

## Miesian Optical Devices: Constructing Perception



Joseph Koon  
Modern Architecture and Theory, 1900-1945  
11-15-09

Mies' early work is concerned with the construction optical devices which deliberately construct our perception. His buildings began to act like cameras, capturing their surroundings and pulling them inward. Exterior space is internalized through the use of frames to create a critical engagement between architecture and its surroundings. To Mies, this engagement is a manifestation of spiritual and artistic values: a gateway to modern metaphysical sensations.<sup>1</sup> To construct such an interaction, Mies employs a variety of devices through his early residential work. His frames become infused with advancing technology. He designs both the way that we see within his buildings and the way that we see his buildings through representation.

If his architecture is to be understood as constructed device which functions to produce an external effect, then the spatial experience can be conceptually understood like that of being inside of a camera. As Bonta suggests, "architects can influence people's view of their work and become an important factor in establishing canonic interpretation"<sup>2</sup>. Perhaps this ambiguity of interpretation is the result of being immersed inside of a series of frames that are not composed to create a concise internal experience, but to produce an image. As the device is meant to function, it captures an image, but at the same time produces an internal experience different than a camera. The layered interior steel frames containing large glass sheets sporadically readjust our perception. The images are pulled inward through steel frames, not held in film, becoming

---

<sup>1</sup> Fritz Neumeier, "A World in Itself: Architecture and Technology", in The Presence of Mies ed. Detlef Mertins. (New York, NY: Princeton Architectural Press, 1994) pp. 72.

<sup>2</sup> Juan Pablo Bonta, An Anatomy of Architectural Interpretati, (Barcelona, Spain: Gustavo Gili, 1975) pp 64.

projection-like spatial features. It is no coincidence that his early European work is represented exclusively through cropped photographs and photomontage collages. This interest in photography develops coincides with his early work and gradually becomes laced into the conceptual basis for his constructions.

In his 1933 speech, “What would Concrete, What would Steel Be without Mirror Glass?” Mies spoke of the “space toppling power” the he finds in the synthesis of glass, steel, and concrete construction. He stated that, “they are the genuine building elements and the instruments of a new building art” and concluded by emphasizing the ideals of “simplicity of construction, clarity of tectonic means, and purity of materials.”<sup>3</sup> Although this has been interpreted as his interest in a truthful expression of structure and materials, Mies is first interested in the radical sense of space that the materials produce. As we see in his residential work from 1927 to 1930, Mies becomes fully invested in the capacity of his modern devices to construct such “power”.

Schinkel’s column filters at the Altes Museum, a building greatly admired by Mies, provide a precedent for Mies understanding of the framing devices. Schinkel’s buildings do not only exist internally, but also extend themselves into the indefinite environment through framing devices. His perspective drawings (fig. 1) depict interstitial spaces defined on the peripheral by large columns. The massive stone frames have an immediate physicality, while the landscape is framed as an image. It is at the same time pulled perceptually into the

---

<sup>3</sup> Mies Van Der Rohe , “What Would Concrete, What would Steel Be without Mirror Glass?”, in The Artless Word: Mies van der Rohe and the Building Art ed. F. Neumeyer (Cambridge, Massachusetts: MIT Press, 1991) pp. 314.

architecture but released outward: functioning as a reflexive type of camera. On a more residential scale, the recessed first floor column screen of New Pavilion in Schloss Charlottenburg Park of 1824 functions on a smaller scale (fig. 1). There is a double filtration, first through typical white window mullions and then through a pair of unstructural columns. The reflexive volume captured between these two visual filters emphasizes the relationship between interior and exterior. In several descriptions by Neumeyer, the wavering sensation created by the filter is described as a poetic dialogue between self and nature. As the architecture obscures our perception of the landscape it acts as both a two-dimensional framed image and a spatial sense of surrounding. The perceptual ambiguity, which exists in the classicism of Schinkel ultimately, stimulates our sense of the surrounding nature.<sup>4</sup> To Mies, this symbolized the capacity of an architectural element to manifest a spiritual relationship between internal and external space. In Mies' work, the steel frame will become the modern equivalent to Schinkel's columns.

To Neumeyer, the frame is an element which captures, in its absence, an image. He describes the frame as a "reflexive architectural element" that is capable of mediating both subjectivity and objectivity: between the self and the environment.<sup>5</sup> The frame allows for the third person viewing of the modern world from within a piece of architecture. By directing our perception, it creates isolation and connection at the same time as a place of encounter between opposite

---

<sup>4</sup> Fritz Neumeyer, "Space for Reflection: Block versus Pavilion", in Mies van der Rohe: Critical Essays ed. Franz Schulze (Cambridge, MA: MIT Press, 1989) pp. 159.

<sup>5</sup> Fritz Neumeyer, "A World in Itself", pp. 76.

worlds.<sup>6</sup> Mies, however, did not use singular frames but composed them into complex internal compositions. In his early residential commissions from 1927-1938, Mies experimented with various compositions and frame constructions.

Mies took the adjacent commissions of the Lange and Esters houses (1927-29) as opportunities to test the capacity of the frame to internalize and externalize the space. Thick black steel window frames punctuate the heavy brick buildings. In exterior photos (fig. 2), we are able to peer diagonally through the core of the masonry mass. The transparency is not linear, but dynamic and shifting. Through a window appears a doorway, and through the doorway we peer through another window. The effect of this diagonal viewpoint is comparable to Colin Rowe and Robert Slutzky's explanation of Gropius' Bauhaus building. Rather than creating sensations of phenomenal transparency through imaginary planar projections, the misaligned elements in plan literally extend the space infinitely outward.<sup>7</sup> Mies thick black frames as opposed to the thin repetitive mullions of the Bauhaus windows, however, provide a stronger sense of physical immediacy. Besides acting as spatial dividers, the interior structural frames begin to establish a sense of sequential, filmic, spaces that will develop in his later work. While these conditions are present in both residences, each house contains specific devices.

