CINEMA AND ARCHITECTURE: TRANSPARENCY AS A WAY OF BUILDING SPACE

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Abstract
Modern glass architecture, as interpreted by theorists and critics of the Modern Movement, contributed to the rise of a new era – one that involved a new conception of space and new relationships between the human gaze and the architectural object. This new era in architecture is also frequently closely linked with the emergence of cinema as a new medium.

In contrast to the enclosed spaces of nineteenth century dwellings, the new glass architecture was to open up housing to the exterior, framing the space and the vista. At the same time, the new cinema began to use vision and emotion as specific tools. Film-makers and architects established a common ground through the cinematic space, based on transparency and movement.

Key words: *Architecture, Cinema, Transparency, Space*

1. TRANSPARENCY AND SPACE IN EARLY 20TH CENTURY ARCHITECTURE

Modernity has been haunted, as we know very well, by the myth of transparency: transparency of the self to nature, of the self to the other, of all selves to society, and all this represented, if not constructed, from Jeremy Bentham to Le Corbusier, by a universal transparency of building materials, spatial penetration, and ubiquitous flow of air, light, and physical movement. (Vidler 1992, p. 217).

Many of the architects working in the early 20th century reinvented the architecture of the day by taking inspiration from the great engineering works of the 19th century (Albrecht 2000, p. 3). "In Vienna, the banking hall of Otto Wagner's Post Office Savings Bank (1904-6) combined riveted steel columns, shining ceramic walls, a glass ceiling, and aluminium furniture for an architectural evocation of machine-like precision and sleekness" (Albrecht 2000, p. 3). This architecture influenced by great engineering feats during the Industrial Revolution, interiorised principles linked to the machine and the mechanism, at the same time as it freed itself from the opacity of the vertical self-supporting plane. In this context, space was created so that the materialisation of transparency could be established conceptually and formally.

In 1911 Walter Gropius was invited to produce a design for the Fagus factory in Germany, for which he created façades that prominently feature glass, thus marking a new position for architecture. From then onwards, Gropius' work took on, above all in his designs that were linked with the Bauhaus, a fundamental role as far as this new spatial conception was concerned; the Bauhaus School building (1925-1926), with its extensive glass surfaces, is illustrative of this development. The predominantly transparent façades – which allowed for a fluidity between the buildings' interiors and exteriors – relied on technical elements which were themselves innovative (Giedion, 1941, cited in Blau & Troy 2002, p.1). Many of these transparency-based designs quickly became references for the new modern architecture – amongst them, Bruno Taut's 1914 design for the *Deutscher Werkbund* exhibition, in which a glass dome was the prominent feature. Some years later, in 1922, Mies van der Rohe, designed a glass skyscraper for New York – an interior structure bearing an undulating glass membrane that covered the whole building, an intrinsic transparency. This design, however, was never built. Another few years on, in 1925, Le Corbusier presented his *Pavillon de l'Esprit Nouveau* at the *Exposition Internationale des Arts Décoratifs et Industrielles Modernes* of 1925. The pavilion featured large glass windows – in an assymetric composition – and a "floating" roof pierced by a large circular opening that heightened the illusion of spatial and formal lightness (Albrecht 2000, p. 9). In the new Corbusian spirit, mobility, circulation and flux were basic concepts that came together to liberate the

architectural object[1] – liberate it in the interior/exterior relationship and in terms of spatial organisation. "(…) l'architecture, c'est de la circulation" (Le Corbusier 1960, p. 48). For Le Corbusier, movement, circulation and liberation represented the victory of modern architecture over "paralysis", which he considered a serious issue in traditional architecture. And for Le Corbusier, buildings were built through control of the structure and by means of the express intent of focusing on the release of the tension with the ground – resolving the free plan – and in this sense Le Corbusier houses defined "(…) themselves neither by space nor by forms: the air passes right through them!" (Giedion, 1928, cited in Vidler 1992, p. 217).

