

PIERCING TRANSLUCENCY

**On Light. When solid light pierces
translucent light**

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On Light. When solid light pierces translucent light.

I would like once again to pause and reflect on light in architecture. It is my belief that we will continue to make progress in how to use light, opening up new possibilities in how to control light in a very precise way. If light is matter and a primary material of architecture, it ought to be used with exact, *quasi* mathematical precision, controlled like structures by means of its exact calculation. A true labor of research.

I have always argued that Architecture itself is and must be a true labor of research. An architect must attempt to advance in every project step by step, and through baby steps advance one more step in the long history of architecture.

Architecture is not just the construction of capriciously conceived forms, built with enormous effort and expense, only to amaze the ignorant crowd and, at times, the wise who are ignorant of almost everything related to architecture.

It is about building spaces guided by the hand of reason, which belong to the era in which they are constructed, faithful to their time. Architecture has always gone hand in hand with new technologies. That is why we say that worthwhile architecture always bears the hallmark of true research.

In his acceptance speech given upon receiving the National Research Award¹ in 1982, the Spanish philosopher and disciple of Ortega, Xavier Zubiri, expressed his gratitude to the Spanish people for recognizing that Philosophy is also a true labor of research. And if in that speech, wherever he says “philosophy”, I write “architecture”, the result is unimpeachable and surprising in the similarity of the views expressed regarding the best architects and what they should be striving for: a true labor of research.

I am convinced that what Palladio, Bernini, Mies van der Rohe, and Le Corbusier did, to name just a few, was true research. All of them deeply understood their time and they used technology as a key to unlock new



ways of conceiving of and constructing space. They researched new technologies and studied space as true scientists, not merely as artists. Mies van der Rohe could never have conceived of continuous space if he hadn't had steel or been able to make use of plate glass in large dimensions. Understanding technology, he was able to create new possibilities for architecture.

And so, if research refers to new technologies as they are applied to the materials and construction of architecture, we must ask ourselves whether we can conceive of that same research in relation to light, the oldest material of architecture? That is our intent and the topic I will be addressing here.

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SOLID LIGHT²

I have written extensively on light in architecture and built many works in which light is a central design consideration; so much so, in fact, that some people associate my name with the use of light. I will never get tired of repeating it: light is the most luxurious and precious material used by architects. However, because it is free, many of them don't place a high value on this divine ingredient. Ask any scientist, light is as material as stone and there can be no architecture without it. Architecture without light is like music without air: *Architectura sine luce nulla Architectura est.*

In well measured and controlled quantities, depending on the desired effect, the solid light of the sun enters a building through holes drilled into the ceiling or the walls: skylights in the uppermost horizontal plane, the plate roof, or windows opened in the vertical plane, the walls, and is not only of capable of illuminating the space created by the architect, but also of tensing and tuning it. Solid light allows spatial friction, thus giving a space its own unique tune, much like the passage of air between the holes, strings, and within the resounding chamber of a musical instrument that gives birth to its own sound.

TRANSLUCENT LIGHT

If the situation of a space in shadow, pierced by contrasting solid light is understandable, that of a translucent space pierced by solid light

should be equally clear. But in order to understand it better, we will first need to go deeper in our understanding of simple translucified space.

When the Goths first raised their stone cathedrals, the whole point was to get more light from heaven, quite literally the sky. They rose upwards not just because of the spirituality of the form of the construction, but also in pursuit of the greatest quantity of light that could stream through their stained-glass windows. In order to achieve this, and maximize it, they invented the clerestory,³ the upper level of the nave of a church, which was very effective in redoubling exposure to light. The light was the central consideration of the entire operation.



