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SIZA

CRÉDITOS
CREDITS

(2 puntos)

(:) Siza, Fundación Iberé Camargo

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EDITORIAL

(2 puntos) es una publicación dedicada al análisis de proyectos significativos de la arquitectura contemporánea. Un estudio que pretende ser especialmente atento a la materialización de cada diseño, para lo cual pretendemos reproducir distintas escalas de un proyecto –de ahí el nombre- intentando profundizar en aspectos menos evidentes de la arquitectura actual.

Esta publicación surge con la intención de provocar una reflexión sobre el oficio del arquitecto. El oficio que implica la atención al detalle, la preocupación por el dibujo o la ejecución de la obra como partes de un mismo proyecto.

Inmersos como estamos en un universo de imágenes, puede ser común la impresión que el oficio del arquitecto es algo que haya podido desaparecer, aunque lo cierto es que nunca ha dejado de existir y creemos que es en la atención a la pequeña escala donde se puede mostrar su valor.

Para éste número, hemos seleccionado una obra de Álvaro Siza, por su relevancia pero también por el reto que supone intentar mostrar la pequeña escala en un proyecto como la "Fundación Ibêre Camargo" que seduce primero, por su riqueza formal y por su complejidad espacial.

Esta publicación pretende además superar la barrera de las imágenes y mostrar ese mundo de lo íntimo tan propio de la arquitectura de Siza.

Introduciéndonos en esos dominios propios de la escala del hombre, de ese hombre que se acerca a un espacio por medio de la visión pero que lo habita con sus manos y su piel. Intentamos por distintos medios lograr sumergirnos en lo táctil, en las texturas, en esos ámbitos solo reconocibles en la proximidad de la distancia muy corta -no siempre reproducibles- que Siza elabora con maestría.

En definitiva esta publicación pretende ser el inicio de una serie que se presenta como una reflexión sobre el oficio del arquitecto, a la vez que sobre el dibujo y las distintas maneras de acercarnos a un proyecto y reflexionar sobre esas otras dimensiones de la arquitectura que van más allá de la cultura de imágenes que nos rodea y que en gran medida nos domina y condiciona nuestra forma de pensar sobre la arquitectura y nuestro entorno.

C.S.

EDITORIAL

(2 points) is a publication dedicated to the analysis of relevant projects of contemporary architecture. A study that aims to focus on the realization of each design, for which we intend to work with the different scales of a project -hence the name-, trying to get deeper into the least visible aspects of architecture.

This publication starts with the intention to generate a discussion about the craftsmanship of an architect. A craft that involves attention to detail, concern for drawing or attention to the execution of the construction works as a continuation of the design project.

Surrounded as we are by a world of images, the impression that the craftsmanship of the architect may have disappeared could be common, but in reality it has never ceased to exist and we believe it is in the small scale where we can show its true value.

For this issue we have selected a work by Alvaro Siza, not only of its architectural relevance but also because of the challenge implied when trying to show the small scale on such a project as "Ibêre Camargo Foundation", a project which seduces at first instance with its formal richness and its spatial complexity.

We aim to overcome the barrier of images and enter the intimate world, so important in Siza's architecture, by introducing ourselves in those domains that belong to the scale of man, a man who arrives at a space through vision, but occupies it with hands and skin. We tried by various means to immerse ourselves in the tactile, the textures in those areas only recognizable in the proximity of the very short distance and which Siza always so masterly resolved.

This publication aims to be the start of a series and is presented as a reflexion on the subject of the craftsmanship of an architect as well as the discipline of drawing, and also to think about those other dimension of architecture that go beyond the images that surround us and determine the way we think about it.

C.S.



Feet



Flesh



Textures 1



Walking finger

MEMÓRIA DESCRITIVA

Alvaro Siza

Pretende a Fundação Iberê Camargo construir um edifício para arquivo e exposição da sua colecção.