As Frampton has pointed out, the Esters house is internally penetrated by a series of steel framed, plate glass double doors that separate the primary living

---

<sup>6</sup> Fritz Neumeyer, "A World in Itself", pp. 79.

<sup>7</sup> Colin Rowe and Robert Slutzky, "Transparency: Literal and Phenomenal," Perspecta 8 (1963) pp. 52

space.<sup>8</sup> As seen in the photograph (fig 2), the perceptual cut through the building collapses the series of spaces, pulling the landscape inward. The physical column mass, which Schinkel utilized to return a sense of immediacy, is channeled into thin modern steel mullions. Mies, perhaps for the first time, confronts the viewer with the artfulness that he alludes to. The large window spans necessary to see through the masonry, is made possible only through the use of elaborate Reiner beams<sup>9</sup>. The advanced structural system allows for a modern sensation of space.

The Lange house, instead, utilizes retractable plate glass windows to extend itself into the landscape.<sup>9</sup> As a high tech version of the Schinkel colonnade, the frame could be lowered into the lower floor. The complex detail of the mechanism is concealed behind brick. It becomes necessary, in the construction of an effective framing device, to hide the mechanisms. The image of the outside, which was at first framed within the space, would suddenly erupt inward as the mechanics draw the frame down. The architectural device, through which we see the changing modern world, is in this instance capable of change itself. The mechanism emphasizes our complex interaction with the outdoor environment. Perhaps Mies desires to complicate this interaction only to inspire a question, rather than provide an answer.

---

<sup>8</sup>Kenneth Frampton, Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture (Cambridge, MA: MIT Press, 1995) pp. 163.

<sup>9</sup> Frampton, Studies in Tectonic Culture. pp.167.

If we understand these as experiments, then it is no surprise that Mies refused to publish these two homes<sup>10</sup>. The homes hardly communicate his ideal “simplicity of construction”, as massive steel joists and trusses are concealed beneath brick courses, while only the window frames are revealed.<sup>11</sup> Beyond a detail sketch, the potential effects of the moving frame are surprisingly underrepresented. In his drawings, the frames are no more than features in a larger brick and steel construction. The homes merely feature the devices as singular elements in their overall composition.

Mies utilizes a frame of unprecedented technological innovation in the primary living space of the Tugendhat house (1929-30). The 80 foot long steel frame consumes the full height of the space and faces out to an unobstructed view of Brno and the Schossberg.<sup>12</sup> The frame was carefully conditioned by a retractable sunblind and chromium plated heating tubes set just beneath in the floor. As in the Esters house, portions of the frame could be lowered mechanically into the basement.<sup>11</sup> But while the mechanical frame of the Esters house had minor effects on the interior space, this unprecedented frame had capacity to generate dramatic transformational effects. The frame, at first a wall that filters our view of Brno, releases us from our containment. Once lowered, the distant image is no longer seen through an architectural construction, but is felt, as the open air is pulled inward. The frame is a liberator, which helps us to

---

<sup>10</sup> Wolf Tegethoff, Mies van der Rohe: The Villas and Country Houses (Cambridge, Massachusetts: MIT Press, 1985) pp. 63.

<sup>11</sup> Frampton, Studies in Tectonic Culture. pp.167.

<sup>12</sup> Tegethoff, Mies van der Rohe: The Villas and Country Houses.pp. 85.

appreciate our immediate and distant sense of place. Out of necessity, it first contains us, only to dramatically release us outwards.

As Claire Zimmerman brings to attention, of the photographs taken by an avant garde Weimer photographer, De Sandalo, only 8 were ever disseminated under supervision of Mies. All feature the frame, but none feature the outward view or sensation previously described. Our understanding of the internal spaces is severely limited by these photographs.<sup>13</sup> The images specifically ignore the more humble north and interior living space, but instead draw attention towards the south facing dark ribbon window (fig. 3). Mies deliberately chooses to communicate, not that view out from the living space, but an image of his architectural device from the exterior. He emphasized the appearance of his n invented modern architectural advice, rather than the effect that it produces. In one image, we see the building from the ground, framed by dense vegetation. Moving further up on the hill, the building has a stronger presence as its sharp white edges peer outwards. Zimmerman, in her critical article of the Tugendhat photographs, emphasizes the inconsistent and incidental tendencies of such documentation. While the building is a continuous body” the picture is an “individuated object” which emphasizes different meanings by eliminating the full sensuality of space.<sup>14</sup> By carefully controlling these images, Mies prefers to flatten his space. The desire to communicate a sense of modernity overcomes the dramatic spatial experience that the mechanical frame is capable of. We are

---

<sup>13</sup> Claire Zimmerman, “Tugendhat Frames,” Harvard Design Magazine 15 (2001): pp. 26.

<sup>14</sup> Zimmerman, “Tugendhat Frames,” pp. 30.



seeing a way of seeing. We are looking up at looking out. The way in which we perceive his architecture is being carefully orchestrated towards a meaning of space rather than a sensation of space.

Although the frame of the Tugendhat house has the technological capacity to dynamically regulate the viewer's connection the landscape, Mies representation of the project fails to communicate its use as a device. As if taking a picture of a camera, Mies chooses to depict only views up towards his architectural device. It seems his interest lies less within the landscape, and more inwardly towards the architecture. It is unclear from his photos if the device produces the poetic dialogue between landscape and the self. The dialogue, which exists in Schinkel's perspectives, all but vanishes in the photographs because the tension between interior and exterior is not depicted. Through his representations, Mies seems consumed with the image of the building and the dominance of the frame as a formal rather than experiential composition.

Although constructed before the Tugendhat Pavilion, the Barcelona Pavilion establishes the most complex set of internal visual relationships. Because it has virtually no program, Mies is able to deploy his most refined image creating device yet.