This approach broke with the dominant trend of the preceding century and inverted the meaning of architecture. In contrast to the houses of the 19th century, where had a clear separation between the public and the private space (which was interior, closed and dark), Le Corbusier's houses broke down the barriers for good and looked to the exterior. "(...) 'privacy' became old-faishioned" (Buck-Morss 1997, p. 303). Thus, one can say that "Under the glass roofs of the last century, flowers and whole gardens were transposed indoors." (Buck-Morss 1997, p. 303).

A few years later, in 1929, Mies van der Rohe designed the German pavilion for the Barcelona World Fair, presenting an innovative work that is considered by many authors to be not only his masterpiece but also one of the reference works for the Modern Movement. The vertical surfaces, which function as free elements in the space – leaving the pavilion's structure also free – were conceived in glass or were covered in marble or onyx. The transparency of some of these planes and the "free plan" allowed for assertion of the pavilion's spatial fluidity (Albrecht 2000, p. 13).

Architectural experimentation – in terms of space as well as form and structure – brought with it the capacity of the architectural object to transmit different emotions to a new society. Thus, the development of a new method of building based on specific materials – steel and glass – boosted the relationship between the free space and matter. As Albrecht argues, this new architecture probably appeared to the lay observer as fragile and naked (Albrecht 2000, p. 4). In other words, exactly the opposite of the closed and contained architecture that characterised the 19th century.

Taking it as one the leading examples of this latent modernism, Albrecht writes that:

Le Corbusier's 1931 Maison de Refuge, (…) represents modernism at its peak. A shocking departure from its traditional neighbours, the building meets the street with an asymmetrical composite of freestanding elements, including a white-tile-and-glass-block cylinder, a dramatically cantilevered canopy, and a cubic pavilion clad in primary-colored panels. These provide the foreground for the main, multistoried body of the building, a structure clad in a skin of metal and glass. (Albrecht 2000, p. 4).

That same year, 1931, saw the completion of Pierre Chareau's *Maison de Verre* in Paris, another important milestone in the history of architecture in the early 20th century. Built between 1928 and 1931, this house presents a conceptual innovation that is also expressed in the materials used. Marked by a free metal structure, its main façade, as well as the rear façade, stand out for the extensive surface made of glass bricks. The house's structure defines three distinct functions within one and the same residence: a doctor's office, a private residence and a place of social gathering. The combination of the skeleton-like structure and the translucence of the façades mark the recognition of transparency and translucence as fundamental concepts in Chareau's *Maison*. The light crosses the courtyard and takes in the garden, without obstacles. In this way, the house is illuminated by the sun in its interiority, reflecting the paradigm of modernity that highlighted the relationship between sunlight, healthy energy and the healthy house – the passing from the century of disease to a century that was to be free of infirmities, breathing with full, open lungs – that the architecture reflects. In this specific case, the owner of the *Maison de Verre*, Jean Dalsace, was a gynaecologist, and the design of his house reflected

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[1] Distancing himself categorically from the architecture he deemed "traditional", Le Corbusier made a detailed comparison between the traditional brick house and the iron and concrete house and defined the existence of "waste", "inefficiency" and "paralysis" in describing the traditional house, contrasting it with the iron and concrete house, in which one could find the "free plan" and the "free façade". In other words, "paralysis as the opposite of "circulation" (Le Corbusier 1960, pp. 42-45).

a specific concern with salubrity and health. The *Maison de Verre* is also a demonstration of the application of industrial materials in architectural design.

1 – Maison de Verre, Pierre Chareau (1931)

Entrance to the courtyard that provides the light to the Maison de Verre's main façade (Photo: Maria João Soares, 2011)

2 – Maison de Verre, Pierre Chareau (1931).

Translucidness and transparency – a detail of the main façade (Photo: Maria João Soares, 2011)

In addition to the architecture defined by the use of glass walls that liberated the space, one also witnessed the defining of architecture that was based on the permeability of the spatial structure, as referred to above – proposing for a direct barrier-free relationship. As Giedion points out, the movement of air became a factor in the constitution of the architectural space itself. In other words, the space itself became a whole that was indivisible – a separation between the interior and exterior ceased to make sense (Giedion, 1928, cited in Vidler 1992, p. 217).

