

FROM SETBACK TO OPEN SPACE

ALTERNATIVE SPATIAL TYPOLOGIES FOR RESIDENTIAL DEVELOPMENTS IN UNPLANNED TOWNS

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INTRODUCTION

Within the past decade, uncontrolled urbanization and real estate speculation has saturated the Lebanese coast, exceeding the territory's maximum building capacity, and spreading into its mountainous hinterland, in the search for more affordable property.

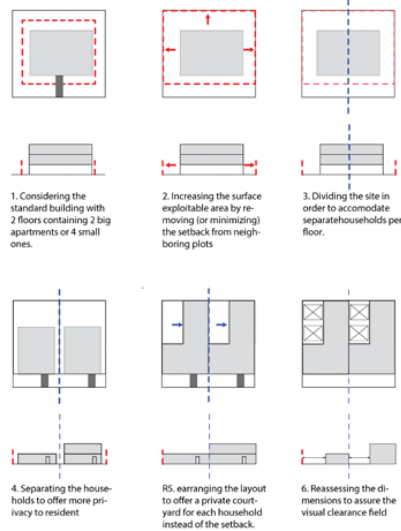


Figure 1

As a result, urban sprawl is now emerging in mountainous towns and their peripheries, following a rule-based zoning that is not specific to topography or lot size. The problem is more dramatic in unplanned towns, where the only regulating factor is the provisional zoning law of 25-50, used for cities and towns with no zoning.

Under such a law, the lot becomes a flattened backdrop to a two-floors building block occupying 25% of the lot,

and the 75% remaining open space takes the redundant proportions of setbacks, preventing meaningful uses of outdoor space around the residential building. At a large scale, the landscape bears evidence of the physical rifts that such general regulations impose upon it, with a severe ecological and aesthetic toll.

Concerned by this development that is dictated by real-estate oriented regulations, the following design research sets out to reengage the threatened rural territory by questioning general zoning as a tool for development in rural and semi-rural Lebanon. Taking several prototypical lots in unplanned towns, our argument develops form-based explorations instead, based on specific local conditions, in order to result in integrated strategies for the relationship between the built and unbuilt space of the lot.

The research is informed by traditional domestic architecture, which embedded specific frameworks for adaptation within the landscape through vernacular elements such as courtyards, agricultural terraces, and open staircases, and proposes a contemporary architectural language of restructuring open space elements indirectly, inspired by our indigenous characteristics.

THE 25-50 LAW BETWEEN RULE AND PRACTICE

On a flat plot of land, the 25-50 rule allows for 25% surface exploitation, 50% total exploitation, an additional 20% of balconies, 10% of double walls and 20 m² of vertical circulation. This inflates the 25% to an actual 35% footprint and 70% total built-up area.

The total height of the building (including the "pilotis") is usually ten meters.

On a flat lot, this rule results in a standard two-floor building with a central vertical circulation and one, two or more apartments per floor, with the ground floor acting as a dead parking space (in the case of pilotis) or retail.

At the neighborhood scale, buildings will all have the same typology since they are trapped in the two-floors system, which results in a monotonous urban fabric. The resulting neighborhood has little or no character. The buildings do not relate to each other architecturally and are not related to the street. The connection between the public space of the neighborhood and the private spaces of the buildings is weak. The neighborhood and ground floor of the buildings are overwhelmed with cars and have little space for pedestrian or community life.

On a sloped lot, the resulting building has three floors because of the additional "first basement", which is not considered as built-up area according to the Lebanese building law. This results in a 25% surface exploitation and 75% total exploitation, but in practice results in 35% footprint and 95% total exploitation after adding

balconies, double walls and vertical circulation. As a rule, the first basement should be closed in the back and open on the sides, but in practice, the rear retaining wall is removed after acquiring the permit. In this case pilotis is allowed as well, adding yet another floor to result in a four-floor building, while the original intent of the law was to allow for a two-floor building.

At the neighborhood scale, this typology of three-to-four floor buildings is particularly problematic, as scattered buildings are tamped down along the road, blocking the view, erasing the geography in which they sit through setbacks and cut-and-fill guidelines, with no relationship to each other or to the road. Instead of an urban fabric that follows the topography, this typology commits an aggression against the landscape with its heavily massed boxes, results in high retaining walls and a disconnection between the buildings and the natural terraces.

In addition to the aforementioned issues, the 25-50 regulation has the following impacts: low density buildings that encourage linear sprawl rather than compact villages; no control over visual exposure; no control over sun orientation and lighting; and an imbalance in the open space distribution to each housing unit, where the relationship to outdoor extensions is severed through the ground floor. Also, this housing typology is urban, with access through the building's public staircase, and balconies as outdoor space.

