barcelona (ES)

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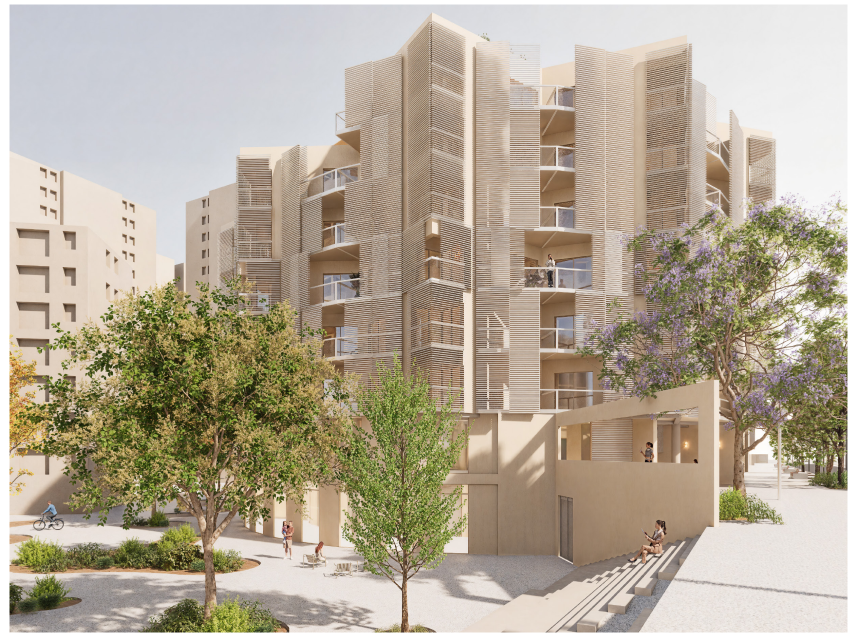
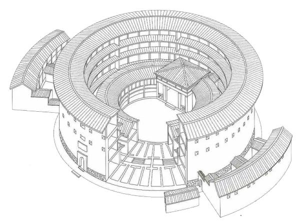
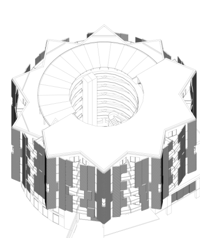