It was this relationship of dependence between the interior and exterior space – the concern with the relationship between what one sees and what is reflected – that came to govern the structuring organisation of the use of the space by the residents. The relationship between transparent matter, opacity and light that defined the designed space and at times took on a dubious meaning was explored:

For example, when it was dark and Viktor left the curtains open so that the windows became mirrors casting the whole room in duplicate, the chairs, the table, the onyx wall, reflected out there in the night. And his mirrored image walking back and forth, back and forth, suspended over the lawn that

had itself become ghostly and insubstantial in the reflection. Refraction of the daytime become reflection of the night. (Mawer 2009, p. 4).

In the living room, the idea of the reflecting screen that projects our own actions/life in the space we move in and extends itself like a cinema screen was accentuated. The narrative is developed, for each visual experience constituted a reception of fragmented information (Pinto 2012, p. 36), as the observer generates and builds upon. The body is the actor and, at the same time it is the viewer – it constructs the narrative and moves in the space, as the space permits. By opening up the space, the architecture made the framing of the body possible. This brings us into cinematic territory. Many of the critics and theorists of the Modern Movement interpret the modern glass architecture as a new spatial conception that can be compared to developments in cinema. (Jacobs 2007, p. 74).

2. TRANSPARENCY AND SPACE IN EARLY 20TH CENTURY CINEMA

Film is, in purely physical terms, the materialisation of transparency. Physically, the *old* projection material – celluloid – is itself transparent. The projection of film involves light passing through the film material (which is transparent or opaque to varying degrees) to be projected onto the screen.

As far as technical development is concerned, this period saw the experiments of Man Ray, with his rayographs, and the experimental approach of Dziga Vertov, particularly with *Man with a Movie Camera* (1929), in which the transparency is transposed to the film by means of experiments with the superimposition and juxtaposition of images.

Beyond the physical, experimental and conceptual questions, cinema also made use of transparency in its film sets, revealing the immediate relationship with architecture.

Cinema brought to the scenographic domain influences from architecture, with glass being used as a means of creation and expression. Transparency was defined as a conceptual and technical element that furthered innovation both in architecture and cinema – an intrinsic element and hallmark of the modernity of the early 20th century.

We have taken as references the films *Sunrise: A Song of Two Humans* (1927), directed by Murnau and *The Lodger: A Story of the London Fog* (1926) by Hitchcock, as well as a film project entitled *Glass House* (which was begun in 1926) by Eisenstein.

In *Sunrise*, the idea of transparency that is transmitted is very much in line with the emerging architecture – glass architecture. It features prominently, for example in one of the film's first images, which places the action inside a large train station. This scene has the station as its backdrop; the station is projected onto a large glass façade and serves as the framing for the city – like a film set. But this relationship between glass architecture and *Sunrise* is not only expressed in the formalisation of the set. Transparency and glass are used by Murnau – in a way that it perhaps less obvious but all the more relevant – to explore and transmit to the viewer the notion of three-dimensionality of the space.

Sunrise constitutes a successful experimentation with control of the depth of field[2] and the projection of three-dimensionality off the screen. Murnau repeatedly uses successive transparent planes, for example in the restaurant scene, in which the characters have to pass through several glass walls to enter the restaurant's interior space. Once inside that space, we see in the background the teeming city, the exterior. The life of the city is presented to us via the glass surface. The depth of field is accentuated.

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[2] Dietrich Neumann points out that Murnau used 3D cameras as a way of increasing the depth of field. (Neumann 1999, p. 113).

