

rence in the plane face of the facade where the circulation cores coincide. The structure is treated with simplicity and elegance, it is drawn on the facade giving rhythm and scaled volume, something which Villanueva began to explore in the buildings of the University City along with the use of colour as a necessary partner in architecture, Alejandro Otero was to be responsible for the building's polychrome.

Upon the completion of the Residential Units of "El Paraíso" and "Cerro Grande", Villanueva embarked in TABO on a project far more ambitious and on a different scale, the "Cerro Piloto" Plan 1954-1955.

For this Plan a new type of superblock was projected, more simplified, more economical and of faster execution.

Thus were built the urbanizations of "Lomas de Pro-Patria", "Diego de Losada", "Lomas de Urdaneta" and "Atlántico Norte"; and the Residential Units "Altos de Cúpira", "Cotiza", "Artigas" and "La Vega". A gigantic intervention in western Caracas which did nothing else except anticipate what was to be the final experience in the "23 de Enero" and "Simón Rodríguez" starting from 1956. Given the scale of the intervention a new type of block was selected which had been developed by one of the students who participated in TABO, Carlos Brando, it had been presented by him as a thesis for his grade, thus demonstrating to what extent the workshop was integrating and democratic. Each block was erected in two months and the whole urbanization was built in three years, a real feat.

The Residential Unit "El Paraíso", beyond its architectural merits, can only be understood within this experience which gives it greater meaning. Today, despite having passed more than half a century and having lost their beautiful polychrome, it is still there, haughty, vigilant, now surrounded by the city, reminding us of Villanueva's final words of the conference Some observations on the current development of Ibero-American Architecture dictated at the Ministry of Housing in Madrid in 1965: "In seeking a solution we shall have to find it for the quantitative demands and for the qualitative demands. To the changes in its content must correspond, in a coherent architecture, changes in its form; we hope that these will also occur and in a certain sense,

they do not worry us. What does interest us is to present, with precision, the need that design systems should also be altered, to convert them into efficient instruments, gradual and self-regulated, even admitting experimental verification.

It will therefore open a vast field of experience and research. Many of them, of course, are not new, nor original, but we have our conviction intact and firm that others newer and more advanced will help us, if not to discover a new architecture, which would be a miracle or something absolutely disproportionate with our efforts, values and knowledge, yes to go on resolving, with the powerful tools of reason and method, each time with more serenity and security, the many problems that face this tormented world and yet extremely Live".

Paulina Villanueva (Caracas, Venezuela, 1950). She has been professor of Architectural Design and Theory and Director of the Architecture University UCV. She is currently director of the Villanueva Foundation.

From Le Corbusier's boîte to Villanueva's cube.  
The pavilion of Venezuela, in Montreal, 1967.

José Javier Alayón González

Anyone who knows the Boîte à Miracles, before knowing the tales that arise that suggest Le Corbusier's drawing as an inspiration for Villanueva, at once intuitively understood that the Montreal Pavilion was in debt to this concept of the empty box or magic box, beyond the simple drawing and its architectural sensation, the geometric thing that the Swiss architect defined. Villanueva's interpretation becomes even more faithful to the original idea of a box of miracles, than that developed by the inventor himself in his various versions, a recurring idea in evolution from the beginning of his career. The tendency towards what is simple is an inclination of the spirit, it is "the sign of command" explained Le Corbusier. A tendency that would be translated into one of the four types of the modern house, represented by the Villa Stein in Garches: "[...] a rigid case, absolutely pure. A difficult problem, perhaps a pleasure of the spirit [...]".

This building, small and ephemeral, liberated from the social load -in its quality of basic service- which should govern architecture and keep, despite of its experimental nature, the key to Villanueva's last architecture. Defined by some critics as a "zero moment" of his career, a re-start, is for us exactly the opposite: the distillation of certain principles long matured and succinctly explained. The project of the petroleum school of Maracaibo, is the link that shows the progression in the construction of "an ideal form, without anything useless, so logical and so pure that no significant difference existed between the roof, walls and natural spaces".

This desire of Villanueva is always preceded by the idea that: "The building has significance only for the content that it shelters". Nevertheless, there are situations in which a changeable or nonexistent content -as in the case of the Pavilion- requires an empty box. The utilitarian principle of the building minimized -the contents-, its form and its construction will be the main problem to solve.