traditional "tulou"
chinese fortificated housing building



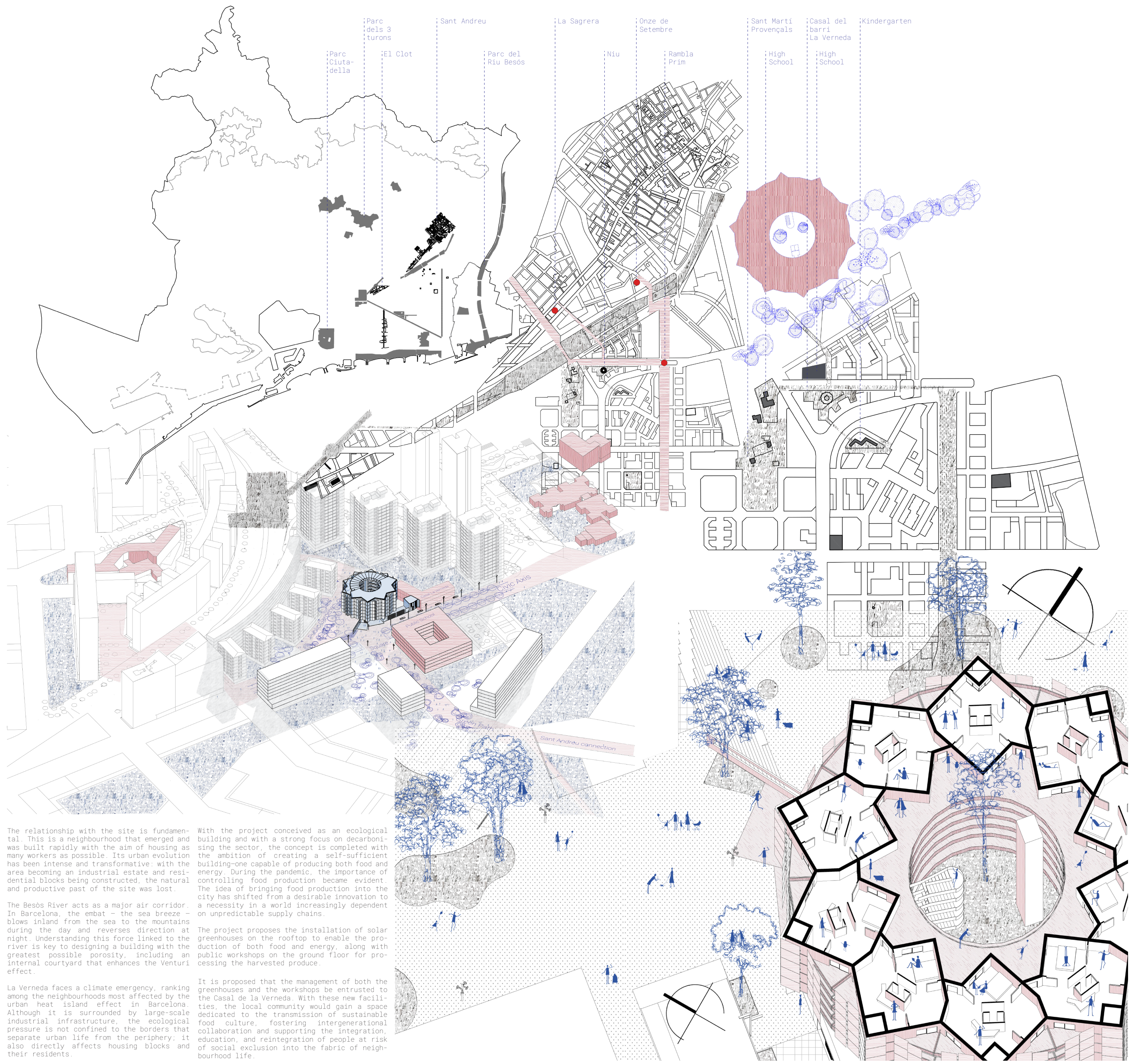
social housing
same form but more more permeable

To protect themselves from bandits who attacked small rural communities, Hakka peasants in the southern province of Fujian began building the Tulou in the 12th century. These were characterised by a closed structure, generally circular in shape. In the traditional Tulou, rooms are arranged in a regular pattern around the perimeter, leaving the central space open to facilitate social activities. This layout is reminiscent of social housing blocks, making them well-suited for accommodating new residents.

Unlike fortified dwellings, this type of building is designed to be porous and accessible, allowing for visual connections between the interior and exterior at ground level, where public facilities interact and communicate with the immediate surroundings. The façade, made up of adjustable louvre screens, together with the inward-facing orientation of communal spaces, reflects the building's autonomous yet permeable configuration. This helps to filter light and protect against external solar radiation.

The project is located at the intersection of two urban conditions: the transformation of the area from industrial fabric to residential use, and a 1960s housing estate lacking permeable, high-quality public space. The building and the urban space it generates aim to act as a hinge between these two fabrics. At the same time, it seeks to activate a multidisciplinary, intergenerational meeting point where current and future communities can coexist.

The project promotes the urban regeneration of the neighbourhood by establishing a point of connection between different contexts and activating multiple scales through a strategy of self-sufficient community. This strategy considers social cohesion, the urban substrate, biodiversity, and food sovereignty — and it requires the involvement of all affected stakeholders to ensure balanced and healthy coexistence.


Parc Ciutadella
Parc dels 3 turons
El Clot
Sant Andreu
Parc del Riu Besós
La Sagrera
Niu
Onze de Setembre
Rambla Prim
Sant Martí Provençals
High School
Casal del barri La Verneda
High School
Kindergarten
Civic Axis
Public School
Square
Sant Andreu connection

The relationship with the site is fundamental. This is a neighbourhood that emerged and was built rapidly with the aim of housing as many workers as possible. Its urban evolution has been intense and transformative: with the area becoming an industrial estate and residential blocks being constructed, the natural and productive past of the site was lost.

The Besòs River acts as a major air corridor. In Barcelona, the embat — the sea breeze — blows inland from the sea to the mountains during the day and reverses direction at night. Understanding this force linked to the river is key to designing a building with the greatest possible porosity, including an internal courtyard that enhances the Venturi effect.