3 – A still from Sunrise: A Song of Two Humans

Three-dimensionality enhanced by glass surfaces. (Sunrise: A Song of Two Humans 1927 [film]. Friedrich Wilhelm Murnau. dir. USA: Fox Film Corporation)

4 – A still from Sunrise: A Song of Two Humans

Three-dimensionality enhanced by glass surfaces. (Sunrise: A Song of Two Humans 1927 [film]. Friedrich Wilhelm Murnau. dir. USA: Fox Film Corporation)

Another example that illustrates the emphasis placed on the three-dimensionality of the action is the night-time scene at the amusement park. A huge glass partition separates the dance hall from the dining area, which is in the foreground in the scene. This scene highlights, on the one hand, the idea of transparency and, on the other, makes the depth of field explicit. The two scenes take place at the same time: in the foreground, we follow the characters having their meal; in the background, a dance is going on; between the two is a glass curtain. The relationship between the various film highlights the dynamism and movement of the action and the image ceases to be flat and becomes three-dimensional.

5 – A still from Sunrise: A Song of Two Humans

Transparency as a setting for the action. (Sunrise: A Song of Two Humans 1927 [film]. Friedrich Wilhelm Murnau. dir. USA: Fox Film Corporation)

In addition to transparency being used and expressed in them, the two films – *Sunrise* and *The Lodger* – can also be linked by the use of fog scenes to emphasise both translucence and opacity. In *Sunrise* fog features in the story in two fundamental moments: at the beginning of the film, where it is an accomplice in the night-time meeting of the two lovers; and at the end, also a night-time scene, when diverse characters in boats are searching for the protagonist's wife. This search is all the more intense because of the fog that develops, making the search more difficult and increasing the despair of the characters involved. In *The Lodger: A Story of the London Fog*, the word fog features in the film's title, offering a clue as to the unfolding of the story. In *The Lodger,* the murderer is able to hide in the alleys and fog of the city – the city of London, which is itself typically associated with fogs[3].

But, whilst in *Sunrise* the transparency is expressed more emphatically through the development of cinematographic three-dimensionality, allied to the depth of field as a way of expressing a new dimension in the context of cinema in the transposition from the screen to the viewer, in *The Lodger*, Hitchcock uses transparency as a technical aid to express the dramatic relevance of a scene.

In *The Lodger,* Hitchcock focuses on the idea of transparency as a technical innovation in the field of cinema – the "glass house" – given that the house where the action takes place, known as Bunting House, is a typically Victorian house. In Bunting House, the private life of its dwellers is contained, with its secrets, in between walls, ceiling and floor (Jacobs 2007, p. 74). It is the opposite of the then contemporary architectural context. "The archetypal Hitchcockian house is completely at odds with the concept of the glass house that runs like a thread through the utopian aspirations of architectural modernism (…)." (Jacobs 2007, p. 74). In reality, the relationship Hitchcock establishes with the glass walls is not a matter of incorporating the architecture being experimented with at the time, but rather a technical aspect in the field of the cinematographic development. This development was based on the use of "glass houses" to be able to emphasis certain angles in the filming of scenes. "(…) in the early 1920s, the "architectural" school was already very much in evidence in the earlier period of glasshouses and location shooting (…)". (Bergfelder, Harris & Street 2007, p. 51). This was a period in which film directors understood that the camera was an extension of their intentions. Building these glass houses gave the director access to specific points of view on the action – through the positioning of the camera behind or below the sets. Filming through the transparent element gave the director an exclusive mobility. In other words, the director takes control of the action not only in the descriptive sense but also in the interpretative sense.

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[3] The legendary London fog was caused by pollution from the coal-powered factories of the Industrial Revolution.

