior space, is appreciated for its capacity to assemble the building's entire population. The collective use of this space includes a variety of activities which go far beyond its main function as a sports facility. General assemblies, weddings, midnight masses and sports tournaments are among the many activities taking place there. Consequently, the commercialization of its use since 1956 is largely regretted by the inhabitants, as they not only lose the free access to the sports facility but more importantly the space around which the collective life of the Unité had been organized. They also no longer had access to the sun terrace located on the roof of the gym's secondary facilities. It is in the aftermath of this loss of an important part of their collective space, that the inhabitants start to appropriate the different clubs of the building, in which they have installed - among others - a library, a cinematic space, a recreational club and a painting studio. All of the 9 spaces have been maintained ever since, and remain at the disposal of the inhabitants today. Some of the collective activities previously held in the gym, have been relocated to the collective winter garden on the third street. Until today, assemblies, concerts, conferences and other types of activities requiring more space than provided by the small clubs are regularly taking place there. Apart from that, the space has lost an important part of its function as a meeting place since the closure of most nearby shops, as a consequence of the newly constructed shopping mall across the street. Today, it is more frequented by tourists than by the Unité's residents. The ever-growing number of visitors are also increasingly conflicting the residents' use of the remaining facilities on the rooftop. Temporary divisions have therefore been installed on the rooftop to allow the undisturbed

use of its southern part containing the playground facilities. The nursery school is still in use and the playground remains highly frequented by the kids of the building. As people no longer have access to the sun roof, the southern part of the rooftop is used for a large number of outdoor activities, which include sunbathing, informal apéros and smaller festivities. The open-air theatre on the north side on the other hand is used in a similar way as the winter garden. If the weather is friendly, the space allows to host larger events. The sculptural ventilation shaft continues to provide an impressive scenery and the backwall of the stage can be used as projection screen. The daily delivery service of fresh goods has been abolished just few years after the inauguration. The depot has been attached to the adjacent super market which has taken on some of the depots' use value by offering residents a source of food within the building. The double height commercial facility which has existed since the very beginning, has closed its doors around a decade ago and is since rented out as a conference room. The laundry room has been privately managed since the very beginning. Residents were charged for the service, but still made frequent use of it since almost nobody owned a washing machine at the time. The dining and guestrooms have also never been exploited in a purely collective manner. They were privately managed from the start. During the earlier years, the bistro-like facility was frequented by inhabitants for similar purposes as the ones originally intended. Since the general upgrade of the building through a massive restoration campaign in the 90s, it has been transformed into an upper-class gastronomic restaurant and a night in the newly furnished bedrooms comes at a considerable charge. Since then the restaurant is almost exclusively frequented by outsiders. The hotel rooms on the other hand are still occasionally used by residents to accommodate guests. In 2010, the gym is sold to Ora-Ito, who has transformed it into a private art-space. Since then, the space has been in very good shape, however generally unoccupied except for the exhibitions taking place once a year. It is to be noted that despite no longer having any

sports facility at their disposal, the residents of the Unité are still regularly exercising together by using the large open areas on the rooftop. The third generation of kids in the building seems to have appropriated the first and second street of the building, where they are frequently playing together. In the beginning, the entry hall had mainly been appreciated as a reception area, with the main users of the seating facilities being elderly residents and people waiting to be picked up. Since the closure of most of the shops on the 3rd street, it has taken on some functions previously held by the winter garden, namely being the place of occasional meetings on your way to get groceries. The space is also used for the exhibitions organized by the residents' associations five times a year. The intraurban park surrounding the building is among the facilities least frequented by the inhabitants. Its affectation as a public park within the increasingly urbanized surroundings has made its appropriation as a domestic space more difficult. Its use as a playground or recreational area is more pronounced during hot summer days when its ample vegetation offers fresh shade.

