Design modular tools for social housing: the case of the complex in Rua da Seara by João Álvaro Rocha

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João Álvaro Rocha

Complex Rua da Seara

repetition

rhythm

symmetry
objectives

João Álvaro Rocha

Complex Rua da Seara

design modular tools

structural module

repetition

spatial module

rhythm

compositional module

symmetry

constructive module
objectives

Show tools

Facilitate construction

reduce costs

Help architects

High quality
João Álvaro Rocha
One of the greatest exponents of contemporary social housing in Portugal

“In an interview on the occasion of an award he received in 2005, Rocha said, ‘The fact that the award was given to a work of social building, a type of project that is usually underestimated by official institutions and the public because it isn’t spectacular and thus not mediagenic, has special importance for us. It constitutes a kind of invitation to action, in order to demonstrate that so-called minor projects can, after all, have dignity and be made with the same quality as all the others’”
One of the greatest exponents of contemporary social housing in Portugal

Eduardo Souto de Moura:
"I have no problem in choosing one of the works of Rocha, because it is perhaps the most difficult subject to deal with in this moment: the social housing"
One of the greatest exponents of contemporary social housing in Portugal

Complex Rua da Seara

Complex Gemunde

Complex Lugar do Outeiro

Complex Vila Nova da Telha
Álvaro Siza:
"housing is a constant presence in the city and it is always social"

Eduardo Souto de Moura:
"Many times I wonder how he manages to do that architecture, with the qualities and those prices. I know how he gets them, and it is through systematization to the limit. Few details so that there is not too much diversification, and great discipline. When there are few details and the amounts increase in geometrical proportion, accordingly, prices fall and allow you to choose better and more expensive materials. Rocha has taken advantage of his opportunities and makes the best social housing, in terms of language, discipline, rigor and quality"
Álvaro Siza:
“housing is a constant presence in the city and it is always social”

João Álvaro Rocha:
“The program of the social housing is like the single family-house but complicated by ten. Because it has to be cheap, accessible, small; It must be constructively very effective; and beyond that, it is a program that from the 80s was somewhat forgotten, ignored. (…) I was for some time thinking about it and came to the conclusion that it should be just the opposite; precisely because it had a social character it had a number of attributes that should be positive.”
Influences in JA Rocha

basic principles  geometry  order

School of Oporto  care to place  construction
In essence, all these principles are based in the platonic idea of order. The basic principles are for the architect as notes and key to the musician.
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basic principles  geometry  order

School of Oporto  care to place  construction

In essence, all these principles are based in the platonic idea of order. The basic principles are for the architect as notes and key to the musician.

systematization  details  control

Fernando Tavora  Mies Van der Rohe  Le Corbusier

The systematization in which the importance lies in the controlled and minimum number of details, reminds us of Mies’ principles of action.
Visits of the Complex in Rua da Seara

Location: peripheral area in Matosinhos

Jose Manuel Pozo:
"Back to Oporto, the Maia social housing, prototype winner of later developments or the building of Aguas Santas, also residential and located in Maia teach us the care with which Nature is also in domestic operations of low budget."
The housing complex had to be a combination that measures the importance of these factors.
Side elevation of the Complex

Parallelepipeds
Repetition
Rhythm
Symmetry
Order

3D volume
Repetition is used in series as if it was an industrial process that facilitates construction and reduces costs.
This adjustment of the proportion and scale brings beauty to the project, in the same way as occurs in nature.

João Álvaro Rocha:
"Unable to find a perfect and generalizable model, with the ability to respond to all requests, including the place, through the relationship the built object is able to establish with it, eventually it becomes the determinant of the difference, making the object become unique and unrepeateable - just a small ripple on the ground, a slight slope, a loose stone or the shape of the house next door..."
Fernando Tavora:
"The popular house gives us great lessons when it is properly studied because it is more functional and less extravagant, in a word, is the one that is more in line with the new aims"
repetition of windows - rationality - reduction of details

View of one of the blocks of the Complex in Rua da Seara

View of the Apartments "Bonjour Tristesse" by Álvaro Siza

José Manuel Pozo: "Repeat means better identification of the unit"
Similarities with Rua da Seara
Similarities with Rua da Seara
identify the units
Structural floor

Spatial floor
Base Modules
Structural Base Module

Spatial Base Module
Superposition of Base Modules

Superposition of base modules
### Interpretation of structural and spatial modules

<table>
<thead>
<tr>
<th>Structural modules</th>
<th>Axes</th>
<th>Dimensions</th>
<th>Proportion Coefficient</th>
<th>Space</th>
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</thead>
<tbody>
<tr>
<td>Base Module</td>
<td>2-3-4-5,5-6, 6-7-8,9-10 ( \times a-b )</td>
<td>5.20 x 7.15</td>
<td>M</td>
<td>living room and services</td>
</tr>
<tr>
<td>1/2 Base Mod., Access</td>
<td>1-2-3-4,10-11 ( \times a-b )</td>
<td>2.60 x 7.15</td>
<td>1/2 M</td>
<td>bedrooms and access</td>
</tr>
<tr>
<td>Housing Module</td>
<td>1-4,4-6-8,9-11 ( \times a-b )</td>
<td>10.40 x 7.15</td>
<td>H = 2 M</td>
<td>Housing unit</td>
</tr>
</tbody>
</table>

### Superposition of Modules in typical floor plan

[Diagram of superposition of modules]
Facade planes
Compositional modules on facades’ planes
Compositional Module
Superposition of compositional modules
Constructive Module
Constructive Module

Materials legend
01 Reinforced concrete slab
02 Reinforced concrete support
03 Solid brick exterior wall
04 Brick wall
05 Insulation panel
06 Cement rendering
07 Cement plastering
08 Air chamber
09 Marble sill
10 Marble lintel
11 Insulation sheet
12 Leveling cement
13 Wood platform
14 Wood carpentry
15 Wood shutter
16 Glass
17 L metal profile
<table>
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<th>Social housing</th>
<th>Bad conditions</th>
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<tr>
<td>Difficult needs to fulfil</td>
<td>Speculation</td>
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João Álvaro Rocha:
“One of the conclusions I reached was that most of the works were degraded because the exterior area was never completed, and the places chosen to place social housing were unskilled. So I concluded that the problems of social housing were not problems themselves but were due to the bad starting conditions. Moreover, the attitude of the architects was not too correct and building companies made a lot of money with prefabrication, which disqualifies the building systems which were chosen exclusively on price rather than quality.”
João Álvaro Rocha:

“Then came the competition for social housing in Matosinhos that we won, and I think we did it because we faced the problem of social housing in a completely different way: it was realistic, inexpensive, with controlled costs, but we did things differently, it succeeded and was built ... it took almost ten years but it was eventually built.”
João Álvaro Rocha:

"This gives a lot of work, because in the single-family home you project a window and there it is, while social housing it is necessary to project seven or eight windows before deciding which one is right, because of the costs, the building systems. It is demanding, but from my point of view is also the most fascinating aspect of these projects. (...) However, the problem of social housing is not the typological, this is the least we can demand an architect. There were other issues and problems that needed a more assertive response, especially in the beginning when we projected the competition for Matosinhos"
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Thank you for your attention

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