Hitchcock used transparency to be able to effectively move the camera and also as a way of adapting the light sources to new viewpoints. "The combination of intimacy, careful exploration of domestic interiors, use of highly charged objects, and mobile camera work, (…) also characterize several of Hitchcock films such as *The Lodger* (…)." (Jacobs 2007, p. 17). Camera mobility in the space of the action is a reference factor in Hitchcock's films; the travelling shot is a guarantee of recognition of the space of the action by the viewer. The viewer can follow the unfolding of the action. In the Bunting House, with its saturated interior, the technical transparency is necessary so as to be able to visualise different scenes through the various levels of the house. The relationship between two of the levels in the house in which *The Lodger* was filmed has a very strong "aura" and, as this is a silent film, this "aura" has to be evoked in visual terms; thus, this evocation is particularly successful in the famous scene with the glass ceiling (Jacobs 2007, p. 74). "Hitchcock translated the perception of the lodger's footsteps into a shot of a moving chandelier and, subsequently, into a shot taken through a glass ceiling, so that the sound of his pacing is, as it were, visualized." (Jacobs 2007, p. 74). Steven Jacobs also points out that the Bunting living room is located on the opposite side of the house to the staircase that runs through it (Jacobs 2007, p.74). Despite this incongruity as to the positioning of the rooms of the house – which were built as film sets – the effective relationship between the correct location of the rooms used in the action is determined by the director.

6 – A still from The Lodger: A Story of the London Fog

Filming in the "glass houses". (The Lodger: A Story of the London Fog, 1927. [film]. Alfred Hitchcock. dir. UK: Wolf and Freedman Film Service)

Hitchcock took an important step in consolidating filming using processes based on transparency with the use of the "glass house" technique "(…) in the famous scene with the glass ceiling." (Jacobs 2007, p. 74). In this context, in "(…) the early 1920s, German films were either shot on outdoor locations and stages, or in "glasshouses", that is studios with glass roofs that allowed diffuse sunlight to naturally illuminate the sets (…)" (Bergfelder, Harris & Street, 2007 p. 41). The ability to control the lighting on a set was an added bonus for Hitchcock, as he really did not like shooting outdoor scenes. He has written that it was difficult to control outdoor factors in shooting a film, especially the lighting and the weather conditions and, later, after the emergence of talking films, the sound. Hitchcock created his own universe from the world that surrounded him and, in this sense, the use of the transparency of the "glass houses" was not just a technical issue but also a consequence of the director's own individuality and character. He was a stickler for details and, in this sense, his character was expressed in the means he chose to achieve his objective – the film.

The same year that Hitchcock released *The Lodger*, Eisenstein began developing a film project that was never completed but which he returned to frequently throughout his life[4]. *Glass House* was the working title given to this project[5], about which Eisenstein made extensive notes, which have been published in book form: *Glass House : Du projet de film au film comme projet.*

While Hitchcock was using the technical effects of the use of glass (applying the "glass house" film set), Eisenstein was writing *Glass House*, based on the idea of filming in a tower with transparency as a "character" in the action.

Eisenstein imagines a residential tower that is completely transparent, taking the concept of glass architecture to the extreme. Despite the experiments of Mies van der Rohe in particular in Germany between 1919 and 1922, it was Eisenstein's "encounter" with an image of a model for a Glass Tower by Frank Lloyd Wright, (…), that made him exclaim: that's it! (Soares 2011, p. 154).

In *Glass House* private life is subverted and becomes public life. For Eisenstein, this transparent universe was not limited to shooting a film in a "glass house", as a basis for the action and for emphasising certain viewpoints, but also included the act of revealing the residential universe in transparency. In this project "(…) for a drama on the conditions of living in transparency, Eisenstein explicitly noted the possibilities of using steep angles seen through transparent floors and ceilings – exactly what Hitchcock exceptionally did in *The Lodger*." (Jacobs 2007, p. 74). This reference to *The Lodger* is primarily based on a technical issue and on the need for the camera to be able to freely create the tension necessary for shooting the film, so as to guarantee the desired effect. In his project Eisenstein proposed a new way of looking at cinema and the space. *Glass House* was to highlight the question of visualisation through the material that constitutes the boundary to the space itself, through subversion of the notion of limit or boundary. "However, the *Glass House* project went beyond the context of Soviet cinema in the early 20th century, where experimentation had reached its highest point with Dziga Vertov and *Man with a Movie Camera* (…)." (Soares 2011, p. 53). In other words, "(…) *Glass House* became a film of impossibilities, a project destined to remain virtual." (Soares 2011, p. 153).