When looking at the success of the collective spaces in Marseille one must also consider the comparably high social status of its inhabitants. Since the beginning it has housed 4 times more white-collar professionals and 8 times less blue-collar workers than the average of the city (census of 1954). The slow but continuous social increase of the population's social status has further been accelerated by the considerable price increases seen since the massive restoration campaign that took place in 1995. The relatively homogenous culturally educated population of the early years has been capable to rapidly appropriate the programmatically rich collective facilities. A neighborhood solidarity has been achieved by the collective organization of and participation in numerous social and cultural activities. The maintenance of the thereby achieved social stability has also been facilitated by the fact that the privatization of the previously state-owned apartments in 1954 has occurred very quickly after the

building's inauguration and without further insurrection by the inhabitants. The fact that the population has never faced any major social crises has certainly contributed to the maintenance of a great part of the collective space provided. Nevertheless, the fact that over the years privatization has been the cause of almost all the loss of collective space in the first major realization of a collective housing facility in a capitalist country has a bittersweet connotation to it.

## REZE-LES-NANTES

Despite the comparably slow populating of the buildings during the first years of its delivery, the innovative cooperative model has proven to be fertile soil for collective life. All inhabitants had exactly the same status, with the building and its beautiful park as their communal property. The organization of their collective use was even anticipated by the formation of the residents' association in 1953, well before the delivery of the building. Within the first three years, all the clubs have been appropriated and have been intensively used ever since. Among the initial programs installed are a library, a photography club, a youth club and a painting studio. Some of these programs remain unchanged to this day, while others have evolved with the changing needs and interests of the building's population. Another factor which helped to create a strong community among the residents was their social homogeneity. The building's early population primarily featured young families, most of whom could not afford the luxury to go on vacation or weekend trips. The beautiful park therefor served as a welcome alternative. It is the space in which most of the collective life is happening and thus the inhabitants are strongly committed to its maintenance. They appropriate it to a degree where they are actively involved in its adaption to their needs, manifested through the construction of a playground, for example. The rooftop on the other hand seems less central to collective life. The limited comfort offered by the sparsely equipped open spaces under the rough

climate of the Atlantic coast is certainly among the primary reasons for this. When the decision is taken in the 70s to have the rooftop no longer freely accessible – as a reaction to incidents of inappropriate use –, it is without further consequences on the collective life in the building. The forceful abolishment of the building's cooperative status in 1973, on the other hand, has led to the first major social crisis associated with the building. The residents' association managed to postpone the application of the 1971 law of Chalondon – which formally abolished cooperatives for social housing –, but in 1973 the residents were finally confronted with the choice of either becoming full owners of their apartments, ordinary social housing tenants or leaving the building altogether. The people most affected by this law were the ones that could neither afford to buy their apartment, nor qualified for social housing. The fear of a gradual destruction of neighborhood solidarity as a consequence of imminent confrontations within the newly divided population further contributed to the departure of around 40% of the buildings population during the years between 1972 and 1974. The long-term consequences, however, were less severe than expected, as much of the cooperative spirit has been maintained thanks to continuing engagement of the remaining 60% of the buildings population. Even today, the formally divided population remains spatially mixed and held together by the residents' association in which owners and tenants maintain an egalitarian status. Much is being done to assure the social cohesion of the increasingly diverse population. Meetings are organized when newcomers arrive to familiarize them with the collective life in the building. The costs of the collective facilities are kept in checks by consciously refraining from any sort of wage labor work and charging all households at the exact same rate. The amount of collective space available has since even been increased by the extension of the park from 2 to 6 hectares, which includes two pre-existing buildings which now host a series of collective spaces. The additional greenspace has been used to install, amongst other things, a collective barbecue facility

and a community garden.

The successful creation of a genuine community is also recognizable on the annual Heritage Day, when it is the residents who are leading visitors through the building and explain the working of its interior life. Even people who are no longer residing in the building regularly come back to visit old friends or show the place where they had grown up to their offspring. Contrary to Marseille, the costs of living in the Maison Radieuse of Rezé are in accordance with its surroundings. The qualities of the community life in the building are generally of greater importance to incomers than the reputation of its designer.

