Vertical modular neighborhood; Hardau Zürich

Vertical Neighborhood

Introduction

Ces dernières décennies ont connu d'importants changements sociétaux, particulièrement dans la composition des ménages qui perdent de leurs cohésions, se recomposent et deviennent généralement plus petites. Le tissu de la société devient plus fluide et diversifié que jamais. En comparaison, le modèle de construction architectural actuel peine à suivre ces accélérations de tendances.

Le marché de l'habitation sera bientôt saturé de logements non dimensionné aux besoins des nouvelles générations et les plans encore développé aujourd'hui ne seront probablement plus pertinents dans une dizaine d'années. Le problème découle du fait que l'architecture d'habitation tente de créer une architecture pérenne dans une situation toujours transitoire. Il ne s'agit pas de construire des monuments qui résistent à l'épreuve du temps et des générations, mais de créer des logements qui répondent aux besoins d'individus à des moments spécifiques, pour des périodes spécifiques. Pour cela un nouveau paradigme de flexibilité adaptable est nécessaire.

Le village modulaire vertical est une proposition de re-design des monolithique tours Hardau à Zürich à travers le prisme de la modularité. Il s'agit d'offrir aux habitants des logements entièrement sur-mesure à la manière d'un quartier découpé en trois-dimensions ; des logements flexibles dans la conception, capables de s'étendre et rétrécir au fil du temps et de s'adapter aux changements de vie de ses locataires.

Hardau, Zürich: Elevation

Hardau, Zürich: Site plan 1/2000

Spatial rules per level

Distribution: revolving staircase

Three staircase placed to permit various configuration of internal organization per floors.
The variation along the tower due to revolving staircase facilitates permeability between floors and permits potential public space to occur.

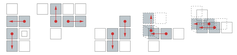
Potential public space

Each of those spaces are reserved for amenities distributed in the tower and are accessible by a minimum of two staircase for the community sized amenities and all three staircase for tower wide amenities

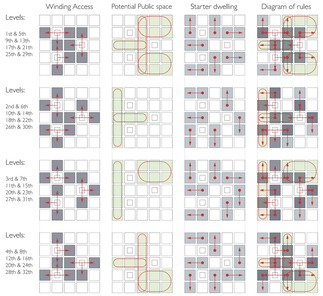
Starter dwellings

Dwellings are placed so as to always connect to a staircase, with a minimum of two 4x4m cubes (32 sqm) pointing to the closest facade without blocking each other.
Each starter is organized to expand at least once per floor before combing with another starter or forming a duplex.

Combinations



Diagrams

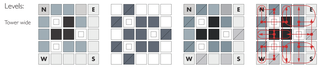


Spatial rules per tower

Optimal function per spatial distribution

- Bathroom
- Kitchen
- Dining room
- Living room
- Bedroom
- Structure preventing vertical porosity

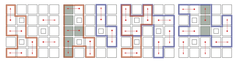
Diagrams



Programing Evolution

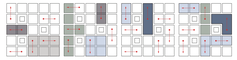
Public space: Attractors

Starting with organizing public functions throughout the building to create attractors for communities. Each has a zone of influence defined by the maximum holding capacity of the amenities, the distance between the user and similar amenities and the access capacity As such a diffusion of amenities over the tower, with an 8 level difference between similar functions reinforces smaller communities of around 20 peoples within the tower.



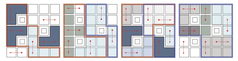
Plot cutting: First seeding

The first plots are distributed in the vicinity of the amenities, with a one level gap minimum distance between large sized apartments to avoid blocking in the last phases of expansion and retractions. The starter spaces are mandatory and the combinations described earlier hierarchies the space: duplex tends to work better on the left side and bigger apartments are best suited to the right side.

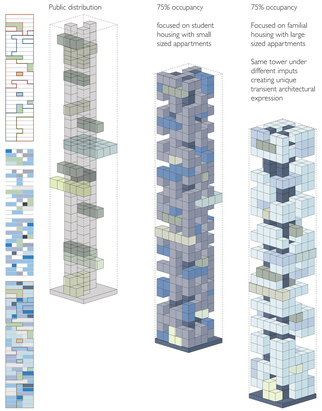


Plot cutting: development through time

The internal plot division morphs through time as needs of present occupants changes, new arrivals start filling the blanks while still starting from the starter dwellings. The tower's occupants will be expressed in the facade by the spatial organization of the plot division. The same towers will react differently depending on the style of occupants and the architect.