O terreno disponível confina a Norte com a Avenida Padre Cacique e a Sul com uma escarpa compreendida entre as cotas 5 e 24.

O programa proposto inclui áreas de exposição, depósitos, biblioteca e videoteca, livraria, cafetaria, pequeno auditório e áreas de administração e de oficinas artísticas.

Será igualmente construído um parque de estacionamento para 95 veículos, em subsolo, sob a via marginal.

A base do edifício é constituída por uma plataforma longa, elevada 0,90m em relação ao passeio (cota 5.5m) da Avenida Padre Cacique, sob a qual se situa uma parte das áreas do programa. Esta plataforma é acessível a partir do passeio através de rampa.

O volume principal recorta-se contra a vegetação da escarpa, ocupando uma sua concavidade, e resulta da sobreposição de quatro pisos de forma irregular, incluindo o rés-do-chão à cota da plataforma. Este volume é limitado por paredes rectas e quase ortogonais (a Sul e a Poente) e por uma parede ondulada (a Norte e a Nascente).

Esta parede limita a toda a altura do edifício o espaço do átrio de acesso, o qual é rodeado, no restante perímetro, pelas salas de exposição (uma sequência igual, nos três pisos superiores, de três salas de diferente dimensão) e pela recepção, rouparia, e livraria no rés do chão. Não se diferenciam os espaços destinados a exposições temporárias e permanentes, optando-se por uma flexibilidade apropriada à tendência de funcionamento actual dos museus.

As salas de todos os pisos poderão estar abertas sobre o espaço do átrio, ou encerradas por painéis amovíveis até a altura de 4 m, permitindo a entrada da luz natural a partir do átrio e entre essa altura e o tecto.

As salas do último piso recebem luz natural e artificial através de lanternim constituído por duplo envidraçado com acesso intermédio para limpeza e regulação de luz. O espaço do átrio recebe luz por lanternim situado no terraço e por aberturas ao exterior na parede ondulada.

Os acessos verticais (dois ascensores e duas escadas) situam-se em cada uma das extremidades da sequência de salas de exposição. Incluem ainda um sistema de rampas, de pendente entre 8 e 9 %, cujo desenvolvimento se processa em parte no interior do espaço do átrio e em parte no exterior, constituindo galerias que rodeiam o volume do edifício, abertas pontualmente sobre a belíssima paisagem.

PROJECT DESCRIPTION

Alvaro Siza

The ICF aims to erect a building for the exhibition of its own collection.

The available piece of land is bordered by the Padre Cacique Avenue on its North face and by a hill that steeps from 5 to 24 metres above seal level on its South side.

The proposed program of functions includes several exhibition areas; storage, library video library, bookstore, cafeteria, a small auditorium and administration and workshop areas.

An underground parking with a 95 vehicle capacity will also be built under the coast road.

The base of the building consists of a long platform raised 0.90 mts. above the sidewalk (+5 mts) on Padre Cacique Av. An important part of the working areas will be located under this platform which will be accessible through a ramp from the sea promenade.

The main volume defines itself against the vegetation of the cliff by occupying its concavity as a result fro the overlapping of four floors of irregular shape, including the ground floor at platform level. This volume is bounded by straight walls, almost orthogonal (the South and West) and by a waved-corrugated wall (the North and East).

This wall limits the full height of the building's entrance space, which is surrounded in the remaining perimeter by the exhibition spaces (in similar sequence to the three upper floors made up of three different size rooms) and by an oak room and a bookstore on the ground level. The permanent and temporary exhibitions have different spaces, opting for a suitable flexibility to give response to the actual trend of operating museums.

The rooms on each of the floors will be able to remain open onto the lobby area or to be closed by means of removable 4 metre high panels allowing the flow of natural light from the atrium between the top the panels and the ceiling.

The under-roof rooms receive both, natural and artificial light by means of a skylight system built with double glazing and with an intermediate access for cleaning and light adjustment purposes. The atrium space receives light from skylights on the rooftop and from some openings to the exterior on the waved-corrugated wall.