## BERLIN

Given Berlins general housing shortage at the time of the buildings delivery, it was populated very from the beginning. The population was made up of culturally educated middleclass (by taking advantage of the fact, that they could easily gain access to these housing units for they had unsteady income and could therefore easily demonstrate that they qualified for social housing): musicians, actors, politicians. The number of children grew from 120 to 300 within the first three years. The presence of children had a beneficial effect on community building. As the building was isolated from the city center, car sharing developed among the families to organize the children going to school. Even though there was no school located in the building itself, the common need of bringing children to school worked to bring together the individual parties inhabiting the building. The washhouse or laundry room was situated on the 18th floor when the building opened. It took over the function of a community space, much like the central square in a village. When it was moved to the ground floor in 1984, some of its value was lost. However, due to the suboptimal acoustic characteristics it did not offer a comfortable enough room to be used for relaxing and meeting up and was instead converted to host exhibitions and other cultural events. Even though many children were present, the park was not open for

playing, and the youth center was used for military purposes, housing some British editors, after having served as a construction office for the builders working to construct the unit. In 1979 an investor named Benzko bought the building and the social housing unit was divided into 550 joint ownership apartments. The tenants were unhappy about the new development and felt that Benzko was conducting property speculation. He did not show respect for neither the conceptual nor the spatial qualities of the estate and restructured the apartments to be of a more zeitgeisty style in order to have increase their market value. The entrance hall, as well as the interior streets were restructured, estranging them from the intention of the initial conception by completely destroying the color scheme that was so defining of the unit's identity. The residents thus were faced with a decision, either they could leave the apartment and the building they call home, or they would have to buy the apartment they were living in. The external force pressuring them to take that decision made the residents feel unwelcome, and many of them did not know how to respond to such a threatening situation. The new owner of the housing block did not seem to pay much attention to the problems and interests of the residents. Even though they were offered an arguably good price for their apartment and, thanks to the tenant protection's effort, could continue living under the same conditions for at least seven more years, many of them were unsure if they wanted to stay. Many of the residents decided to leave and only a few apartments were sold. All apartments went through complete restructuring with the view of fitting-out the premises to enhance their chances of being bought. Nevertheless, the common enemy impersonated by Benzko led to the formation organized resistance by the residents. They formed an association and entered into contact with residents of other units and actively worked on protecting the building and its functions. By joining forces with other residents they established an international network, legitimating their claims for protecting and restructuring the building. This made it possible to regain some of the qualities that had been

lost through the restructuring, and even partly achieved to restore the entrance hall and the interior streets to their original conditions. However, the fronts between the residents and the investor hardened further, leaving Benzko with a total number of 120 apartments that he failed to sell. In 2009 he went bankrupt and had to file for insolvency. The tenants association invested itself heavily amongst the residents in order to convince them to buy their apartments and thus bring back some stability to the neighborhood's community. Some of the residents were persuaded, however, it was not enough to entirely prevent some degree of gentrification. The current community of residents is heterogeneous, ranging from the blue-collar worker to the Russian millionaire, but as everyone has an equal part in the discussions regarding the life in the community, social difficulties are dealt with in a most efficient manner. The building's composition and spatial concept allows for a positive effect on community life; the common access through the interior streets and entry hall lead to increased social control, which makes living among many individuals more convivial and gives everyone an equal degree of responsibility. The majority of potential social problems can be circumvented as everybody knows everybody else and each party has a part in the functioning of the community they live in. The increased involvement of residents has led to re-appropriation of some of the collective space. The collective laundry room on the ground floor for example, which is still in use, has been reorganized to serve as a community space. Through the creation of a small library, organizing movie nights, providing seating areas, the room was restructured to a sort of common living room. Since 2009 the building in the park is used as a day care center, however, it failed to build a lasting relation with the rest of the building, as of today only 35 children are among the residents of the unit. Otherwise, the park is well used and has been partitioned into space for dog owners on one side, and space available for children to play on the other side. The entrance hall was also rearranged and furnished with benches for sitting and meeting up. There have also

been efforts by the residents for reactivating the former laundry room as a community space, not least because of the newly emerged consciousness of the globally accepted value of these housing units. The only reason this reactivation is stalled, as is so often the issue, are financial constraints. The retail areas that are situated at the ground floor level, and where once the shops for the residents had their place, have also been contemplated for reactivation as community spaces for the residents. However, the ownership structure makes it hard to take back these spaces that had also seen harsh restructuring through the investor. It is nevertheless a good sign that even residents that have moved to the building in recent years and have not been there from the beginning, seem to have developed a deeper understanding of the values these community spaces have on them and the community they are a part of.