Given that the quality of glass at that time was not perfectly transparent, we can imagine those spaces first filled with a very special, translucent, and beautiful light. With the ornaments of the glass, they at once filled with the pedagogical spirit of colors and doctrines. As a result, those gothic spaces lost clarity. Medieval architects probably did not think, or realize, that the rational and primary impulse for what they had done was, in fact, motivated by the search for a greater quantity of light. They forgot this and filled the space with more doctrine, extinguishing the luminous potential of the churches; more spiritual light and less material light.⁴



In only a very few cases did those naves fill with celestial, translucent light, the sort we might call more “whitish”, and which, in a certain way, enveloped the space as if it had passed within a cloud in the sky. Yes, a majestic cloud whose verticality, emphasized by a stone structure raised as high as possible, made it a glorious sight. However, besides a few exceptions, the *horror vacui* latent in every human being had its way, resulting in the loss of that brilliant translucency. More doctrine and less light.

Víctor Nieto, in his essay *Light, Symbol and Visual System*, argues that it was not light but the construction itself that led Gothic architects to raise the naves of their churches. Nevertheless I believe light to have been the central element of Gothic architecture. More light meant making more “divine” those spaces that were in reality not only more vertical, but also more “spiritual”, achieving a concept so ardently sought after: the suspension of time.

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Several writings about the Cathedral of Avila,⁵ with its echoes of French Gothic, lament the fact that the stained glass windows are “*so lacking in color*”, when it is precisely that lack of color and purity of light that makes the cathedral so very beautiful, bathed in that same translucent light that we are concerned with here.

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Centuries later, the Baroque period saw the rebirth of light as the central focus of design. The best architects of the time, such as Bernini and Borromini devised new ways of treating light. The diabolically brilliant invention of Bernini, *luce alla Bernini*,⁶ was magnificent: he hid the entry point of the brightness of the light behind constructed forms such that the space appeared mysteriously flooded by divine light. In order to accomplish this feat, he scrupulously controlled his design with such mathematical precision that every millimeter of its dimensions and orientation were accounted for and reconciled.

Many years later, the invention of the “glass block” brought along the ability to erect an enclosure, an entire wall, soaked in light. The glass block was the *in situ* precursor of translucent concrete which some in our century desire to patent. In my estimation, it adds hardly anything substantially novel to the marvelous and old-fashioned “glass block.”

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In any case, the wife of Doctor D’Alsace, the owner of Pierre Chareau’s Maison de Verre⁷ in Paris would recall that while it was under construction, a peculiar character outfitted with thick, black-framed glasses and a hat would pass by every morning to inquire about those pieces of “glass block”, a complete novelty at the time. That person was none other than Le Corbusier. The Maison de Verre (1930) was not only a bold statement in favor of “translucent light”, but also, because of its dimensions and proportions, one of the most beautiful spaces in the history of modern architecture. Afterwards, Le Corbusier would use the glass block in many of his works, but never with the skill and polish of Chareau.

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In the same vein as Chareau, Giuseppe Terragni put up a breathtaking house for the V Triennale of Milan⁸ with more “vertical space”, whose large façade of glass blocks (*pavés verre*) boldly retains, by the use of transparent glass from side to side, its intended eye-level evocation of a French window. This studio is a marvelous piece, a key to Terragni’s own architecture and also to the history of Modern Architecture.

Perhaps it is that horizontal plane strip in the roof that confers on the space that greater sense of tension than is to be found in Chareau's house. The long silk curtains, also translucent, combine to make this space difficult to equal in terms of illumination.

Jesús Aparicio has written a text *The Density of the Architecture of Giuseppe Terragni*,⁹ in which he makes an accurate analysis: "*The interior of the studio is a paradigmatic example of the premises of phenomenological transparency. The box opens up to the light by building one of its sides with translucent glass; furthermore on this plane of light a horizontal strip built with transparent glass stands out from all the rest, which is done in glass blocks*".



SOLID LIGHT ON THE TRANSLUCENT SPACE

Could it be possible that similar to the rays of sunlight, solid light would "break" the darkness of the space in shadow, and also bring "tension" to the translucent space?

Let us take a step further with this idea by taking a step back into the history of Architecture. Let us imagine a new type of space which, learning from all its forebears, proposes new possibilities.