Eisenstein sought to explore the idea of the matter that surrounds us becoming transparent. He placed characters in uncommon situations, such as the study he produced for a glass balcony through the floor of which one could see the intense movement of traffic in the city below (Eisenstein 2009, p. 18). This heightened the feeling of vertigo and instability. The same effect is achieved in another study in which he drew two people and a cat sitting on a glass surface above the traffic of the city below. (Eisenstein 2009, p. 18).

The express idea of filming under the theme of transparency determined, on another level, the total lack of privacy. In other words, intimacy is turned inside out. This goes for the intimacy of lovers – "Love Scene through a W. Closet" (Eisenstein 2009, p. 19) – and, in the extreme, the intimacy of sickness or death, as in a scene that shows a woman who dies in a transparent space (Eisenstein 2009, p. 17).

As Jacobs argues, when Eisenstein imagines a woman dying in a glass space, one understands that: "in the cruel voyeurism of Eisenstein's glass universe, neighbours become rapt spectators of suicides and murders." (Jacobs 2007, p. 74). Eisenstein proposed the inversion of society's way of living – in contrast to the enclosed space of the early 20th century bourgeois dwelling, we now have the proposal of a spaced enclosed by glass, in which the individual is never alone in his day-to-day life:

The "transparent" meaning of bourgeois life – the direct, uncensored perception of material and social reality it seems to offer – proves illusory in *The Glass House*. Spatial and social relations among

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[4] "Si l'idée du film est postdatée de mi-avril 1926, les notes débutent en janvier 1927 et s'étalent sur toute l'année et les six premiers mois de 1928. Puis elles reprennent en mai-juin 1930 durant le séjour à Hollywood, avant de réapparaître sporadiquement en mai 1946 et mars 1947." (Albera 2009, p.13).

[5] Referring to Eisenstein : "Le 22 mai 1946, il écrit dans son "Journal de travail" : "Chacun une fois dans sa vie, écrit son mistère; le mien, c'est 'Glass House'". (Albera 2009, p.11).

objects and persons become problematic with the perspectives in depth, overlapped images and unprecedented points-of-view afforded by the glass walls and floors. (Goodwin 1993, p.122).

3. TRANSPARENCY AS A WAY OF BUILDING SPACE

Light in architecture and cinema is inseparable from the creative act. Light dominates the space the body moves in; it is both architectural and cinematographic material. The idea of transparency in cinema and architecture transports the development of the creator's thought; it indicates a way of creating, of developing within the art itself. The idea of transparency crosses the universe of architecture and that of cinema. We have taken as references Murnau with his film *Sunrise*, Hitchcock and the film *The Lodger* and Eisenstein with this project for *Glass House*. We find in these projects different relationships between the idea of transparency and the artistic output. Transparency is the expression of the conceptualisation of art of designing space and matter, and of the conceptualisation of the art of filming.

In this context, the use of glass becomes a sign of modernity. We witness the transformation of society itself, for architecture frees itself of its constraints and, in doing so, defines the space not only through the matter but also through the void. Hence, the domestic, everyday life of the residents is altered thanks to this new conception of the use of the space. "Walter Benjamin interpreted the glass buildings as the architecture of the future because it could destroy the excessively furnished bourgeois interior, in which everything was veiled, wrapped, cloaked, draped, and concealed." (Jacobs 2007, p. 75). The rejection of the dense ambiences in houses – which were saturated with furniture and had a lack of opening to the exterior – liberated society in the early 20th century.

The *materialisation* of transparency becomes a reference and central theme for a society in change; this is linked not only to the codes of architecture or cinema but also, more profoundly, to the experiencing of life and transformation of society in the early 20th century: "(…) transparency opened up machine architecture to inspection – its functions displayed like anatomical models, its walls hiding no secrets; the very epitome of social morality." (Vidler 1992, p.217).

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