## BRIEY-EN-FORET

The original population after the buildings delivery in 1961 is socially diverse. It includes many workers of the region's dominant mining sector, lower middle-class professionals - among them the city's future mayor Guy Vattier - and a delegation of American soldiers. In 1963 the mass redundancies within the mining sector cause many workers to leave the region, which leads to numerous empty apartments in the building. With the departure of the American delegation in 1966, 60 additional apartments become empty at once. To counteract the growing number of vacancies, the office for social housing starts to be less strict in the attribution of apartments. The consequences being an increasing amount of unpaid rents and deteriorations of the collective spaces. In 1965, the management of the building is passed from the office of collective housing in Briey to the one in Meurthe-et-Moselle, which accepts the task of managing the deficit-stricken building without further enthusiasm. The project to build a shopping mall on the site of the building to counter the much-contested isolation and insufficient

equipment of the area is abandoned. In 1971, the increasingly frustrated residents are calling to the municipality for help. However, the ambitious project for the construction of a sociocultural center presented in 1972 by the young municipal consultant Guy Vattier will also remain in the drawers. The absence of educational and cultural facilities and the further accelerating crisis of the mining sector pave a sinister path for the Unité. Since 1980, all maintenance is halted and in 1982 the decision is taken by the office for social housing of Meurthe-et-Moselle to disaffect the building altogether. The municipality has pronounced itself against the decision and is arguing for a rehabilitation. The office for social housing accepts the proposal under the condition that the state contributes to its costs. The state funds have not been given and the building is closed down in 1984 and the remaining 144 families were forced to leave. In the following years, Guy Vattier, the city's newly elected mayor launches a rehabilitation campaign to save the building from its imminent destruction by making it an affair of national importance. He makes use of its prominent author by getting personalities and institutions like Claudius Petit, André Wogensky and the Fondation le Corbusier involved. The building is finally sold by OPAC, its previous owner to the hospital Maillot, which has Guy Vattier as a board member for the symbolic price of one franc (whereas the accumulated debt is considerably more important at 13 million francs). The building is entirely refurbished to host the nursing school of the hospital on the first 6 levels of its northern part. The rest of the apartments are sold to individual buyers. The first residents arrive in 1988, two years after which the building is fully populated. In the localities on the first street, an ambitious association has been created. The facility called Association de la Première Rue, the organization of which started in 1989 on the initiative of various regional and local actors, is realized in 1991. Since it has hosted a number of cultural and educational activities, some of which were of remarkable success and have even gained international recognition.

## FIRMINY

The original population of the Unité is divided into two camps. On one side, there are the applicants for social housing indifferent to the concept of collective housing, which are unsatisfied with the unconventional configuration of the apartments and the Unités isolation from the city. On the other side, the pioneers of the 68s for whom the building provides a fertile soil for the sociopolitical experiment of a new, inherently collective, way of life. The tenant's organization, created in 1968, was the first of its kind in the entire field of social housing in Firminy. Since the beginning it has been in charge of the collective life in the building. Right after its creation, it has demanded three clubs to be opened for collective use by the inhabitant. The collective life in the building has been flourishing ever since(?). The number of clubs has increased to a total of 12 within the first 4 years and the rooftop was freely accessible and actively used. The large nursery school on the top of the building constituted the second pillar of the community. It facilitated social relations among kids and parents. The kids which were growing up in the Unité at the time were known amongst all residents and therefore enjoyed the liberty to freely move within the ample collective spaces provided, as they were always in eyesight of the community. The electoral victory of the communist party in the municipal council's election of 1971 was the beginning of a long-lasting tension between the local authorities and the Unités residents, which, as social housing recipients, were at their mercy. The dynamic life in the Unité was a thorn in the municipality's eye for several reasons. First, because the construction of a large number of social units in Firminy Vert did not work in favor of its constituents, the homeowners and merchants of Firminy. Second, the realizations by le Corbusier were seen as central parts in the legacy of Claudius Petit a political predecessor, and a long-time ally of the architect and a social housing pioneer. And lastly, because the Unité was seen as a hatchery for militants because of the vivid engagement of its inhabitants in the social

