

Transparencies: Reflections on the Evolution

Recurrences and alternatives under an environmental perspective

SÍLVIA MOREL CORRÊA,

Laboratório de Conforto Ambiental, Faculdade de Arquitetura
Universidade Federal do Rio Grande do Sul, Porto Alegre, Brasil

ABSTRACT: *The subject of transparency, one of the most characteristic aspects of the Modern Movement, remains as an object of discussion and new considerations under multiple perspectives. It was the theme of the Seminar DOCOMOMO SUL, in 2006, which revised classical examples of modern Architecture. Before that, in 1995, in the Light Construction exhibition, organized by Terence Riley, a great number of contemporary examples were constituted by enclosures of multiple layers of glass and translucent materials featuring shading devices made of light metallic elements. The transparencies – viewed in this paper as a strongly seductive and persuasive attribute to different architects' generations – prevail in the region of the building envelope that seems to oscillate between the desire to break away from the environment or merge with it. Facing the conceptual and pragmatic changes suggested by environmental questions which are central in contemporary architecture, it is intended in this paper to discuss some aspects of the environmental performance of the building's enclosure through an historic approach. This discussion has to be connected to an analysis within a wider perspective of the architectural context, since by isolating the building enclosure as only an element susceptible to performance analysis, we may risk eliminating its historic, aesthetic, constructive and functional meanings.*
Keywords: *transparencies, comfort, natural lighting.*

INTRODUCTION

As we think of transparencies from an environmental point of view, it can be stated that architects have enough theoretical knowledge to predict the environmental performance of buildings with transparent façades. However, it is known that this is only one among many focuses of a project – basically visual perceptions can predominate in the judgement of and decisions about a project. Thanos Stasinopoulos' text defines well the situation that has persisted in relation to an uncommitted attitude of architects towards environmental sensibility [1]:

'[...] the face of solar design has not acquired a distinctive (and certainly not a tempting) character yet. Most constructed examples consist of neutral buildings with some energy related features attached on them. In overall architectural terms they can hardly be assessed as exciting, thus shaping the public perception that the form which follows the environmental function is not usually attractive.[...] Indeed, words like savings, reduction, kilowatts and dollars reverberate in conferences [...]. Other notions like style, quality of living or imagination are usually absent [...].'

In order to expand the scope of reflection on a feature such as transparency – a dominant aspect in the Modern Movement and still a very strongly attractive and

persuasive feature regarded by different generations of architects, a review of the main historical landmarks is compared to some updated examples. It is not the goal of this paper to present solutions, but rather look for new views, so that the natural environment feature can also be incorporated as a sensory quality, i.e., the perceptions stated about such venues.

EVOLUTION OF TRANSPARENCIES

No landmark for this review other than Paxton's 1851 Crystal Palace (fig. 1) can be pointed out. At that time a note in the Times magazine by the emigrant German politician Bucher [2], reads:

'We see through a delicate network of lines, without having any clue by means of which we might judge their distance from the eye or its various dimensions. [...] Instead of moving from the wall at one end to another, the eye sweeps along an unending perspective which fades into the horizon. [...] There is no light-and-shadow play that can allow our eyes to gauge measurements. If we let our eyes rise, they will find the blue-painted lattice girders. At first these occur only at wide intervals; then they range closer and closer, until they are interrupted by a dazzling band of light – the transept – which dissolves into a distant background where all materiality is blended into the atmosphere.'



Figure 1: Paxton Crystal Palace. [Online] Available: http://upload.wikimedia.org/wikipedia/commons/eleb/Crystal_Palace_interior.jpg [04/03/09]

Only eighty years later did the first glass houses appear. The first one built between 1928 and 1932, the Maison de Verre (fig. 2), was executed by Pierre Chareau, in association with Bernard Bijvoet - a house with a complex functional programme meant to be a gynecologist's office and be completely independent from the family's residence.



Figure 2: Maison du Verre, photo: Daniel Lebé, SDIG [Online] Available: <http://www.culture.gouv.fr/culture/inventai/itiinv/archixx/imgs/p26-03.htm> [05/03/09].

This house, whose envelope became the classic example of translucent lighting, consists of a new and special experience, which is well illustrated in Herman Hertzberger's text [3]:

'But I can't imagine anyone who, upon entering this house for the first time will not be amazed at the space that unfolds before him on the other side of this solid glass wall. For me, this house - a unique space, an articulation of places blending and overlaying one level upon another, without visible divisions - has represented a whole new experience. [...] The entrance, with its

acoustic transparency, makes any remote corner of the house audible, and together with the unusual feature of light filtered by the glass blocks, diffuse and quiet like indirect light, evokes an extraordinarily peaceful and airy atmosphere.'