METHODOLOGY

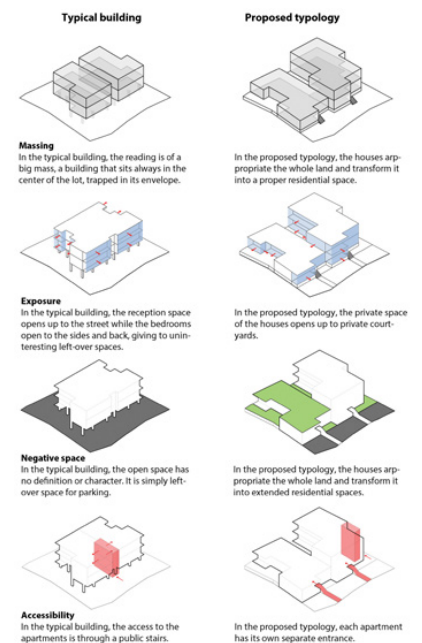


Figure 2

The research postulates scenarios for lots with different sizes, shapes, and topographies.

It looks at two hypothetical sizes that are prevalent in rural towns' cadastral plans:

800 m² and 1200 m²; two terrain conditions: flat terrain and sloped terrain; and two lot shapes: square and rectangular. For each scenario, it proposes housing

arrangements that rearticulate the relationship between open space and dwelling. The research process was guided by the ultimate goal of reverting the typology of a building block to a cluster of houses or townhouses that better adapt to semi-rural contexts in terms of massing, exposure, access and relationship to the outdoors.

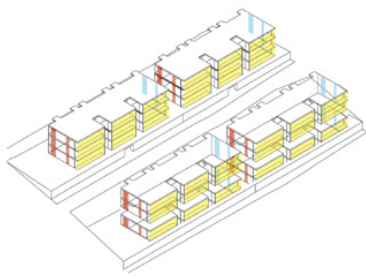
Two key rules were introduced as a precondition for being liberated from the building block typology that is

defined by the built-up area being double the surface exploitation, and to achieve a residential typology that is more interesting in scale: The first rule was to allow for more surface exploitation on the ground floor, and less exploitation on the first floor.

The second rule was to allow no or smaller setbacks with neighbors on the one hand, and an almost double visual setback clearance, whose minimum proportions are closer to an outdoor living room (5x8 meters instead of the 4.5x5.5 meters adopted by the law) on the other hand. In addition, this study removed the open basement floor from sloped terrain cases, replacing it with extra square meters in the upper floors.

These parameters introduce a range of flexibility that will allow for lower building heights, separate entities (houses), consistent proportions for open spaces, all the while having the same total built-up area.

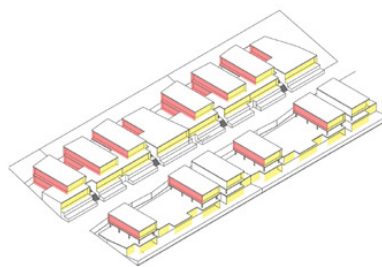
Typical neighborhood



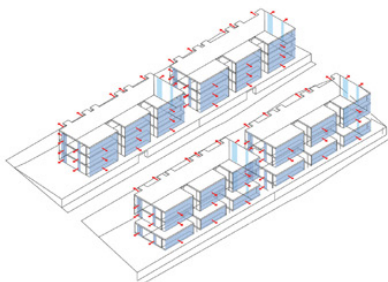
Orientation

In the typical neighborhood, one side of the repetitive buildings' program will be oriented north

Proposed neighborhood

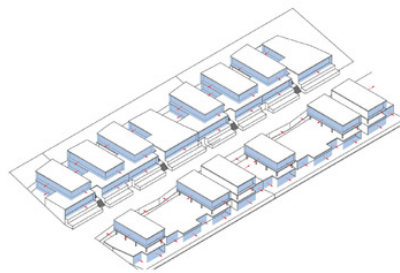


In the proposed neighborhood, by mirroring the layout, most of the program can have sun exposure.

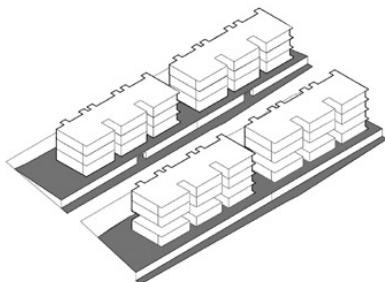


Exposure

In the typical neighborhood, the side functions (like bedrooms and living rooms) give to a vis a vis.

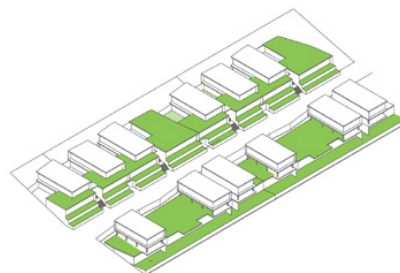


In the proposed neighborhood, the side functions give to private courtyards.



Negative space

In the typical neighborhood, negative space is rarely used



In the proposed neighborhood, negative spaces are extensions to houses on all levels.