project of collective life in a largely self-reliant community. The municipality's strategy to deal with the problem they saw in the Unité was one of negative demonstration and progressive isolation. The maintenance was kept at a minimum and funding for the collective spaces was eliminated in succession of Chalondons law of 1971. The massive under-occupation of Firminy's social housing estates as consequence of the crisis in Firminys metal industry sector, has led the municipality to close down the northern half of the building in 1983. Despite being the least under-occupied social housing complex in Firminy, the pretext of heating cost savings was used to forcefully resettle residents of the northern apartments on the southern side. The interior streets were walled up in the middle. As if this wasn't enough already, the keys for the rooftop were confiscated and its access prohibited. The resident's massive mobilization against the forceful interventions on their living space has brought them even closer together. Under the widespread unemployment at the time and the absence of appropriate social services, neighborhood solidarity was more important than ever. It was at that time, that the associations were also more active than ever. The clubs were intensively used for various types of activities and additional collective space was obtained by appropriating apartments for collective use. The hard core of inhabitants remained in the Unité until the construction works in the 1990s caused some of them to leave. In 1995, rumors of an eventual closure of the nursery school on the occasion of its planned refurbishment had made the tour among the activists in the building. They felt insured however by the fact that they had legal assurance that such an operation could not happen against the will of the concerned parents. The happenings of Friday 13th in the November of 1998 proved them wrong. They were informed in the early morning that the school was to be closed down by the end of the courses. The members of the association were taken by surprise and immediately decided not to accept the municipality's decision which was justified as a delayed application of the 1967 law for high rise buildings, which demands the

presence of security personal and a 24 h guardian service at the entrance for high-rise buildings with rooftop facilities. On the initiative of the tenant's association, around forty parents occupy the school as a response to the threat of its imminent closure. They managed to maintain its activity until the end of the school year. The closure of the nursery school constituted a loss of an important motor of collective life and is still strongly regretted today by the buildings longtime inhabitants. In 2005, all of the 20 clubs are occupied. Around the same time, the refurbishment of the strongly deteriorated northern part is completed. It had been financed by a number of private investors. The apartments were sold as private property and many of them have been enlarged by joining multiple apartments together, in order to make them more attractive to a more affluent clientele. The northern part has since been repopulated and the social division between owners and tenants remains moderate, which has been facilitated by their collective representation through what is now called the resident's association. After an absence of seven years, the communist party regained municipal rule in 2008. Among its first actions in the Unité is the initiation of an "inspection" of the clubs' activities. The result of this inspection was the imminent closure of 18 of the 20 spaces, with the justification of inappropriate activities taking place in them. Around ¼ of them has since been privatized while the rest remains sealed to this day. During my visit I witnessed some occasional meetings taking place in the street spaces. Despite being formally prohibited you will occasionally see kids playing in the streets. Most of the collective life seemed to take place on the ground floor. On a Saturday, you can see kids playing between the pilotis or toddlers racing their pushbikes. Family picnics are held on the concrete benches next to the entrance and some elderly people chat while seated in the modestly furnished southern part of the pilotis. At the center of these activities is the heavily frequented entrance hall, from which you have perfect oversight of the adjacent northern and southern piloti spaces. It is a generous meeting space in which you are guaranteed to

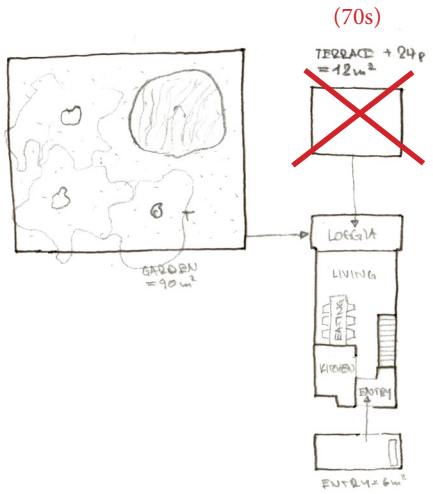
find company quickly. The pilotis and entry hall are also used for a variety of events and exhibitions, taking place throughout the year.