The vertical access (two lifts and two staircases) are located at each end of the sequence of showrooms. They also include a system of ramps with a 8 – 9% inclination developed partly inside the atrium space and partly on the outside space of the atrium, constituting a series of galleries that surround the volume of the building and open promptly of the beautiful landscape



Studio



Pointing



Sketching



Alvaro Siza

Net and grids –takraw-

In one of his first interviews, Siza commented that his initial ideas were almost always visions without a clear definition of the material they were going to be built with, reminding us of a similar quote made by Picasso when advising a friend: "When you look at a painting you must first look for the drawing behind it, colour is something that is added later".

Siza's drawings are usually geometrical structures translated by lines that define spaces without any other materiality and texture than the thickness of an ink stroke. In the sketches of the Ibêre Camargo Foundation there is not any trace of material neither, however the pictures involved a significant degree of abstraction where space seems more the result of a vacuum trapped, prisoner of a geometric mesh, than a place formally bounded.

An abstract grid without texture but with abundant references to proximity. Probably because in the concept of space, the first element that Siza uses to construct his architecture is movement and not material.

In this idea of architecture as source and result of a system of relations, the construction is also concerned with the translation of a geometrical mesh, a grid which bears more similarity to the landscape of an autumn woods or a fragile wire structure than to a volume with textures and materiality.

Among Atrium

In the ICF, the condition of "in between objects" is valid as a strategy used for the interior space and for the relationship with the vicinity. This condition is present in previous projects by Siza, FCI, CGAC, etc., where the object is not as much a result of a preconceived form but of a dense, complex structure, not only alert to everything in the present but also to that preexisting – Bo-naval Park-

On arrival to FIC, the net of geometries is reproduced, reminding us of those imperfect spheres formed by a network of twigs twisted around an archetypal geometric space.

At that moment of reception, the space is not perceived as a formally bounded vacuum but more as a trapped place.

The space is generated without form, a space with an open design, its perception changing depending on the different arrival conditions as it is not bounded by shapes but embraced by a mesh, a mesh that even if drawn in concrete, like in this case, still seems to float in mid air.

The space of arrival, the atrio, is as an autonomous place of relevant importance among Siza's works, almost always deserving an important role. In previous buildings such as the CGAC, the School of Journalism in Santiago de Compostela, or the Portuguese Pavilion in the Lisbon Expo -among others- the atrio becomes the key moment in which architecture reaches its full intensity. The welcoming spaces, the hosting areas where visitors are received and where Siza identifies all the forces that wrap and embrace with movement,

defining those spaces without form.

In the ICF, the atrio maintains the conditions common to other atrios. Geometries are alert to proximity, fluid movement which reproduces the idea of a moving space, a rolling motion in a way reminiscent of a rising swirling spiral. It is always a complex geometry in any case, one which does not appear to come from a visual perspective, but from a structure in open relationship with everything around it.

Materiality and Freedom

As in a small number of previous projects, this relations structure has in the Porto Alegre project a dense materiality. In the foundation the lines are materialized in concrete, these acquire a heavy dense body although not heavy enough to limit its freedom of movement.

Unlike previous projects such as the swimming pools of the Leca Restaurant in Palmeira –not built- or in the more recent Library in Viana, where Siza also uses exposed concrete, in this project in Porto Alegre, the concrete is shown as a material which transcends its needs and shows its heaviness (severity).

In the ICF, the concrete, far from trying to hide its heaviness it reinforces it showing its texture, outlining its joints, trying to reflect the effort in the drawing of broken lines, an effort that seems to leap and lead the observer to discover the different nuances of a landscape.

Traces and Lines

When trying to build different geometries, Siza uses the joints of each layer as an important element in the definition of a space. Worked beyond their constructive dimension the joints and their traces become an element of spatial definition which does not only deal with limits or form, it is a system which above all turns perception of space into something that changes in relation to different distances. It is through construction and drawing of all the joints system that Siza is able to translate all his geometries, creating overlapping layers of perception and generating places within the same space.