Figure 3: German Pavilion, photo: Vicens (License: <http://creativecommons.org/licenses/by-sa/3.0/>) [Online] Available: http://upload.wikimedia.org/wikipedia/commons/d/d/Pavelló_Mies_18.JPG [04/03/09]

The third example could not be any other than the Pavilion of Barcelona, of 1929, an archetype of Mies van der Rohe's work, in which he intends to express a compositive determining system for his future works, a system that would produce free plans with fluid transitions between spaces - a feature that was kept essential to his work. The pavilion is one of the memorable venues of architecture precisely because of this interpenetration of exterior and interior, generating Gideon's so-referred intermediary spaces, belonging to the third space age conception [4]. Its objective is to accomplish the transition between inside and outside, sometimes to integrate, sometimes to separate (fig. 3).



Figure 4: Farnsworth House, photo: Jon Miller & Hedrich Blessing [Online] Available: <http://www.farnsworthhouse.org/photos.htm> [04/03/09]

The Farnsworth House has become the archetype of the 'Glass Box' project carried out in 1946. However it was finished only in 1951 (fig. 4). The dispute between Edith Farnsworth and Mies van der Rohe [5], based on the fact that it is an unlivable house because of its high heating cost, is widely known. This spatial perception, however, is an experience to be mentioned: *'...with its strict and minimalist shapes the house stimulates a very sharp awareness of the building envelope: waking up to living curtains because the silhouettes of lime orange tree leaves were one of the very unique pleasures it rendered, according to a later owner, Lord Palumbo[6].'*

Yet, Philip Johnson's Glass House (fig. 5) concurrent with Farnsworth, both made of glass, was largely used. Johnson even died in his own house in 2005. Mies kept pure glass forms throughout his work. Johnson, like Mies, did not want to compromise shape by adding parasols [7], yet placed the house in an oak forest, with old leaves that can filter the sun in the summer and allow sunshine in the winter for heating.



Figure 5: Glass House, photo: Paul Warchol [Online] Available: http://images.businessweek.com/ss/06/11/1122_glasshouse/source/1.htm [13/04/2008]

The Brazilian examples of this period are not entirely made of glass. Niemeyer's Canoas House follows the modern pattern with the peculiarity of completely adjusting to the site and to its topography, generating beautiful curves that invite penetration into the forest (fig 6). Opening and closing gestures will account for opposing opaque zones to transparency; concave wood-finished walls reflect the sunlight that streams through the trees around the house. The bedrooms are downstairs surrounded by opaque walls. Yet covered by glass layers, one can say that from the lighting point of view the theme of this residence is shadow or dim light [8]. According to Niemeyer, the shadow justifies transparency: *'... And for the living rooms I created a shadow zone so that the glass would avoid the curtains and the house could then be transparent, as I do preferred [9].'*



Figure 6: Casa das Canoas, source: "Brazilië. Laboratorium van architectuur en stedenbouw" [Online] Available: http://www.vitruvius.com.br/arquitextos/arq003_03.asp [04/03/2008]

Another example in Brazil, is Lina Bo Bardi's Glass House [10], which, likewise, is not completely a glass box, but features the social area in a transparent suspended pavilion (fig. 7), adjacent to the opaque block of the bedrooms, which is laid on the ground.



Figure 7: Casa de vidro, photo: Nelson Kon [Online] Available: http://www.vitruvius.com.br/arquitextos/arq074/arq074_01.asp [13/04/08]

Thus, we can observe that the Brazilian examples opted for not being as strict as Mies concerning the sublimation of functional requirements. Contrary to the previous examples this reveals an adaptation to the site – the box is simply lying on the ground; what is at stake is the attitude towards glass, which is used as a reflecting surface or the fading of the surface into pure transparency. In fact, by opting for horizontal plane reflected in spatial flow, Mies manifests his option for tapping into light reflection to get floors and ceilings with identical luminous intensity, as it can be seen in the Barcelona Pavilion (fig. 3). By means of reflectibility, Mies refutes the idea of dense lighting directed and concentrated that is shattered by the most obvious verticalities: the rays of the sun [11].

CURRENT PANORAMA

Fifty years later it is still pertinent to review the significant examples when bringing current projects to life, the case in Brazil, in which references do not yet seem to be overcome. The example shows Mariante house, which is a square concrete box supported on pilotis (fig. 8), with glass wall [12]. The house was designed by MMBB Architects and is located in the condominium *Aldeia da Serra* in São Paulo. It still surprises neighbors as an unexpected language in the local context, as it clashes with the consensual homogeneity of the surrounding houses. The concern with the environment stated both as the features of the suspended box - facilitating natural ventilation - as well as the roof with a 20cm reflecting pool which acts as a thermal element, preventing severe summer temperatures which heat the slab, helping to protect the lower floor.