The residents of Firminy have found their home to be the battleground of age old political rivalries. Over the years they have lost almost all the collective space initially at their disposal except for the areas which are either not spatially contained like the surroundings or the pilotis, or the ones not physically separable from the basic functioning of the building, like the entry hall or the interior streets. The community remains nevertheless bonded but the spirit of the earlier years is slowly fading with the decreasing number of first hand witnesses. The remaining activists of the building's turbulent past together with the more recent members of the residents' association are continuing their efforts of keeping the collectivity alive. Despite the fact that many of the newcomers are not getting involved in their doings, the hopes for regaining space for the collectivity remain intact. The newly compulsory pre-schooling has revived the dreams of someday reopening the nursery school. After all, it seems reasonable to expect the possibility of maintaining the original use of a building which is officially recognized as a cultural heritage of global importance, especially when the social need for it is still very much in place.

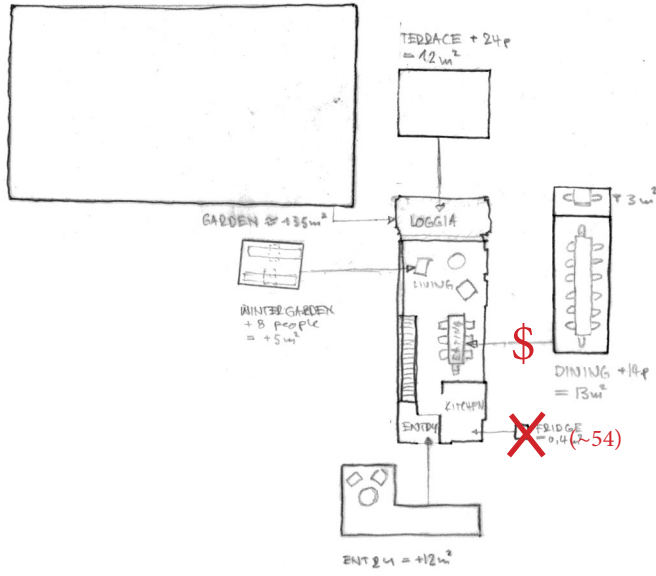
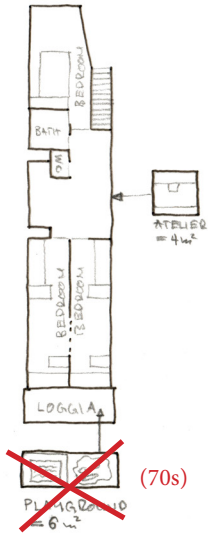
## CONCLUSION

My interest devoted to the five Unités d'Habitation in this essay, has been aimed at exploring the sustainability of collective space within residential structures. As we have seen, these buildings are based on a residential model which seeks for the provision of ample collective facilities by keeping the individual units comparably small. The initial hypothesis has been, that these cutbacks would be more than compensated by the additional use value provided through the collective spaces. Three chapters have therefor been devoted to the comparison between the sacrifice of individual living space - for the creation of additional domestic space in form of collective facilities -, and the thereby achieved qualitative improvement of the residents living space. This essentially theoretical form of analysis has largely confirmed my hypothesis. The determined use value of the collective spaces - understood as the entirety of domestic activities allowed for - showed to be largely superior to the corresponding cutbacks of the private units. The following analysis of the residents' collective histories however showed that the formation of a socially sustainable community depends on more than the mere provision of collective space. In France, the constitutional right to assemble constituted the legal basis for the formation of numerous associations around which the collective life within the Unités has been organized. Nevertheless, different types of undesired developments in the Unités histories - often related to external influences and individual interests of actors outside the residing community - led to a gradual reduction of collective space in almost all the cases observed. The causes for these reductions have come in different forms and shapes, depending on the considerably differing social, economic, political and geographical context of the buildings. Ranging from the economically motivated privatizations in the affluent context of Marseille to the politically motivated aggressions towards the socially marginalized population in Firminy. It should also be noted that the quasi-absence of collective facilities in Briey has led to