We dream of a luminous, translucent space, like a cloud pierced by the sun's rays of solid light –by such means and to such a degree that the operation at work there becomes palpable and visible. Just as it is easy to distinguish the light from shadows in the Pantheon of Rome, this new space would be recognizably translucent and obviously pierced by solid light. This in essence is the meaning behind "piercing translucency".

ADDENDA

In the most serious attempt to advance architectural history in its relation to light, I would like to propose here a new type of space based on previous works, which opens new paths for the future.

We already have experience of working with this kind of light in previous projects. The vestibule of the San Fermín College,¹⁰ in Madrid, is a triple-height space with a great cylinder of glass blocks which only uses translucent light.



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And the same is true for many other works too numerous to mention: from the Cultural Center in Villaviciosa de Odón,¹¹ 1992, to the Benetton Nursery,¹² Venice, 2008 –the emphasis is always on light, whether translucent or solid, as a primary material of Architecture.

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In 2009, in an attempt to win the competition for the design of a new entrance to Milan’s Malpensa Airport, the Porta Milano, Paulo Durao, a young Portuguese architect and I conceived of a magic box design: a radical and bare space filled with translucent light which we rippled with a rain of solid light.¹³

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The key to the operation was to make possible a harmony, yet with unique contrast, of two kinds of light, like the combined sound of instruments in a musical composition.

As I said already, I will never tire of insisting on the importance of measurement and exact quantities of the various ingredients which go into the recipe of architectural design, as the dish of the architectural construction requires the same precision that the words of a poem exact of the poet: too much salt or too much pepper, or rather, just a pinch in excess or a smidgeon too little ruin the intended flavor.

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My intent was to make a space filled with translucent light and pierced by the solid light of the sun in a precise *quantity for quality* artistic effect.

MIA, MUSEUM OF ITALIAN ART, GARRISON, NEW YORK¹⁴

There’s a project on my desk at my studio in New York in which I’ve put all my hopes. Good fortune is shining upon it: a pavilion to accommodate the collection of Italian *Arte Povera* and Murano Glasses for the Olnick Spanu family in Garrison outside of New York City. It is the same place where I built a house for them thanks to a combination of my efforts, their generosity and the effective assistance of architect Miguel Quismondo.

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The project envisages a very restrained concrete box. The entrance is a special space, a 10x10x10 meter cube whose upper half is translucent.¹⁵

In the structure, we substitute bones for little bones, if you will permit a slightly inaccurate metaphor. In short, we make the structure

delicate and white, as opposed to bold and heavy, and covered inside and out with translucent glass, so that it has the ability to sufficiently resist gravity while also disappearing through the force of the light that streams seamlessly through the structure. This structure is made with thin pillars of white painted steel, perfectly suited to define a cubic figure, and it will have a depth of 1 meter allowing movement within for behind-the-scenes maintenance of installations, artificial lights, and for cleaning.

Like I said, it will be covered with translucent glass. On the outside, it will be with delicate yet strong white metalwork, capable of withstanding water and cold. Inside, since all the problems have been solved on the exterior layer, the glass can be placed with more radical freedom.

The ground plane receiving the solid light from both the ceiling and the walls will be entirely white in concrete. Besides offering high performance, white concrete most excellently reflects the light and is a key material for the operation of the space.

The resulting interior space will be one of translucent light, as if we were inside of a cloud. From the outside, when the lights are on at night, the space will resemble a beckoning lantern. By day, the natural reflected light will mysteriously emanate from the inside, offering an unprecedented sight.

But now to the crux of the matter: simply put, what we want to do is only possible thanks to new materials and new technologies. By making precise perforations between the panes of glass prior to installation, the solid light of the sun will be able to traverse both the inner and outer skin of the glass and pierce what previously could only have been a simple translucent space. The correct order, precision and dimension of these perforations will measure the point of tension of that space. As a result of the natural movement of the sun, the harmony, or lack thereof, the tension between the translucent and solid light will reverberate in the space and make visible the light movement in the splashes of light that appear and disappear according to whether or not they coincide with the openings. So very simple.

What already appeared in some of the images of the models that were made for Porta Milano, the design for Milan's Malpensa airport, here