**From the boîte to the cube**

*(...) La boîte à miracles est un cube: par-dessus, il y a tout ce que est nécessaire, la lumière et tous les appareils nécessaires pour faire les miracles, levage, manutention, bruit, etc".*

*This is how Le Corbusier first described his theatrical prototype in 1948.*

*This idea was summarized in a concise image that would be published three years later accompanying his conference "The heart as a meeting place for the arts" in the CIAM of Hoddesdon, England.*

*That cube, which he really drew as a parallelepiped, determined probably by a preconception of the theatrical space in proscenium. Later on this primitive, hermetic and abstract box is developed for some real projects. The concept evolves and it tests new theatrical configurations and expositions achieving richer formal results, but yet very different from the original concept.*

*Le Corbusier claimed the status of the architect and his knowledge of the volumes to justify the given "cube", would be able to satisfy everyone. A basic form for multiple readings, "perhaps pleasure of the spirit".*

*The first Boîte is not a machine à habiter, it does not have to be functional, nor practical in the sense that modern logic established. Its sole function is to fulfil the dreams of its visitors and ensure the technical conditions to make it feasible. Consequently, la boîte will also oppose its constructive prototype par excellence, the rational maison dom-ino. The horizontal spatiality of this is exceeded by the need for a void without a defined directionality.*

*Structurally, this opposition is obvious.*

*Compared to the dom-ino constructive framework, which independence allows it to establish indoor-outdoor relationships without any structural commitment to the facade, the boîte makes its enclosure load bearing. The floor plan goes from being an overlayable two dimensional 'free' concept, to a single cubic space.*

*The box structure which is supposed to be epidermic – as in its interior everything is empty -, reverts the idea of an independent enclosure to that of the structure.*

*The façade will be structural, unique and continuous. It will not be a plane, it will be a volume. The box is a body that settles outright*

*on the ground, therefore pilotis and terraces, spaces below and above the dom-ino model are annulled.*

*The building no longer floats on the ground, it sits on it.*

*Nevertheless, the most relevant for our case is the idea of space and its relationship with the exterior. The boîte, in its initial framework, is understood as a void, the opposite would be to imagine it as a solid. Its exterior does not reveal anything; a tiny door indicates the access to a space that is immeasurably foreseen, magic. In the interior everything is dark; there is no relation with the physical beyond. In the exterior everything is opaque, there are no intuitions about the inside, and it is known that everything fits in but not how. Light, environment and reality, are not necessary, they do not appear. Its interior is only a representation, a pure theatrical artifice.*

*In another way, the plane colour square of the modern artistic avant-garde and the basic forms of the Bauhaus complete the references that we consider are within the conception base of this unique project by Villanueva. Although there have been since ancient times innumerable works created from pure basic volumes, up to the convergence of several of these artists in the German school, the purification strategy of the form developed by the modern movement, did not reach the paroxysm of their students and teachers' projects.*

*From a chess game up to buildings, passing through clothing, furniture, sculptures, etc., everything was likely to be reduced to the basics.*

*Always aware of his time, a good part of the art works that Villanueva gathered in his house Caoma are direct products or heirs of the suprematist culture.*

*Paintings of Lazslo Moholy-Nagy, Van Doesburg, Sophie Taeuber-Arp, share walls with Venezuelan artists of subsequent generations such as Alejandro Otero and Jesús Soto, in line with these European avant-gardes. A collection in which spatiality is pursued through geometries of plane colours or of colour in itself.*

### **3 cubes on a geometric hillock**

*The land conceded to Venezuela, approximately 2508 m<sup>2</sup> and almost rectangular, was located on the island of Notre Dame, on a*

*narrow strip of land reclaimed from the St. Lawrence River.*

*In the design process, which can be reconstructed through his sketches and drawings, from the beginning the architect opts for an implementation of the volumes distant from its borders, seeking a tension between them, independent of the site's geometry. With this decision Villanueva seeks to widen the perspective of the volumetric set, liberating their environment to enhance their formal apprehension and their visibility from a distance.*

*The process would be developed on variations of an idea. Different sizes would be tried for the volumes, their grouping, location on the plot, but always on the basis of cubic and opaque bodies. The idea of the cube as the only formal answer to the need to accommodate a content, capable of standing out in the "variegation of forms" typical of an event of this type, which seems to be the genesis of this election. This strategy would allow a progressive adaptation in the evolution of the content of the pavilion, the suppression; enlargement or addition of one of these does not affect the configuration of the other bodies. Thus, his quest was double, that which would externally behave like a unit and that internally would work autonomously.*

*To understand this pavilion as a sculptural piece is not an unfounded hypothesis, since the architect himself came to define it this way. When he said that: "To freely choose the forms, concerns sculpture, but not necessarily architecture", he was leaving the possibility open to situations that required it. Villanueva himself warned: "not to give too much importance to the formal, it will give a false impression of the role to be played by the architect. Final aim: space and not form". But, "necessarily" in front of an empty programme, if there is no use that generates the space there will have to be form. Form that could not be altered by any element that denounced a human scale, thus, the access doors and services remained hidden under the shadow of the roof that connected the three bodies.*

*The large platform, with light ruptures, is the most explanatory element of the sculpturization of the Pavilion. This geometric topography never ceases to be a foundation halfway between the crepidoma of the Greek temple*

-replacing steps with ramps- and the classical foundation of a sculpture. However, although his objective is to sublimate the trio of cubes, it does not interpose an impediment between the "work" and the visiting "spectator", on the contrary, it facilitates his approach.