Diagrams



Spatial organization : Zürich paradigm

Programmatic distribution

Size	Surface	% Zürich	Tower	Surface
1 Cube	16 sqm	3%	4 lofts	64 sqm
2 Cubes	32 sqm	6%	8 lofts	256 sqm
3 Cubes	48 sqm	14%	19 lofts	912 sqm
4 Cubes	64 sqm	26%	34 lofts	2176 sqm
5 Cubes	80 sqm	27%	36 lofts	2880 sqm
6 Cubes	96 sqm	15%	20 lofts	1920 sqm
7 Cubes	112 sqm	9%	12 lofts	1344 sqm
			Total	Total
			133 lofts	9552 sqm

Family distribution Zürich

47% Single	1 person
30% Couples	2 persons
17% Couples with children	3-5 persons (11% 3s/29% 4s/7% 5s/59% 4s)
5% Singles with children	5% Singles with children (17% 2s/21.8% 3s/57% 4s)
2% Collective living	4-8 persons

Family distribution Hardau

Amenities

Tower	Volumes
1x4 lofts	4 Cube
2x8 lofts	16 Cubes
3x19 lofts	57 Cubes
4x34 lofts	136 Cubes
5x36 lofts	180 Cubes
6x20 lofts	120 Cubes
7x12 lofts	84 Cubes

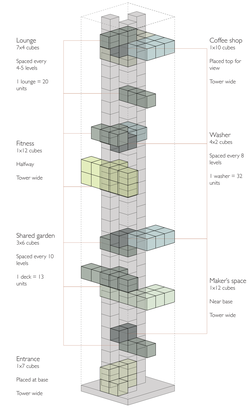
Total	Total
133 lofts	587 cubes

Free space	Surface
95 Cubes	1520 sqm

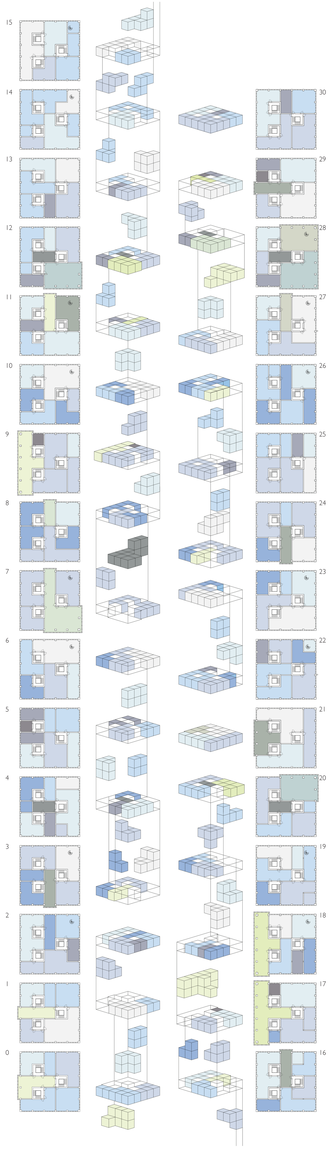
	Tower wide	Size
1:	Gateway + Concierge/ Bike station	1x7 Cubes
2:	Fitness + Yoga room	1x12 Cubes
3:	Children playground + Maker's space	1x12 Cubes
4:	Coffee shop + Co-working + Library	1x10 Cubes
	Community wide	
5:	Shared deck + Indoor garden	3x6 Cubes
6:	Lounge + Event space	7x4 Cubes
7:	Shared washing center + recycling	4x2 Cubes