Thus, elements born from necessity, a need for construction, such as cutting joints, extend the problem of realization and become elements of a three-dimensional geometry, marks of spatial planning not only from the vision, but also from the tactile dimension, allowing room for the understanding of different depths depending on the degree of proximity of the body to its spatial limits.

In many senses, Siza's architecture is a domain which requires a physical occupancy, once surrounded by its geometries, one can fully understand the whole structure of its space.

The result is a dynamic space without space for visual preconception but responds to a changing group's freedom of movement.

(*) Propylaeum, Latin, from Greek propylaion : pro-, before; see pro-2 + pulē, gate.]



Propylea (*)



Lisbon Pavillion



CGAC. Atrium



CGAC. Atrium



FCI, Atrium

STRUCTURE

Jorge Nunes da Silva | Ana Silva

The introduction

A depression of the slope that descends towards the Guaíba river in Porto Alegre, Brazil, opens up a platform occupied mainly by the coast highway. The lush vegetation stabilizes the slope and maintains a platform open. Here, the architect Siza, embedded (not touching the hillside was an essential premise), the museum of the Foundation for the painter IC. It was a dream of the painter's widow brought to life by a determined entrepreneur and life-long friend of the couple.

The building resembles a monolith volume from which several "arms" are projected towards the river, but it is in actual fact a box with a path that drops from top to bottom, sometimes projecting itself outwards towards the exterior space, breaking its balance, and other times disappearing inside.

This monolithic volume would have to be built in white concrete, without expansion joints, mainly due to its monolithic character, also because it would be the only material capable of realizing the diversity of forms and intersections proposed, and finally because of its behaviour which would ultimately require a global collaboration of the whole piece.

Description

The building consists of a basement and four floors. Boasting ample spaces throughout the whole compound for exhibition areas (the atrium has a height which is equivalent to the sum of all the floors), the storage areas of both the museum and the auditorium are located in the basement.

Under the structural point of view, given the nonlinear development and the long span, the outer arms stand out. Its closed hollow section (with the exception of some openings that do not compromise the proposed structural behaviour), with good bending and twisting resistance properties in addition to the proposed slope, allow for a good structural behaviour.

In general, the whole structure is composed of massive laminar elements built in reinforced concrete -horizontal slabs and vertical walls- including general foundation slabs. For the roof and given its considerable span, mixed slabs were used.

The calculus

The geometrical complexity of the building made it essential that in the initial design phase very precise drawings depicting the plan to detail including all the structural elements, were done.

This planning has also become an auxiliary tool in the further elaboration of a global 3D model of finite elements, here the "Robot Millennium" software was used.

Although quite time consuming, this model discretized into finite elements, panels and bars with the same elastic characteristics of the materials involved (steel and concrete) allowing us to understand and study the behaviours of the global actions imposed, in particular those regarding the distribution of efforts, (given the significant differences in rigidness of the different parts of the building), the global deformation, and in a later phase, the study of construction phases (during the release of the braces).

This first study revealed a general behaviour, a stable building, with acceptable stress and displacement values.

Upon performing further analysis by means of conducting more individualized models (thus providing greater accuracy and detail both in terms of discretization of elements and by geometrical definition), it was possible to translate effort values and deformations, corroborating the structural behaviour previously obtained.

For efforts, we obtained stress limits, corresponding to the ultimate limit states, with values around 15 MPa, compatibles with the use of normal concrete.

As for the deformation values under working conditions, the 2 cms. obtained proved to be perfectly adequate for the proposed structure. Also considering the Ultimate Limit State, the points of intersection of the ramps with the building itself were of a special relevance and called for a focused attention. All along the development of the design the angles of intersection of the ramps were open, allowing an easier construction of their connection points. The stress evolved focusing on the point where the ramp takes off from the façade, this later on becoming a critical point for mounting the steel bars.