Furthermore, with its elevation it forces a perspective somewhat inclined over the complex, amplifying its vanishing point and avoiding a flat reading.

At the end of 1966 the programme was defined by three cubes of 13 meters on each side that would contain; the first: an audiovisual projection; the second, a representation of the rainforest and the third, the area of restoration and artistic representations, with a second floor for administrative and other facilities. The technical and budgetary complexity to reproduce a natural habitat within an opaque cube in Montreal eliminated that idea and months before the inauguration, the second cube is emptied of content.

Resolutely, Villanueva would propose the participation of the plastic artist Jesus Soto with a great sculpture.

A sketch by the architect insists on a combination of vegetation ("Tropical plants") and a "floating" sculpture. Mirrors and background music would amplify the abstract – a natural installation. For his part, the work of the kinetic artist experimented with certain informality at the time, superposing materials of organic forms -tangled wire, pieces of metal and wood- on the geometric backgrounds that were producing illusory optical movements, seeking -in his own words-, to explore links with the Art Informel.

### **3 cubes of colour**

Although the power of the shape is crucial for this project, colour is no less important. Since the University Hospital of the UCV (1945), Villanueva used it extensively. However, his favourite was always that of natural material; and his ideal material: concrete. Therefore, the applied colour, as an architectural element, would always be used with very precise criteria and, as is logical, independent from those of art and its integration in architecture. Although, in order to achieve integration, the colour as a common ground must satisfy both, the subjective plastic requirements and the physical objectives of their application. In this case, not having an evident structure

and interstitial spaces susceptible to chromatic intervention, the colour would have to be "structural". The planes that form the cube do not touch each other. All of the vertices are solved with open joints creating a shadow that disarms the cube in floating planes. Planes of colours and not the aluminium that supports it. Colour converts into matter, it stops being an adjective, to become subject. It is a plastic and physical resource, and above all symbolic, representative of a Caribbean culture.

The first cube, dedicated to audiovisual projection and black on the inside, was painted with the three basic colours: yellow, blue and red, the same colours of the Venezuelan flag. That decision, which could be labelled as folkloric, even naive, is a detail that goes unnoticed in the dynamic reading of the Pavilion. The impossibility of seeing three vertical faces simultaneously in a cube, does not permit the appreciation of the tricolour of the flag. The arrangement of the colours must have been studied in relation to the adjacent face of the same cube, with which it makes the exterior corner and the adjacent cube face, with which it makes the interior corner and, very important, where it is reflected creating a third colour.

The cube of Soto's installation, originally designed with its three outer faces in orange and the remaining in blue finally would alternate these two colours to avoid a flat view of the volume from a distance.

The third cube would have three black faces and the outermost, at the edge of the street, would be green.

This disposition would assure that in three of the four possible perspectives, there would be a black surface in the forefront or as a reflecting surface.

Black would neutralize or enhance the adjacent colours. Finally, although the sky train did not exceed the height of the building allowing a view of their roofs, Villanueva did not leave these faces untreated, aware of the photographs, films, and visits that would take place in the exhibition by aerial means. Thus, in the fifth perspective possible, the faces of the roofs, besides being painted, also included the sign of "Venezuela", which was printed in white on the black and blue faces, and in black on the orange and White ones.

### **3 metal cubes**

The construction of a pure shape led Villanueva to deal with the relation structure-enclosure in a unique way in his career. The structure of metal sections, Boyd beams and aluminium plates, allowed a quick and economical execution of the pavilion, with perfect finishes and glossy surfaces. As in the Boîte, interior and exterior are unconnected and the structure disappears embedded in a chamber in the transit of a sculptural exterior to that of an interior, let us call it architectural -spaces with functions-, but alien to external reality.

In Soto's cube, he had to internally amplify and modulate the vibrations of colour of the artist's "string-instrument" and the sound of the sonorous installation that accompanied it, a fully fledged "resonance box". For that purpose, its interior is as smooth as the outside, but matt and absorbent. A background that provides the neutrality required for the kinetic work. The beams are hidden in a false ceiling that covers the machinery that makes the sculpture turn and that does not touch the walls, enhancing the sense of verticality and suspension of Soto's sculpture.

The audiovisual cube was an obscure chamber, a real Boîte à Miracles, in which the projection screens floated.