La Verneda faces a climate emergency, ranking among the neighbourhoods most affected by the urban heat island effect in Barcelona. Although it is surrounded by large-scale industrial infrastructure, the ecological pressure is not confined to the borders that separate urban life from the periphery; it also directly affects housing blocks and their residents.

With the project conceived as an ecological building and with a strong focus on decarbonising the sector, the concept is completed with the ambition of creating a self-sufficient building—one capable of producing both food and energy. During the pandemic, the importance of controlling food production became evident. The idea of bringing food production into the city has shifted from a desirable innovation to a necessity in a world increasingly dependent on unpredictable supply chains.

The project proposes the installation of solar greenhouses on the rooftop to enable the production of both food and energy, along with public workshops on the ground floor for processing the harvested produce.

It is proposed that the management of both the greenhouses and the workshops be entrusted to the Casal de la Verneda. With these new facilities, the local community would gain a space dedicated to the transmission of sustainable food culture, fostering intergenerational collaboration and supporting the integration, education, and reintegration of people at risk of social exclusion into the fabric of neighbourhood life.

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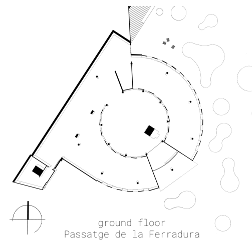
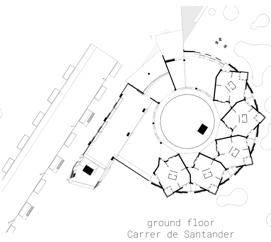
view of the kitchen-dining area with a room in the background
keeping the sliding doors open always allows for a view of two balconies.

view of the metal staircase and its connection to the different residential floors.
the corridors have semi-private spaces that encourage more social use.

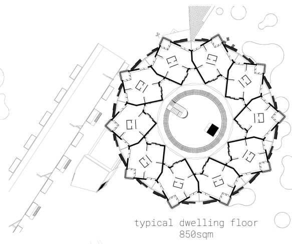
view looking in from the entrance
featuring a piece of furniture that transforms, shifting from a bar to the kitchen



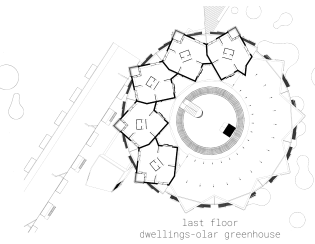
ground floor
Passatge de la Ferradura



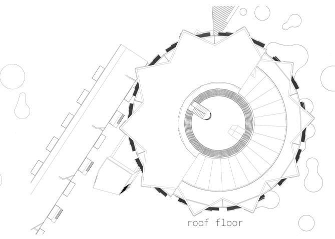
ground floor
Carrer de Santander



typical dwelling floor
850sqm



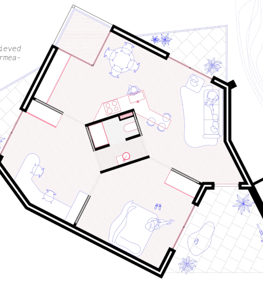
last floor
dwellings-olar greenhouse

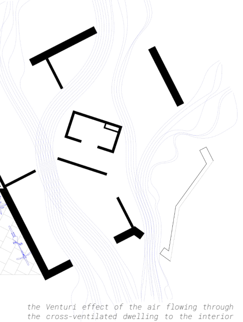


roof floor

typical dwelling
of 60 square metres

circulation within the dwelling is achieved without corridors, allowing for maximum permeability and versatility





the Venturi effect of the air flowing through the cross-ventilated dwelling to the interior courtyard allows for natural air renewal

This is a building with a constructed area of 5,810 m² and a site footprint of 950 m². With a ground floor and six upper storeys, the building accommodates 60 dwellings across six levels, each measuring 60 m², designed with non-hierarchical spaces to allow for flexible use over time.