The observer becomes an active constructor of frames within the Barcelona Pavilion (1929). Compressed between seemingly beamless flat ceiling and floor slabs, the space is defined by a series of free standing stone planes, plated cruciform columns, and steel framed glass sheets. The overhead planes appear to float independently of the columns, as the joints between the

columns and planes are seamless. The frame is no longer an entirely steel construction, as it consists of a series of elements within the space. Robin Evans identifies several of these characteristic which produce a paradoxical appearance of symmetry in the pavilion<sup>15</sup>. The difference in brightness between the floor and ceiling is visually corrected by the use of travertine on the floor to reflect light, and plaster on the ceiling to receive light. The hollow onyx wall, which defined the height of the pavilion, is scored in half so that its horizontal center line becomes that of a viewer's horizon line.<sup>16</sup> These stone slabs, although they appear to be load bearing, are no more than inserted spatial dividers while the chrome plated cruciform columns seem to clamp the floor to the ceiling.<sup>17</sup> As the viewer moves between the shifting planes, impressions of enclosure and symmetry are persistently counteracted by open vistas towards the reflecting pool and surrounding environment.

The pavilion, in this sense, persistently reconstructs the way in which we see. It is a device which brings us inward only to question its own internal construction. To Rosemarie Bletter, the Pavilion exposes Mies expressionist tendencies. As in the work of expressionist author Paul Scheerbar, glass becomes the metaphor for modern change and transformation through its sensory and emotive effects. His use of glass and reflecting pools in the Pavilion has little to do with the modern rational transparency, but with a darker, more

---

<sup>15</sup> Robin Evans, "Mies van der Rohe's Paradoxical Symmetries," AA Files 19: pp. 56

<sup>16</sup> Evans, "Mies van der Rohe's Paradoxical Symmetries," pp. 62-63

<sup>17</sup> Frampton, Studies in Tectonic Culture. pp. 177.

internalized idea of spirituality.<sup>18</sup> Montages and photographs of the Pavilion reveal this deliberate optical intensification (fig 4). The steel frames contain tinted yellowish, dark gray and clear glass which, once layered and moved around, produce an array of effects. In photographs, the viewer is nearly always immediately confronted by the steel frame which contains a reflection of an exterior space.<sup>19</sup> The constructed quality of the photographs tends to encourage the misinterpretations which plagued early writings on the pavilion. An image of exterior is, again, pulled inward towards the interior. As Quetglas describes: “to a visitor coming up the steps and looking into the pavilion’s interior at the other side of the glass wall, the image is unsettling. He is inside the pavilion, though standing inside of it.”<sup>20</sup> Our immediate sense of place is persistently challenged through the architecture’s ability to internalize its external environment.

In the Resor House project in the US (1937-38), the internalized sensation reaches its climax as the frame seemingly seeps into the walls to produce a two dimensional image of the mountainous Wyoming landscape.<sup>21</sup> The residence becomes a frame itself as the architecture acts as a device calibrated to bring a specific element of the outside, inward. The spatial focus, again, is a central living space which is enclosed by large span plate glass window on either side. The functional spaces are pushed to either side to thicken the borders of the

---

<sup>18</sup> Rosemarie Haag Bletter, “Mies and Dark Transparency”, in Mies in Berlin, ed. R. Terence (New York, NY: Museum of Modern Art, 2001) pp. 353-354.

<sup>19</sup> Bonta, An Anatomy of Architectural Interpretation, pp 64.

<sup>20</sup> Joseph Quetglas, Fear of Glass (Basel: Birkhäuser, 2001) pp.65.

<sup>21</sup> Tegethoff, Mies van der Rohe: The Villas and Country Houses. pp 128.

frame. This added mass emphasizes the void through which the landscape is pulled. The architecture is composed to capture the image of its context. Like a camera, the internal functions are concealed while the complexities of the outdoor environment are simplified to a projection-like image. Quetglas emphasizes the absence of space inside the Resor house. This means that as a device, it becomes an abstention of space, an empty lens meant to hold the vast landscape within it.<sup>22</sup>

In photomontages of the project, the distance between the viewer and the framed mountain is unperceivable (fig 5). The perspectival viewer is pulled ever closer to the dominant landscape. The architecture secedes to the dominant force of its surroundings. At the same time that the frame pulls the landscape inward, it becomes a definer of interior space. The glass frame wall becomes an element of the interior: a kind of interior mountain wall.<sup>15</sup>

Because the project was never built, it is questionable if this flattening effect would ever be perceived. As we observed in the Barcelona Pavilion, the viewer is capable of constructing the spatial conditions once the frames are deployed into the space. The frames of the Resor house are, however, singular and static. Perhaps moving around the space would have reconstructed the three dimensionality of the mountainscape. It is significant to recognize that for the first time the steel columns move into the glass walls, no longer offset from the walls as in the Barcelona Pavilion or Tugendhadt House. This early instance will

---

<sup>22</sup> Quetglas, Fear of Glass. pp.78.

become a standard in Mies' later American work as his constructions shift to exposed steel frames with brick and glass infill.<sup>23</sup>

As Robin Evans suggests, "Mies was not interested in the truth of construction, but in expressing the truth of construction".<sup>24</sup> As his early works develop, the buildings become less massive, and lose their discrete sense of tectonics. Ultimately, they become frames themselves. The architectural device exists only as a channel to heighten the interaction between our external environment and internal sense of self. By, 1938, as he designs the Resor house, the architecture has become an immaterial frames for us to look inwardly towards. But from within, we are confronted by the external mountainous environment.

The effective strength of these early devices ultimately becomes diffused in the more complex programs of his later work. As residential scale pieces of architecture with the interior complexity of art installations, they perform beyond their functions. Like a camera, they are devices which capture the presence of their sites within. Through frames, site becomes an intensive spatial manifestation of place. Each of Mies' early residential works is a unique device which interrogates its immediate external environment.

---

<sup>23</sup> Frampton, Studies in Tectonic Culture. pp. 189.

<sup>24</sup> Evans, "Mies van der Rohe's Paradoxical Symmetries," pp. 57.