Figure 8: Casa Mariante, photo: Nelson Kon [Online]
Available:
<http://www.vitruvius.com.br/arquitextos/arq000/esp225.asp>
[05/03/09]

The expression “a curtain wall” was incorporated to architecture lingo several decades ago, but it was really explored by the architect Shigeru Ban in Japan. The house is open to the exterior and uses contemporary materials under new interpretations of Japan’s traditional styles. Long decks run along the east and south sides of the living area on the second story and a canvas curtain is put up on the external façade between the second and third storys (fig. 9). Inside, conditions are controlled by opening and closing this Japanese style curtain wall, favoring natural ventilation in the summer. In the winter a set of sliding glass doors in combination with the curtains may provide for complete isolation and privacy. This fine membrane refers to *Shoji* and *sudare* (screens), and *fusuma* (doors) which appear in traditional Japanese architecture. The result is not only stunning but also thoroughly adequate to the context, evidencing simplicity, beauty and innovation [13].



Figure 9: Curtain Wall House, picture: Shigeru Ban Architects
[Online] Available: http://www.designboom.com/history/ban_curtainwall.html [13/04/08]

Summarizing the way Peter Zumthor thinks of light [14], we can establish the following considerations about possible strategies for the building envelope: first, as transparency that allows light to pass through and tests materials to see it reflecting and transmitting and second, as the opaque box that is being excavated. Alberto Campo Baeza’s project [15] the Blas house in Seville, is a synthesis of this discourse. The building is seated on a tectonic platform over which rises the glass belvedere and from where a beautiful landscape is revealed. It perfectly responds to public and private duality (fig. 10). In this aspect it follows the Canoas house and Lina Bo Bardi’s Glass House, limiting transparency to the public facet of the programme.



Figure 10: Casa Blas, photo: Estudio Campo Baeza (License:
<http://creativecommons.org/licenses/by-nc/3.0/>)[Online]
Available: <http://www.flickr.com/photos/campobaeza/441041858/in/set-72157600038837061/> [05/03/09].

Adding to the alternatives cited by Zumthor, the intermediary space should be mentioned: that architecture, according to Gideon - already cited here, one can recognize an intense interpenetration of exterior and interior. We turn again to Mies’s Barcelona Pavilion, featuring an emblematic example of this flowing communication. However, the intermediary space is much more common. When examined, it surprisingly shows an ample array of very diverse situations - from primitive civilizations until today, as much in Baroque as in the Modern Movement, from single-family housing to representative buildings, in humid and dry climates, in

simple constructions or in palaces [16]. Space characterized by such flexibility not only shows suitable environment application but also creates a bigger enclosure area of the building, with great capability of adding resources to optimize its performance.

FINAL CONSIDERATIONS

In the entire discourse above, the use of transparency demonstrated an extroverted procedure, the desire for an opening to space, a wish for lightness, flotation or even dematerialization. Yet the case of Mies van der Rohe is another instance, for there is an intention of privacy obtained through walls and vertical planes skillfully positioned maintaining the spatial flow and the arrangement of furniture and objects determine the particularity and use of space. Including strategies of transparency and opacity in the same building has advantages from a practical point of view such as solving functional and technical privacy and habitability issues. Such issues were partially disregarded by Mies in the Farnsworth house – for which he was so opposed (at that time he had unreserved admiration for the outstanding advances in artificial conditioning). At the same time, connecting layers of transparency that will add different functional and energetic solutions as possibilities to the protection of and opening to the environment – so as to build up adaptability potencial to this envelope – will lead to a living and interactive building which positively reacts to the environment and vice-versa – as can be seen in Curtain Wall House.

The intermediary space – a great recovery for modern architecture – shows how multiple relations are present in several fields of action and scopes in architecture and landscaping, within closed and open spaces. It proposes new forms of architecture whereby it is not necessary to distinguish indoor from outdoor, whereby use may be accommodated indistinctively and establish much more direct relationships. Frontiers or limits vanish, dissolving and generating new transition spaces – which hold great potential for green solutions.

It can be claimed, at first, that still-emerging environmental aspects we can deal with both functionally and technically have to do with project decisions regarding enclosure and transparency, covering and uncovering acts which are beyond simply admitting or excluding heat. It can be further stated that the visual aspect of transparencies is actually intrinsically related to natural light admission – not as a lighting system, but rather as matter and energy, which will, at the same time, animate and be the soul of the building. This theme is open and still challenging continuity possibilities. It is thus a subject open to multiple views that allows for revisiting this architectural path.

The visual form is unquestionably and inevitably fascinating to architects, even being environmentally-

friendly architecture defenders. This is widely known, almost as though sustainability were an issue to be sublimated anywhere along the process due to stronger sensorial needs – which we are not always aware of. However, it is important to note that the place for natural comfort and sustainability itself is to be found exactly at the sensory level in a subtle way – unperceived in those spectacular photographs printed in related publications – so that comfort can actually be in our priorities as part of a design decision.

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