Surface
1520 sqm

Repartition Hardau

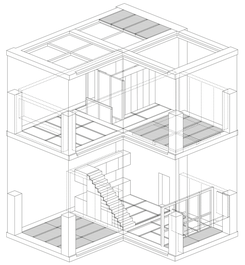


Hardau tower: 100% occupancy



Mega-structure and Toolbox

Construction

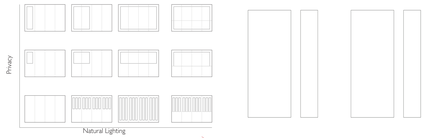


Typical dimensions

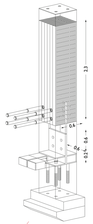
Wood volumes	Internal wall	Inconsistant	100 × 10 × 250 cm	100 × 10 × 277 cm	100 × 10 × 263 cm
	Appartment wall	Consistant	100 × 30 × 250 cm		
	External wall	Consistant	100 × 35 × 250 cm		
	Ground floor	Consistant	100 × 200 × 20 cm		
Connectors	Internal hook	Inconsistant	5 × 10 × 250 cm	5 × 10 × 277 cm	10 × 10 × 250 cm / 10 × 10 × 2770 cm
	Appartment hook	Consistant	10 × 30 × 250 cm		
	External hook	Consistant	10 × 35 × 250 cm		
Services	Bathroom (1.80 x 2.20 sqm)	Water-closet	60 × 55 × 77 cm		
		Shower	80 × 80 × 220 cm		
		Bathtube	75 × 170 × 60 cm		
		Sink	45 × 50 × 80 cm		
	Kitchen	Straight	60 × 300 × 85 cm		
		Island	120 × 200 × 85 cm		
	Staircase	Straight	100 × 400 × 300 cm		
		Spiral	200 × 200 × 300 cm		

Typologies	App. S.	Eat. S.	Int. S.
Wall			
Window			
Door			
Sliding door			
Translucent			
Half-wall			
Full glass			

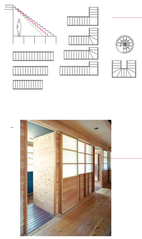
Toolbox typology



Structural pillars

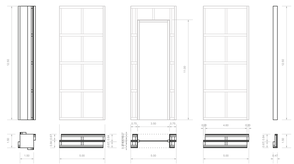


Interior elements

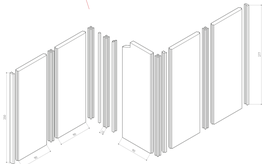


Core characteristic

Loft separation

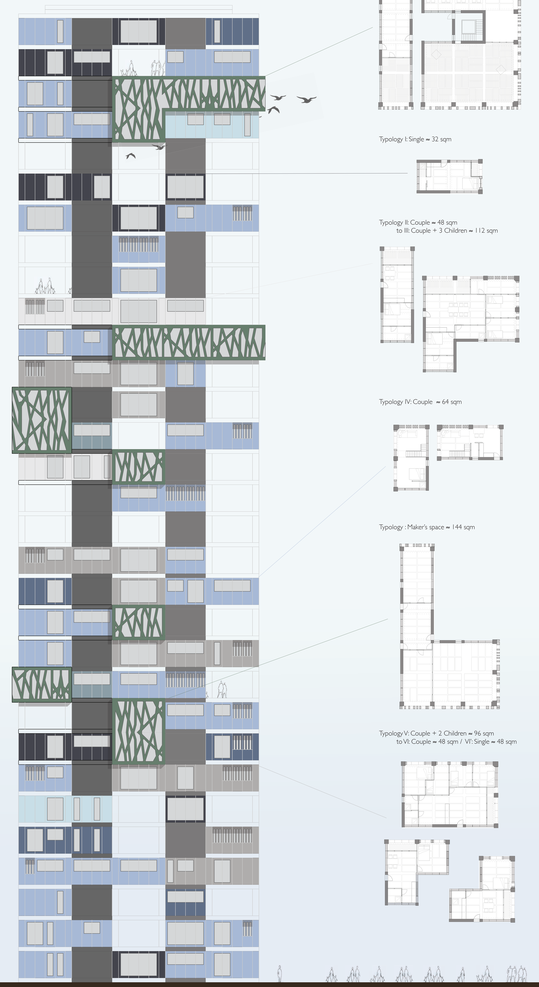


Interior separation



Abstract Facade

Elevation at 60% occupancy: 1/100



Apartment typlogy: 1/150

Typology: Coffee Shop = 176 sqm

Typology I: Single = 32 sqm

Typology II: Couple = 48 sqm
to III: Couple + 3 Children = 112 sqm

Typology IV: Couple = 64 sqm

Typology : Maker's space = 144 sqm

Typology V: Couple + 2 Children = 96 sqm
to VI: Couple = 48 sqm / VI: Single = 48 sqm

E N

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