## Annotated Bibliography

Bletter, Rosemarie Haag, "Mies and Dark Transparency", in Mies in Berlin, ed. R. Terence. New York, NY: Museum of Modern Art, 2001, pp. 350-357.

Bletter shatters the perception of a rational use of glass, instead insisting that Mies use of glass was influenced by a Nietzschean expressionism. Glass becomes understood for its perceptual capacity through his inclusion of uninhabitable glass spaces within the Tugendhat house as a mysterious lightbox, retractable glass windows in early housing projects, and shadow silhouettes in the glass house project.

Bonta, Juan Pablo. An Anatomy of Architectural Interpretation. Barcelona, Spain: Gustavo Gili, 1975.

Bonta investigates the interpretations of the Barcelona Pavilion. In an attempt to clarify the personal meaning behind the pavilion, he finds that the pavilion went unmentioned until it no longer existed. The interpretations that arose from photographs were clouded by an undefined and meaningless "oral tradition" surrounding the Pavilion.

Evans, Robin, "Mies van der Rohe's Paradoxical Symmetries," AA Files 19. Pp. 56-68.

The optical effects of the Barcelona Pavilion are critically analyzed. The asymmetry of the plan creates a "mirror system" between wall, pool, and slab surfaces. The large interior slab surfaces are not structural, though they seem to touch the ceiling. He finds that Mies meticulously constructed subverted sense symmetry into the pavilion that creates its strange perceptual effects.

Frampton, Kenneth. Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century

Architecture. Cambridge, MA: MIT Press, 1995.

Frampton explains Mies architecture through tectonic means. Often discussing minute material details, he surveys and analyzes Mies entire body of work. In the Barcelona Pavilion he finds a "hallucinatory character" in his synthesis of symmetry, materials, and tectonic.

Van Der Rohe, Mies, "What Would Concrete, What would Steel Be without Mirror Glass?", in The Artless Word: Mies van der Rohe and the Building Art, ed. F. Neumeyer. Cambridge, Massachusetts: MIT Press, 1991.

Primary source. Through a speech given in 1933 titled "What would Concrete, What would Steel Be without Mirror glass?" Mies praises the capacity of glass to "permit the skeleton structure its unambiguous constructive appearance". Or, he finds the ability to fabricate the appearance of structural clarity with this seemingly transparent, but structural material. From this will arise more freely articulated space and the ability to "open it up and connect it to the landscape". The ideals of "simplicity of construction, clarity of tectonic means, and purity of material" that he promotes while concluding are no more than an optical construction of materials.

Neumeyer, Fritz, "Space for Reflection: Block versus Pavilion", in Mies van der Rohe: Critical Essays, ed. Franz Schulze. Cambridge, MA: MIT Press, 1989, pp. 148-171.

Neumeyer discusses Mies relationship to Schinkel through his early work. Early ideas of the metaphysical relationship to the frame are established in comparison to Schinkel's use of columns as filters.

Neumeyer, Fritz, "A World in Itself: Architecture and Technology", The Presence of Mies, ed. Detlef Mertins. New York, NY: Princeton Architectural Press, 1994, pp. 71-84. Neumeyer emphasizes Mies use of steel as a high tech frame. Through the use of steel frames, Mies intent becomes metaphysical. The viewer constructs the sequence, an awareness of the whole world and self as one. The building, as a construction of frames, then is able to mediate the modern world. The building freezes the constantly shifting world into a moment of reflection.

Quetglas, Joseph. Fear of Glass. Basel: Birkhäuser, 2001.

Quetglas sheds the viewpoint of a historian, instead critiquing the Barcelona pavilion as a journalist-eager to uncover the immediate experience of the famous structure. Through a series of acts, the pavilion becomes a metaphor for a darker, more illusory sense of space.

Rowe, Colin and Slutzky, Robert. "Transparency: Literal and Phenomenal," Perspecta 8 (1963): 45-54.

The transparency of cubist paintings is analyzed to reinterpret the spatial conditions of Le Corbusier's Garches and the Bauhaus building.

Tegethoff, Wolf. Mies van der Rohe: The Villas and Country Houses. Cambridge, Massachusetts: MIT Press, 1985.

Mies entire body of work is catalogued. Though Tegethoff more generally analyzes the work, the recorded information is dense. Every project by Mies has been recorded at length.

Zimmerman, Claire. "Tugendhat Frames," Harvard Design Magazine 15 (2001): 24-31.

Zimmerman is critical of Mies representations of the Tugendhat house. She finds that Mies deliberately chooses to flatten the space into modernist ideology by ignoring its experiential capacities. The images hardly represent the breadth of the space.