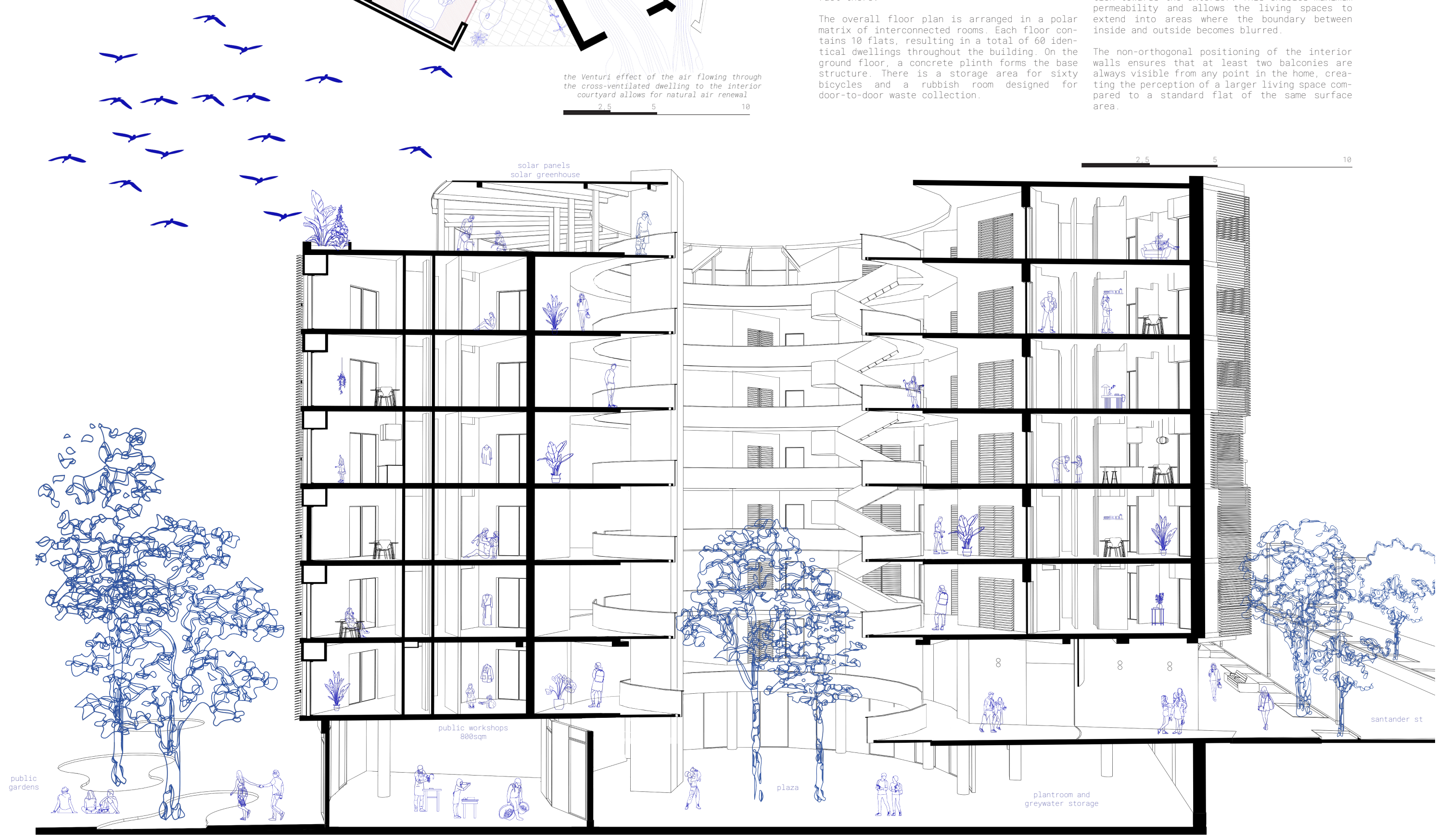
The construction is organised around a central courtyard that connects a series of intermediate spaces. On the ground floor, an open portico facing the city announces the main entrance and moderates the transition between the public space and the communal courtyard, which functions as a small plaza for the residents. Instead of providing direct and independent access from the façade to each entrance hall, the vertical circulation core is located at the centre of this plaza, encouraging residents to meet and interact there.

The overall floor plan is arranged in a polar matrix of interconnected rooms. Each floor contains 10 flats, resulting in a total of 60 identical dwellings throughout the building. On the ground floor, a concrete plinth forms the base structure. There is a storage area for sixty bicycles and a rubbish room designed for door-to-door waste collection.