SCENARIOS

CASE STUDY 1: 800 M² FLAT LOT

In the case of a typical building on an 800-m² flat lot, the surface exploitation (including extras) stands at 35%, or 280 m². Total exploitation (including extras) is 70%, or 560 m². The building would have a 280-m² apartment per floor or two 140-m² apartments per floor.

In the case of the proposed typology, we were able to easily fit a building with a surface exploitation, on the ground floor only, of 50% or 400 m², and on the first floor 25% or 200 m². Total exploitation is then 75% or 600 m². The building would have two 200-m² apartments on the ground floor and one 200-m² apartment on the first floor. The total built-up area is higher than the standard typology.

CASE STUDY 2: 1200 M² FLAT LOT

In the case of a typical building on a 1200-m² flat lot, the surface exploitation (including extras) is 35%, or 420 m². Total exploitation (including extras) stands at 70%, or 840 m². The building would have two 210-m² apartments per floor.

In the case of the proposed typology, we were able to easily fit a building with a surface exploitation, on the ground floor only, of 50% or 600 m², and on the first floor 25% or 400 m². Total exploitation is then 75%, or 1000 m². The building would have three 200-m² apartments on the ground floor and two 200 m² apartments on the first floor. The total built-up area is higher than the standard typology.

Figure 3

NEIGHBORHOOD ON A FLAT TERRAIN

Typical neighborhood

In the typical neighborhood, buildings are large in scale and are not connected to the road; monotony, repetition and detachment prevail. The exposure of the different elevations of this typology is confined to the centrality of the building and has always one side to the north (without sun). The different rooms open up to face each other or to the back. The negative spaces are all dedicated to parking or remain unused.

Proposed neighborhood

In the proposed neighborhood, there are houses, not buildings. Their scale is closer to the pedestrian. Flexibility and architectural variety as well as personalization are key. The exposure of the houses is more flexible. There is always a possibility to allow the sun to enter all rooms by rotating or mirroring the layouts. The open spaces on the ground as well as first floors can all be appropriated as livable space.

NEIGHBORHOOD ON A SLOPED TERRAIN

Typical neighborhood

In the typical neighborhood on sloped terrain, the buildings' scale is even more exaggerated because of the additional first basement. The resulting negative spaces are deep terraces with high retaining walls. In the typical neighborhood, buildings have a large scale and are not connected to the road; monotony, repetition and detachment prevail. The exposure of the different elevations of this typology is confined to the centrality of the building and has always one side to the north (without sun). The different rooms open up to face each other or to the back. The negative spaces are all dedicated for parking or unused. In the orientation diagrams, the blue represents the openings that face northwards and therefore have no sun, while the red represents the ones that face southwards.

Proposed neighborhood

In the proposed neighborhood on sloped terrain, the scale of the buildings is reduced considerably by allowing the massing to follow the slope. The flexibility of the layout allows for better exposure towards the sun via courtyards. The negative space of the lot joins with the roof of the lower floors to become wide terraces for the upper floor. In the proposed neighborhood, there are houses, not buildings. Their scale is closer to the pedestrian. Flexibility and architectural variety, as well as personalization, are key. The exposure of the houses is more flexible. There is always a possibility to allow

the sun to enter all rooms by rotating or mirroring the layouts. The open spaces on the ground as well as first floors can all be appropriated as livable space.

CONCLUSION

This design research was intended as an exploration that can form the basis for tangible revisions to code and regulation, and proved that a similar built-up area can be achieved with alternative forms that give shape and use to the unbuilt and open spaces of the lot, adapt to topography, and create new architectural inscriptions within the landscape.

With the ongoing defacing of the cultural landscapes and architectural character of the mountains, it is essential for architects to deploy design as a method for researching alternative ways of building in the rural territory, test the potentials and limitations of guidelines through design, and reintroduce zoning-specific regulations for mountain towns that guide development and protect culturally and ecologically sensitive resources.

FIGURES

Figure 1. Rethinking typologies: From building to house, from apartment to residence. Source: Boulos Doueihy

Figure 2. Comparative analysis of a typical versus a proposed typology building on a flat lot. Source: Boulos Doueihy

Figure 3. Comparative analysis of a typical versus a proposed neighborhood on a sloped terrain. Source: Boulos Doueihy

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AUTHOR

Boulos DOUAIHY is an architect, urbanist, geographer and co-founder of plateau | platform for architecture and urbanism. He holds a DES in architecture from the Lebanese University, 2004, and a Master in "Environnement et Aménagement du Territoire" from the Saint Joseph University, 2005. Boulos is interested in a multidisciplinary approach to architecture, involving domains that vary from geography and sociology to parametric design and art installations. Before founding plateau, Boulos collaborated with leading architectural firms like DW5 / Bernard Khoury and Hashim Sarkis Studios, where he worked on several projects of various types and scales and was responsible for managing projects from design phases to execution. He is currently active in several local development NGOs and has lectured about his work in several conferences.