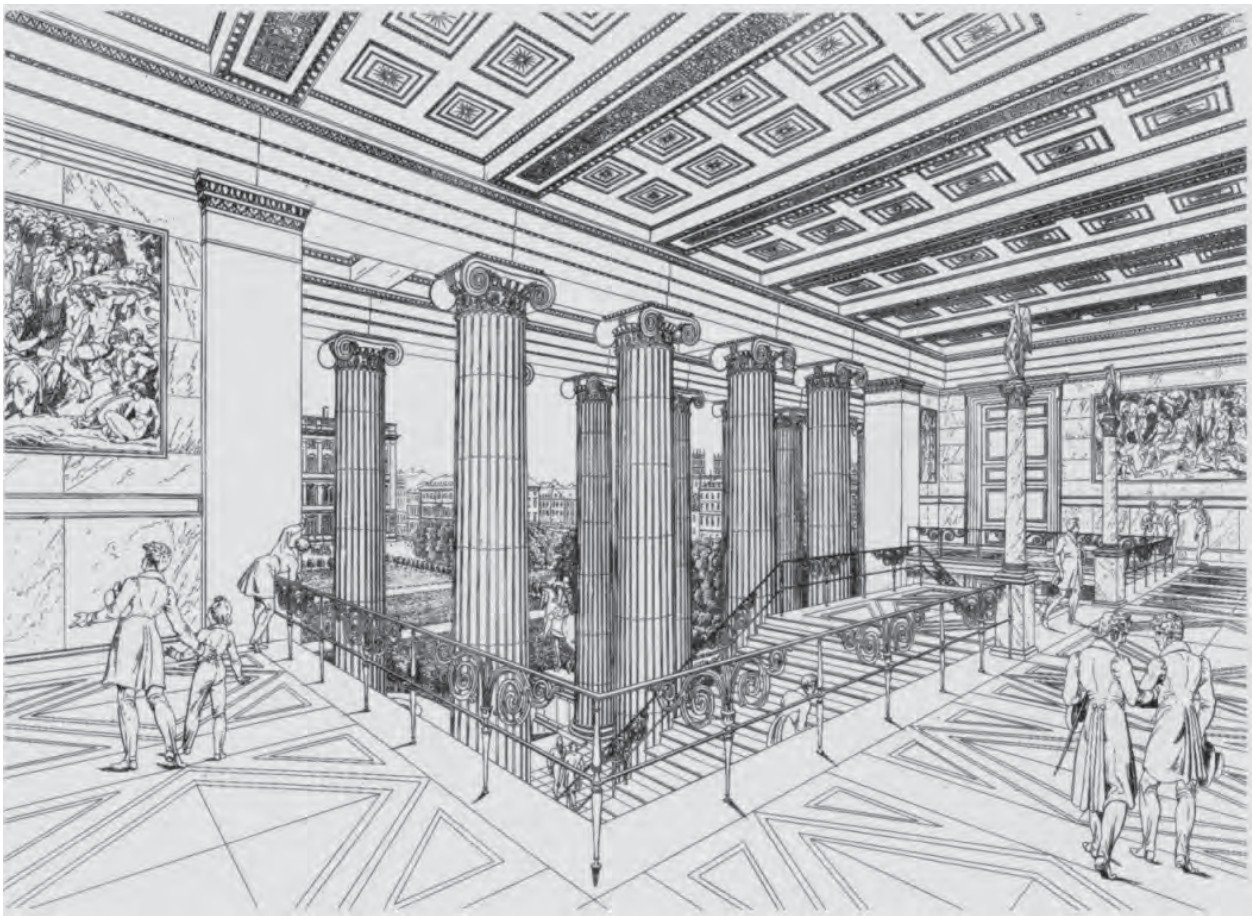
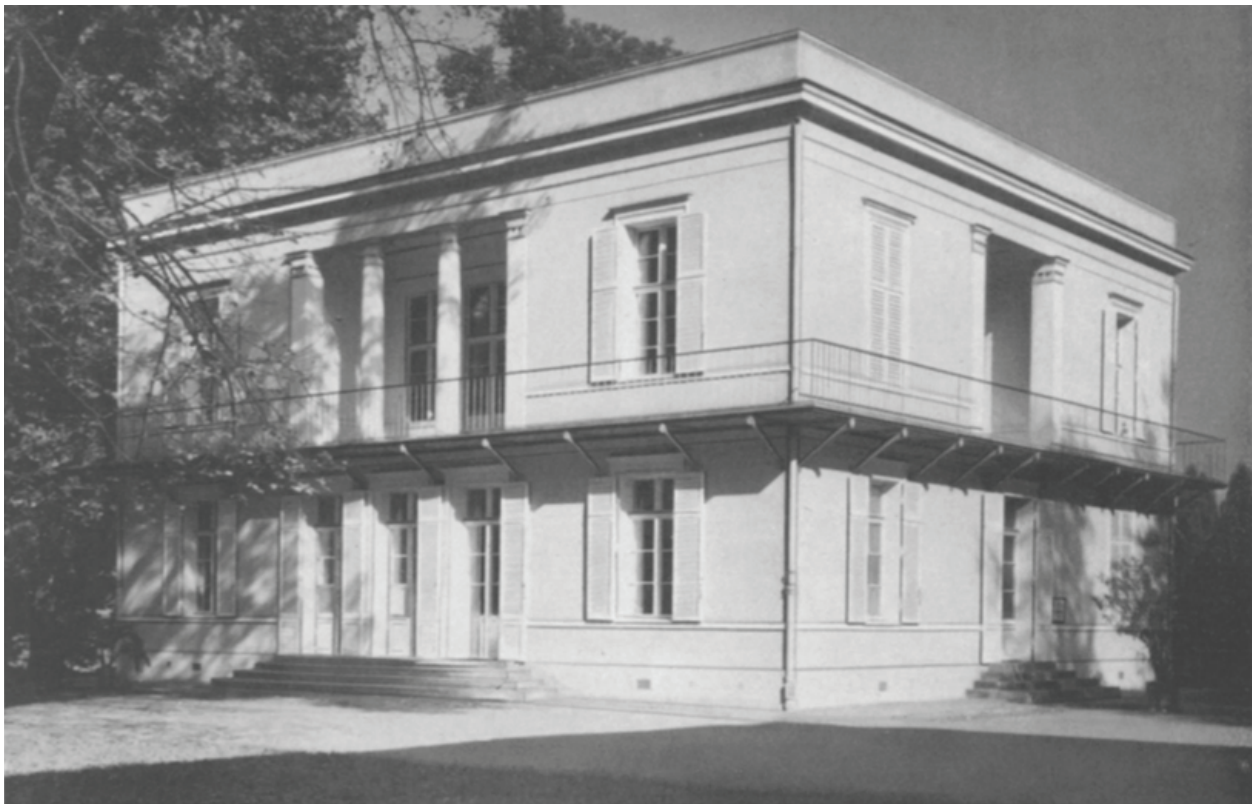


figure 1  
Schinkel Perspective Drawing

Fritz Neumeier, "Space for Reflection: Block versus Pavilion", in  
Mies van der Rohe: Critical Essays ed. Franz Schulze