Using a building morphology that combines porosity and an interior courtyard, and taking air flow into account when designing the layout of the dwellings, an independent, centralised core has been positioned. This allows for dual circulation, connecting the open-plan kitchen and living room with the bedrooms. The entire layout is organised around the central bathroom core and the movement of air. At the heart of the home, the bathroom is positioned as the central nucleus, around which the rooms and circulation routes are arranged, acting as a distributor element that eliminates the need for corridors. The open-plan kitchen, located in the central room, makes domestic tasks visible and helps to challenge traditional gender roles.

Each dwelling includes an internal terrace and three balconies, each with a different orientation towards the exterior. This enables maximum permeability and allows the living spaces to extend into areas where the boundary between inside and outside becomes blurred.

The non-orthogonal positioning of the interior walls ensures that at least two balconies are always visible from any point in the home, creating the perception of a larger living space compared to a standard flat of the same surface area.


solar panels
solar greenhouse
public workshops
800sqm
public gardens
plaza
plantroom and
greywater storage
santander st

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barcelona (ES)

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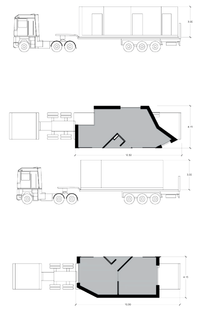
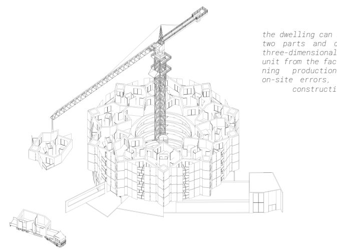
The rigidity of a game board allows for the free will of play. Similarly, modularity brings flexibility to the building, aligning with the unpredictability of life.

3D prefabricated modules, manufactured off-site in a workshop, are assembled dry on-site. This approach optimises time, costs, materials, and sustainability—an added value in line with architecture's core objective: to provide high-quality housing for its inhabitants.

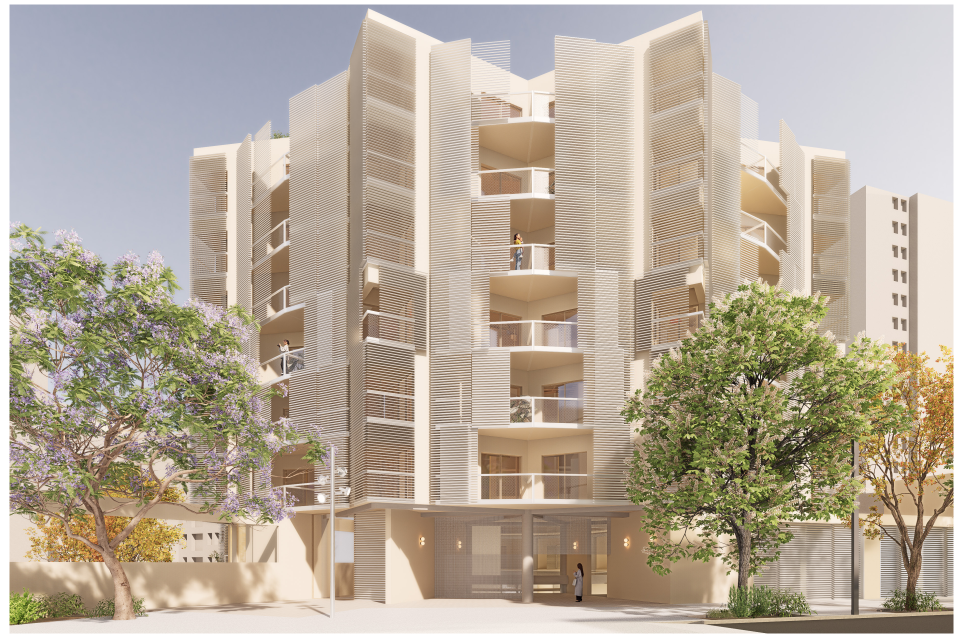
The ability to fully industrialise the residential component allows construction timelines to be better managed. The entire in-situ concrete structure (ground floor and basement level) can be executed simultaneously with the off-site production of the dwellings. It also enables tighter quality control and helps reduce carbon footprint, material waste, and processes that produce high levels of carbon monoxide.