The project

Durability was a determinant factor when analysing the feasibility of the project, with this in mind a study of the composition of the concrete was carried out as well as a careful check of the density of the steel bars in order to keep cracking limits under control. Of special concern was the level of corrosion hence the prescription for the use of galvanized steel bars.

The proximity of the building over the river Guaíba also became a relevant factor, requiring special attention towards the variability of groundwater levels, the possibility of lifting the structure due to water surges and having to deal with the overload resulting from the traffic on the road close by demanded a necessary, careful phasing of the building work, so as not to interrupt the traffic during the construction.

Given the characteristics of the land with its variable groundwater levels, either by the increase of the river tides or via infiltrations of rainwater sliding down the hill, a technical gallery around the perimeter of the building site was established. This 2 metre wide gallery drops 1.50 metres below the lower part of the ground slab in order to redirect any water resulting from an infiltration, it also allows the distribution of the building's infrastructures as well as acting as a water container below the building in case of flooding.

Concrete

The composition of the white concrete of the project was checked by LEME, Federal University of Rio Grande do Sul Laboratory. After some adjustments during construction, The composition for the self compacting concrete includes microsilica, retardant additives and viscosity modifiers.

The Construction

We began the first phase of construction with the lower- basement floor which includes an underground parking area that runs beneath the Padre Cacique Avenue and the promenade along the Guaíba river. The construction of this 160 m long by 18 m. wide concrete box, with an inte-

rior grid of 6m x 5.5 m pillars, has been designed in reinforced concrete slabs in order to minimize its final thickness but also to reduce its depth below the normal river flooding. This design would later allow the division of the construction of the structure, with a joint in the intermediate span at roughly 1.50 m from the axis of its first pillars, this in turn permits the flow of traffic on the road with the least possible intervention.

The heavier, reinforced concrete structure is able to withstand the powerful thrust of the river water avoiding the grounding of the structure.

Finally it was agreed that we would build using "in situ" concrete. Its performance on some on- site tests enabled us to optimize solutions and techniques, one of the most relevant being the control of the concrete behaviour in relation with the outside temperature, its composition checked with each mixing.

On the contrary to the normal practice (or as how it had already been agreed in Cornellá's project), the slabs and inner core were the first to be accomplished followed by the white, exterior concrete walls. The steel bars on hold were bent into their final U- shape to fit the slabs (with a sufficiently adjusted length in the case of the ramps). For less heavy purposes Epoxy reinforced steel bars were used.

In the arms area where the façade had to inevitably be built first, the option of steel bars anchored with plates into the masonry was taken into consideration given the complexity of the angles of intersection of the elements and amount of bars applied. However, the use of compacted concrete and the option of mounting the steel bars all the way up (to avoid amendments) enabled this way of building. To this purpose 3D models were used to help in the final decision of using steel bars on hold.

The building works

As the construction progressed, the easing of the shoring was analyzed, but an unsupported internal alignment, the need to fasten the light weight corners to the rest of the building, and the cantilever walls on the opposite corner threatened the upper edges of the walls resulting in their cracking, hence anchoring the ramps to each other was a must making it seem and work as a huge construction kit.

Final

Towards the end all the preparation work so thoroughly elaborated by the various teams working on this project, became of extreme importance. It was at the end of the building works where the structure, being the final layer, had to meet the highest possible quality requirements.

The coordination of the concrete work along with the other elements was complex. The thermal and sound insulations, the inner and outer openings, all the infrastructures of the various specialities as well as the finishes had to fit and work inside this previously completed concrete box.

The careful preparation of the steel bars, formwork and concreting, the drawings for gantries formwork, the plans for concreting are all the result of this work and acted as key components for the monitoring of the construction from a long distance.

This is the result achieved from technique, professionalism and demand at the highest possible level, or as our Brazilian colleagues would say, "de muito capricho".