New Pavilion at Charlottenburg, 1824



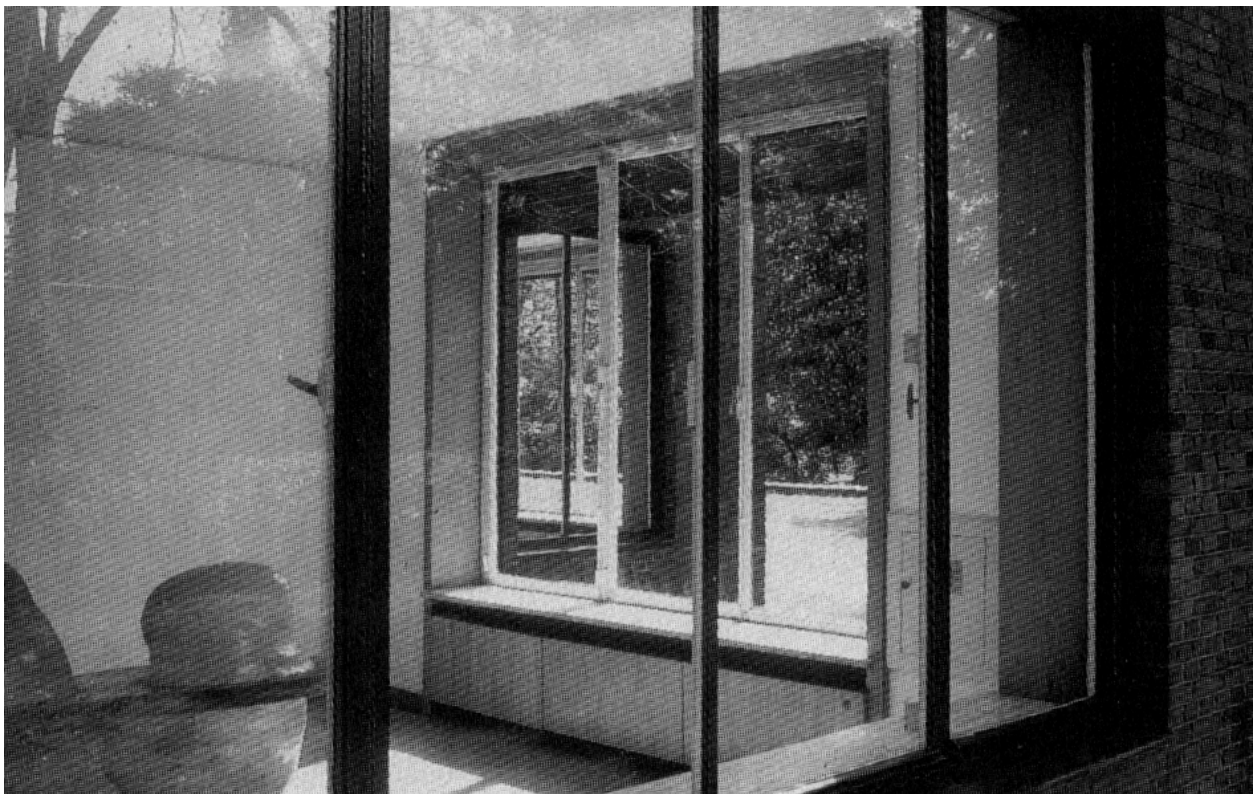


figure 2  
Esters and Lange House

Kenneth Frampton, *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture* (Cambridge, MA: MIT Press, 1995) pp. 168