Off-site production also removes much of the noise, dust, and heavy vehicle traffic typically associated with construction, which is especially beneficial in a well-established residential neighbourhood. The negative impact is significantly reduced.





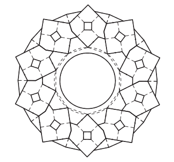
the dwelling can be divided into two parts and delivered as a three-dimensional prefabricated unit from the factory, streamlining production, eliminating on-site errors, and shortening construction times



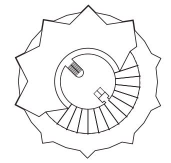
"Niu" is the Catalan word for nest. Much like a nest, a porous and circular framework generates a space to be inhabited — a place of refuge and interaction among residents.

The building is divided into horizontal platforms that include terraces and voids, creating a more dynamic and porous form. The dwellings are composed of identical modules stacked vertically. Circulation is organised around a staircase and a lift core that lead to concentric walkways, forming the building's promenade, where architecture is experienced through movement.

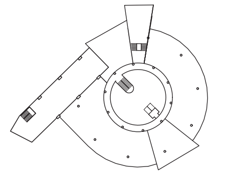
- The plinth, which includes the basement and ground floor, is designed to foster social interaction within the community. It houses public facilities (obradors públics, or shared workshops) and the residents' bicycle parking area.
- The residential zone, from ground/first floor to the fifth/sixth floor.
- The rooftop, which offers a semi-outdoor terrace and greenhouse space, where food can be grown hydroponically. These crops are intended to be processed in the public workshops on the ground floor.