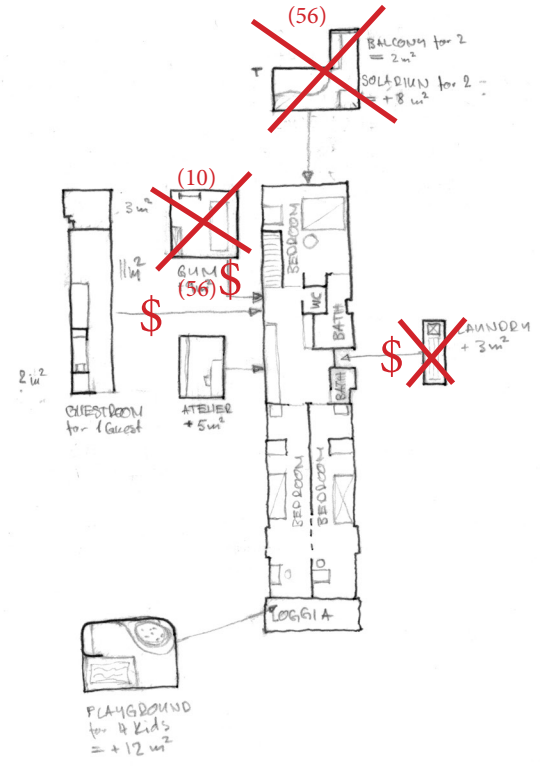
operational difficulties of drastic proportions, which culminated in the Unités imminent destruction which was finally avoided thanks to the vivid personal engagement of a former resident. The pronounced identification of the inhabitants with their living space is a common feature of all the five structures observed. Their collective engagement in the maintenance of their living space and mobilization against its destruction has led to the creation of an internationally connected and largely self-sufficient organizational framework. Since 2011 the communities of the five Unités are formally connected through the Fédération Européenne des Associations d'Habitants des Unités d'Habitation de Le Corbusier. The international recognition of le Corbusiers architectural legacy has certainly played its role in the increased national and international attention towards the fate of the Unités. Since the formal recognition of the five Unités as historic monuments of global importance, its residents are provided a certain protection from material deterioration of their living space. But the cost intensive rehabilitation campaigns initiated by the Unités growing recognition have some negative side effects. Many of them have experienced some degree of gentrification and the growing number of - sometimes a little too curious - tourists is increasingly affecting the Unités intimate inner life. During my research on the animated histories of the five Unités d'Habitation I have sometimes felt frustrated by the fact that most of the protections put in place are exclusively aimed at conserving the buildings physical qualities. Given the important social dimension in the buildings conception, this one-sided form of protection seems insufficient for the preservation of the Unités essential qualities. The considerable amount of resources mobilized for restoring the buildings to their original material condition is simply not met by a comparable public effort to conserve their original use.