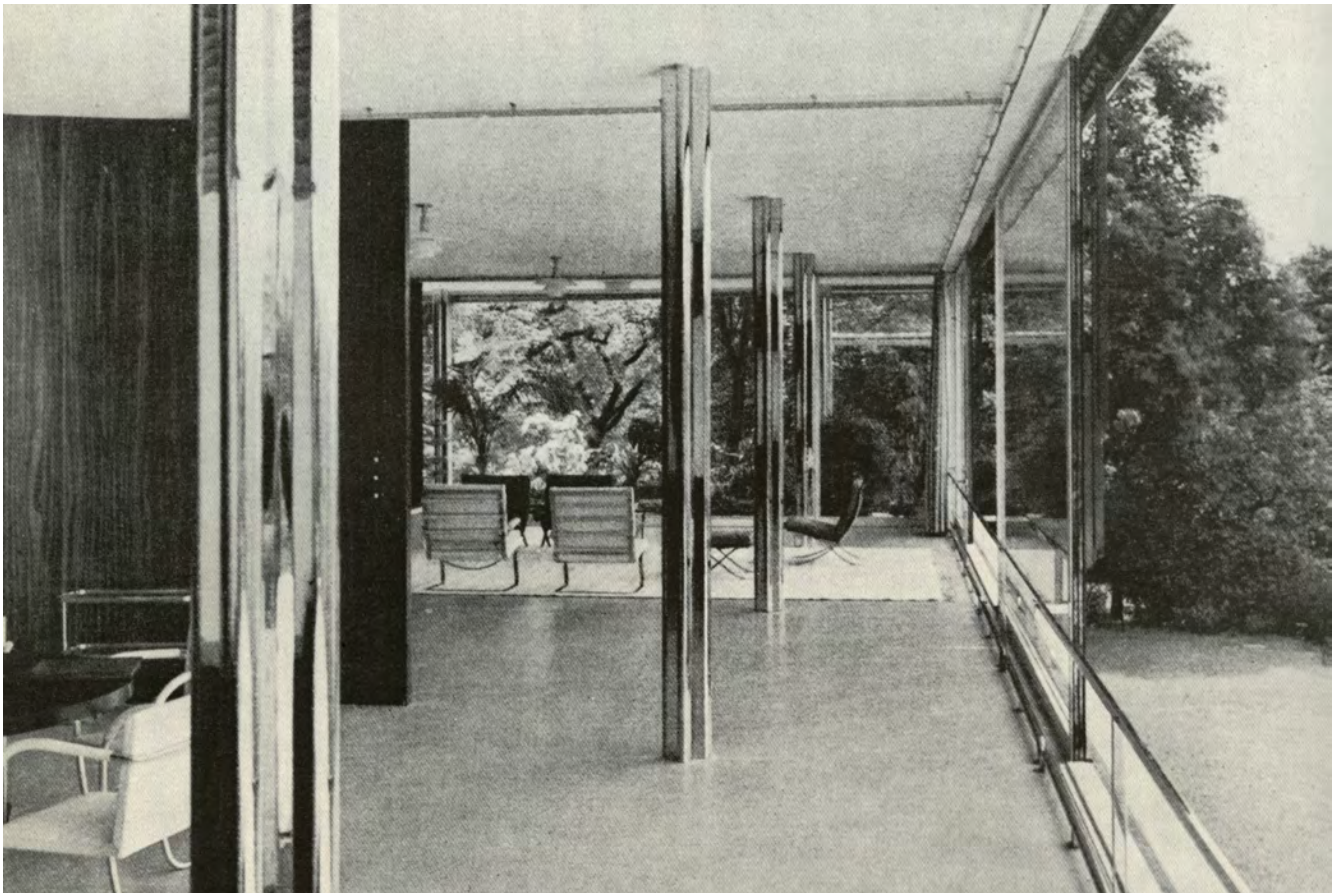
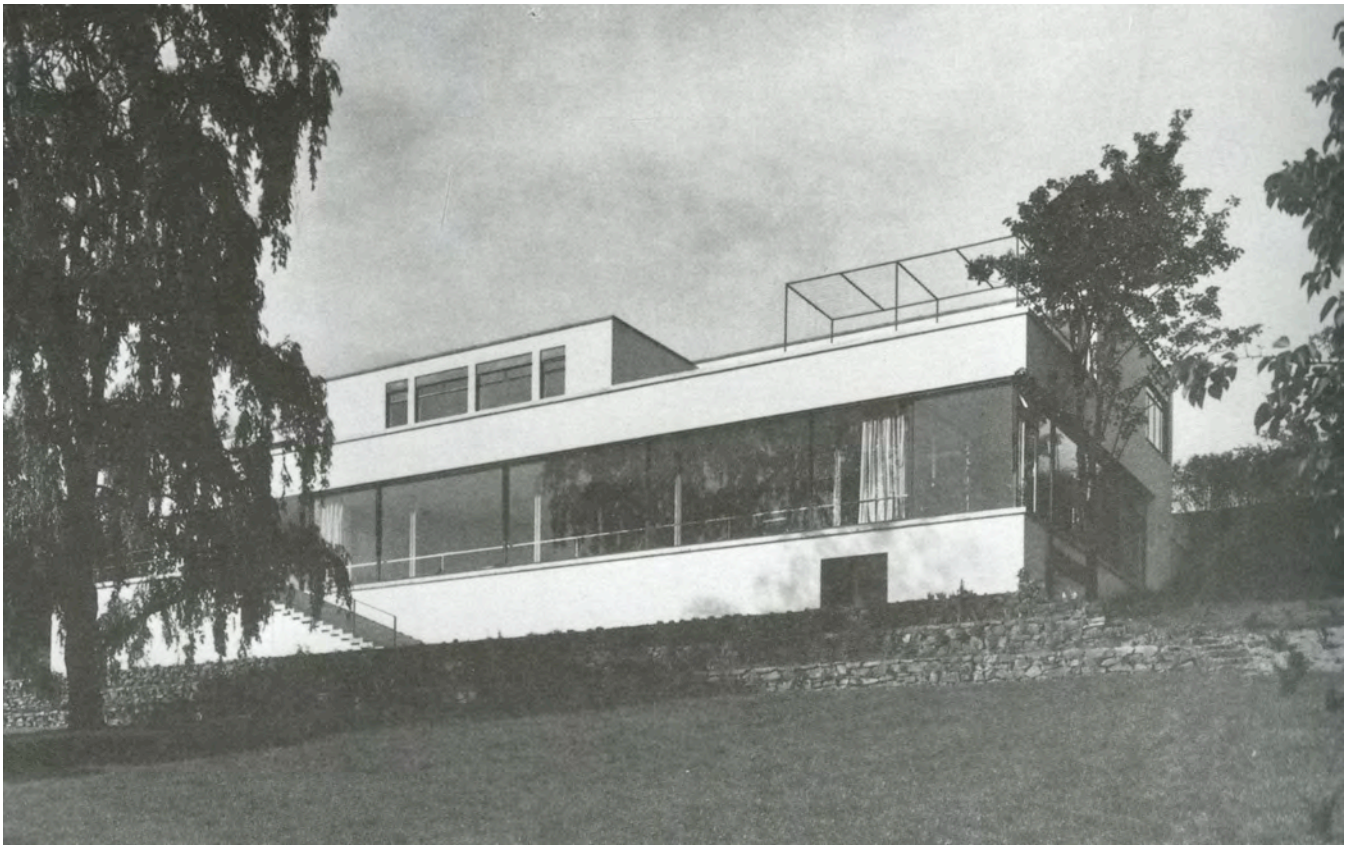


figure 3  
Tugendhat House

Claire Zimmerman, "Tugendhat Frames," *Harvard Design Magazine* 15 (2001): pp. 24-30.