A platform with perimeter ramps elevated the spectator and brought the viewer closer to the height of screens.

This movement allowed for the discrimination of the entry and exit circuits for each audiovisual pass.

A little perimeter gutter on the roofs, embedded in the width of the wall, allowed for the collection and drainage of rainwater, without altering the sharp edges of the volume. At the base, another channel surrounds the three cubes allowing the installation of a tangent lighting. This small pit, together with a small projection of the enclosure, creates a shadow, which replaces the direct encounter of the materials, typical of the architect. This same thin shade raises the cubes from their basement creating, also a levitation effect, a precise boundary of the volume, a black line in contrast with the clear concrete of the hillock. A line that being at the visual height of the visitors (1.50 m), had to be treated with great precision. Any imperfections in the finish of

the concrete would deform the support vertex of the cube and thus its willingness for pure form.

Villanueva's Pavilion being a generic building, without an expository content determined a priori, it relegates its usefulness to that of a problem of image basically (that of a country) and to its constructive resolution. So then, this would be the greatest difference with respect to his long career, ruled by functionality and economy, the main and determinant characters of his architecture. As we already warned, it is not a question of a radical change in the way of his designing, but his response to a specific problem, in which, the use was not the determining factor.

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## Villanueva and Soto

Antonio Barrionuevo

Located on a granite millennial hill, the city in which sowed the seed of the continental dream of Simón Bolívar, the Liberator, is a privileged viewpoint of the Orinoco; the "Río Padre", as they call this horizon of water and the third largest river in the world.

In this land of grace that Columbus sighted on his third voyage, the capital city of the Spanish Guyana moved its original location as a port and fortified gate of El Dorado; until it emplaced itself on the narrowest stretch of the river where the river bed, six kilometres wide, is reduced to eight hundred metres in high water. Ciudad Bolívar constitutes a cultural landscape where its original grid plan, right angled and orthogonal, it settled on a displaced and adverse topography in which the colonial city remains like an intact jewel around the main square. Its rectilinear streets are populated with courtyard houses, the way of inhabiting of the native cultures in sunny latitudes and an evolution of southern architecture.

Benito Irady, coordinator of the candidacy of the city as Cultural heritage of Humanity and committed to "Cultural Diversity" a Venezuelan sign of identity, said: "Who would have thought that at the beginning of the twenty-first century, this city of endless stories would emerge again from its bones of stones to place us in its magical nature and in the consciousness of its name and reveal the American memorial that it keeps in its entrails to the world".

Jesús Soto, master of kinetic art, universal Venezuelan, was born in Ciudad Bolívar in 1923. Tireless researcher in the means of abstract art expression, abandoned early any type of figuration, texture and chromatic colour which were distinct to the flat and pure ones.

After moving to Paris, his works clearly within the inserted theories and plastic arts of constructivism, going on from the single plane to the three-dimensional object, where the superposition of built surfaces with diverse materials conforming graphic patterns, which would make the composition vibrate in front of the observer and his/her body movement; producing the kinetic vibration.

Furthermore, his creations are directed

towards objectivity in art. He stated "I do not see art as a free invention, but as the intellectual development of man in history".

His intense research made him constantly change the materials with which he built his works: he did not want to be trapped by a way of doing things.

"The introduction of plexiglas only interested me as a means to draw the space". And to be liberated of it he invented the way of overlaying the frames by means of metal rods welded together, without the addition that the Plexiglas represented.

Towards 1957 he designed the first "evolving work" which he titled "pre-penetrable".

It is a new achievement in the way of fully creating the total integration of the spectator by turning him/her into an actor "for me a work of art does not exist independently of the spectator". The important thing about the "penetrables" is to demonstrate that the space is fluid and full. The elements do not matter, since they are only there to make the relationships evident, the density of space.

When you are in a penetrable you feel that this is another space. One of play and movement. Soto considered that "the penetrable is not even a work, it is an idea of space that can be materialized in any situation and at any scale, if it were possible; to do so covering the whole planet."

Carlos Raúl Villanueva, Venezuelan born in Paris in 1900, is one of the main architects of Latin America and of the universal modern culture.

Professor of History and Composition at the Central University of Venezuela, outlining his works with total synthetic and expressive force, taking charge of reflecting it into defining plans of the project and the works of the Italian architect Juan Pedro Posani, currently director of the National Museum of Architecture in Venezuela.

For the teaching of architectural composition and design he invited as a master teacher of the workshop the then furniture designer Cornelis Zitman, a Dutchman living in Venezuela, that in the 1950s had founded the prestigious firm Tecoteca, in which functional and comfortable modern style furniture of great simplicity, endurance and beauty were manufactured with great skill.

As professor he emphasized that the plan of studies for the schools of architecture must be based on technology, composition and in