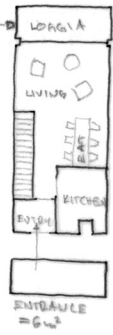
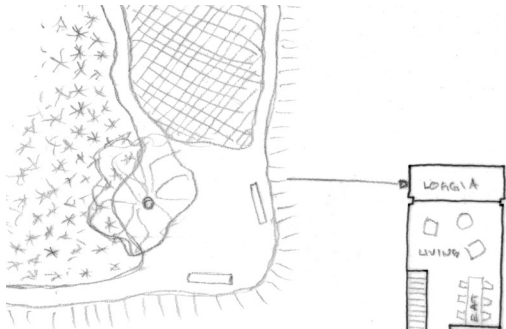
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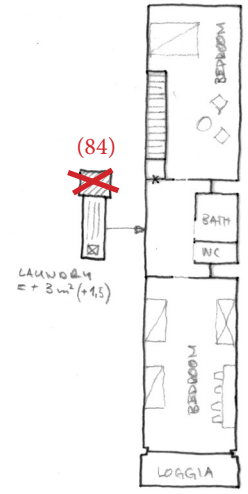
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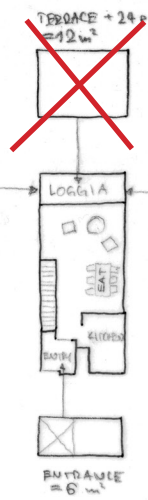
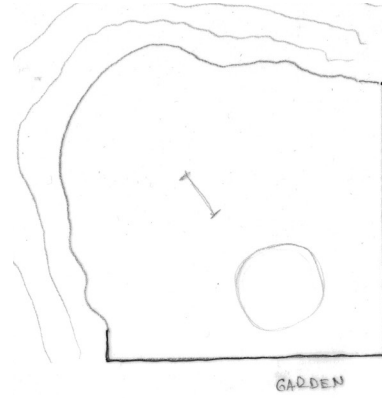
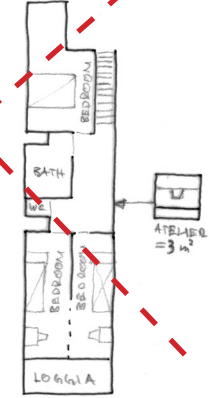
BERLIN



BRIEY



(84-88)



(83)

FIRMINY



# SOURCES

## ILLUSTRATIONS

Figure 1: Photo R. Henrard / FLC L1-13-6

Figure 2: Photo Gaston / FLC L2-20-35

Figure 3: <http://www.corbusierhaus.org/> 24.06.2018

Figure 4: Photo Mazo / FLC L1-6-88

Figure 5: <http://www.projets-architecte-urbanisme.fr/>

Figure 6,7,12,13: Le Corbusier: Oeuvre Complète 1946-1952, Zürich, Artemis, 1976

Figure 8,10,11,14: Sbriglio, Jacques: Le Corbusier - l'unité d'habitation de Marseille. Marseille, Editions Parenthèses, 1992

Figure 9: <http://www.boukoba-architecte.com/projets/hoteliers/citeradiouse-lecorbusier-marseille/> 24.06.2018

Figure 15,37: <http://remonterletemps.ign.fr/> 20.05.2018

Figure 16,17,20,26,27: Le Corbusier et son atelier rue de Sèvres 35: Oeuvre complète 1952-1957. Zürich, Artemis, 1977

Figure 18,19: FLC1671

Figure 21: FLC1606

Figure 22,30: Le Corbusier et son atelier rue de Sèvres 35: Oeuvre complète 1957-1965. Zürich, Artemis, 1977

Figure 23, 24,25: Cors, Martin: Le Corbusier's Wohneinheit „Typ Berlin“. Berlin, Jovis, 2008

Figure 28: Abram, Joseph: Le Corbusier à Briey, Paris, Jean Michel Place, 2006

Figure 31: FLC1712

Figure 34: Le Corbusier: Les Dernières / Volume 8 des Oeuvres complètes. Zürich, Artemis, 1973

Figure 35,36: FLC17170

Figures without index: Mirko Bölsterli

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## INTERVIEWS

In addition to the consultation of written and graphic documentation, a number of interviews were conducted with first hand witnesses of the life in the different Unités.

Dr. Hans Roth,

Resident of the Unité d'Habitation in Berlin since 1995 and current director of the Förderverein Corbusierhaus Berlin e.V.

Fabrice Brault,

Resident of the Unité d'Habitation in Firminy and current president of the residents' association.

Gisèle Moreau,

Resident of the Unité d'Habitation in Marseille since the very beginning.

Martine Vittu,

Resident of the Unité d'Habitation in Rezé since 1956 and former president of the Fédération Européenne des Associations d'Habitants des Unités d'Habitation de Le Corbusier.

Yvan Mettaud,

Resident of the Unité d'Habitation in Firminy since 1980, longtime member of the residents association and current president of the Fédération Européenne des Associations d'Habitants des Unités d'Habitation de Le Corbusier.