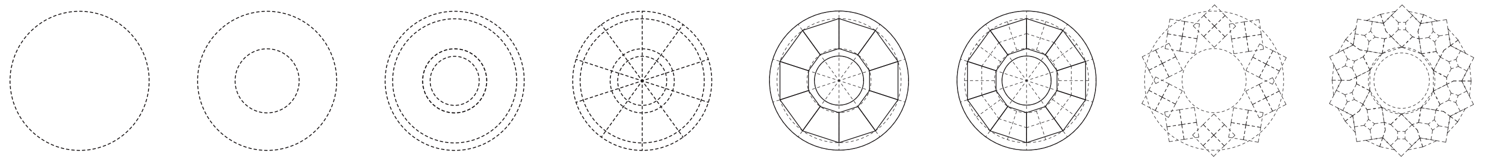
typical floor

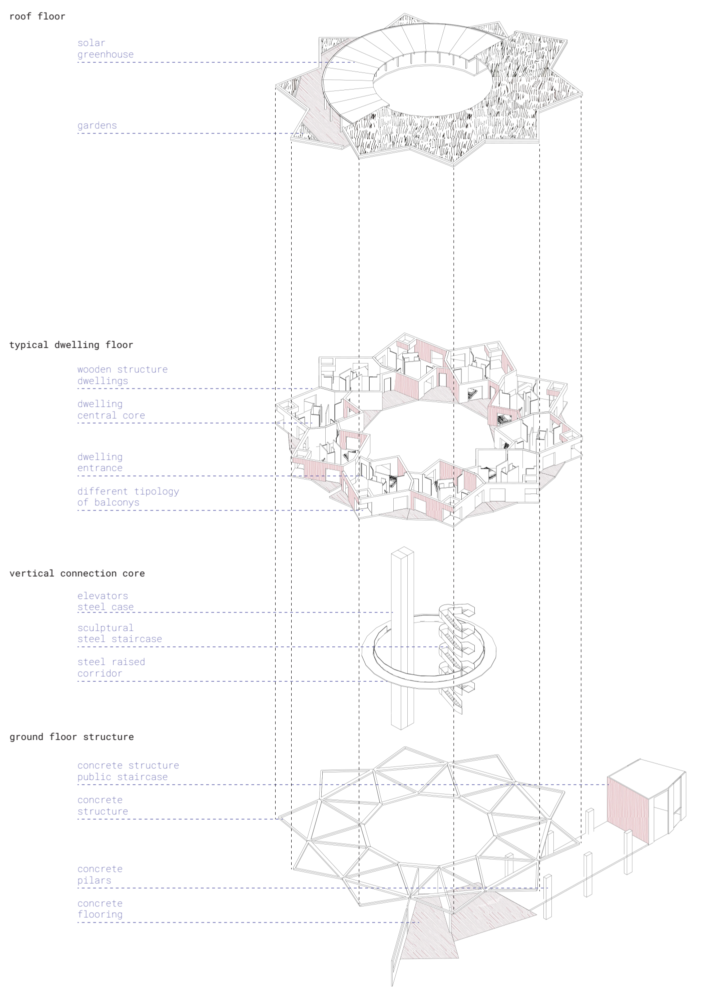


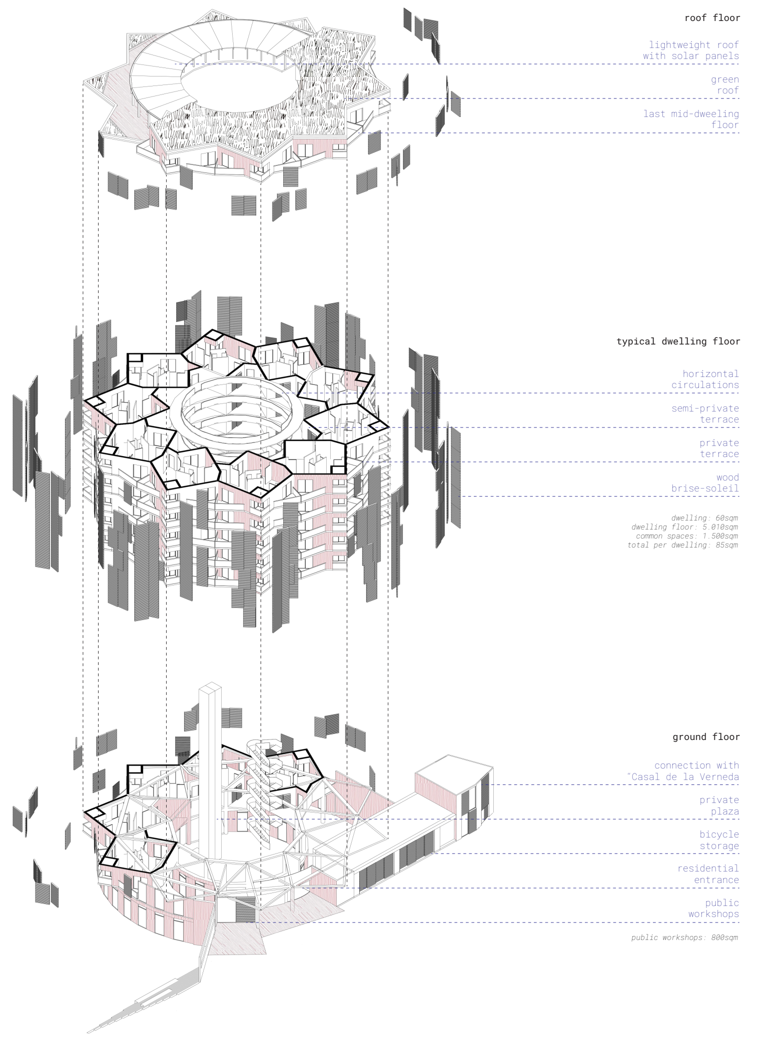
roof floor



ground floor


aiming for maximum space optimisation
maximum dwelling depth and central courtyard
double skin circulations
partitions
inner façade
room partitions
triple orientation four balconies
central core


roof floor
solar greenhouse
gardens
typical dwelling floor
wooden structure dwellings
dwelling central core
dwelling entrance
different tipology of balconys
vertical connection core
elevators steel case
sculptural steel staircase
steel raised corridor
ground floor structure
concrete structure public staircase
concrete structure
concrete pilars
concrete flooring


roof floor
lightweight roof with solar panels
green roof
last mid-dweeling floor
typical dwelling floor
horizontal circulations
semi-private terrace
private terrace
wood brise-soleil
dwelling: 60sqm
dwelling floor: 5.010sqm
common spaces: 1.500sqm
total per dwelling: 85sqm
ground floor
connection with "Casal de la Verneda
private plaza
bicycle storage
residential entrance
public workshops
public workshops: 800sqm