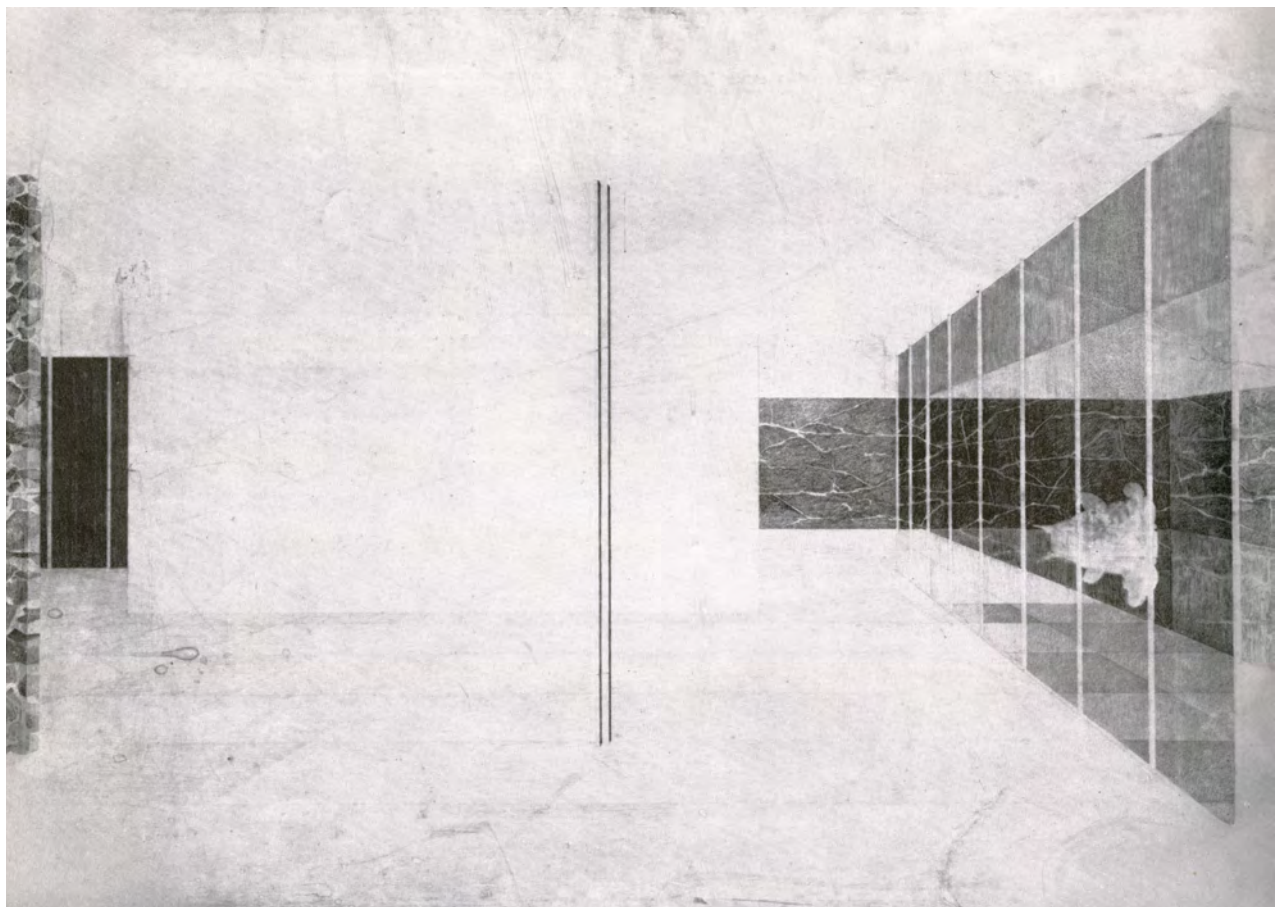


figure 4  
Barcelona Pavilion

Rosemarie Haag Bletter, "Mies and Dark Transparency", in *Mies in Berlin*, ed. R. Terence (New York, NY: Museum of Modern Art, 2001) pp. 14.

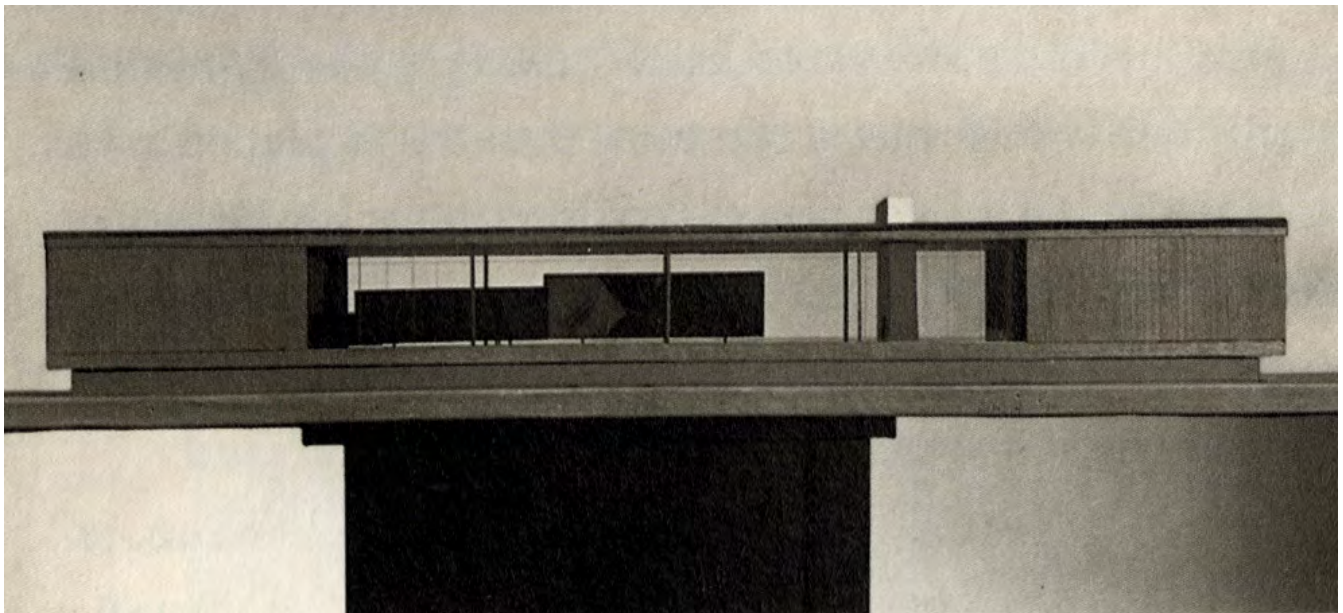
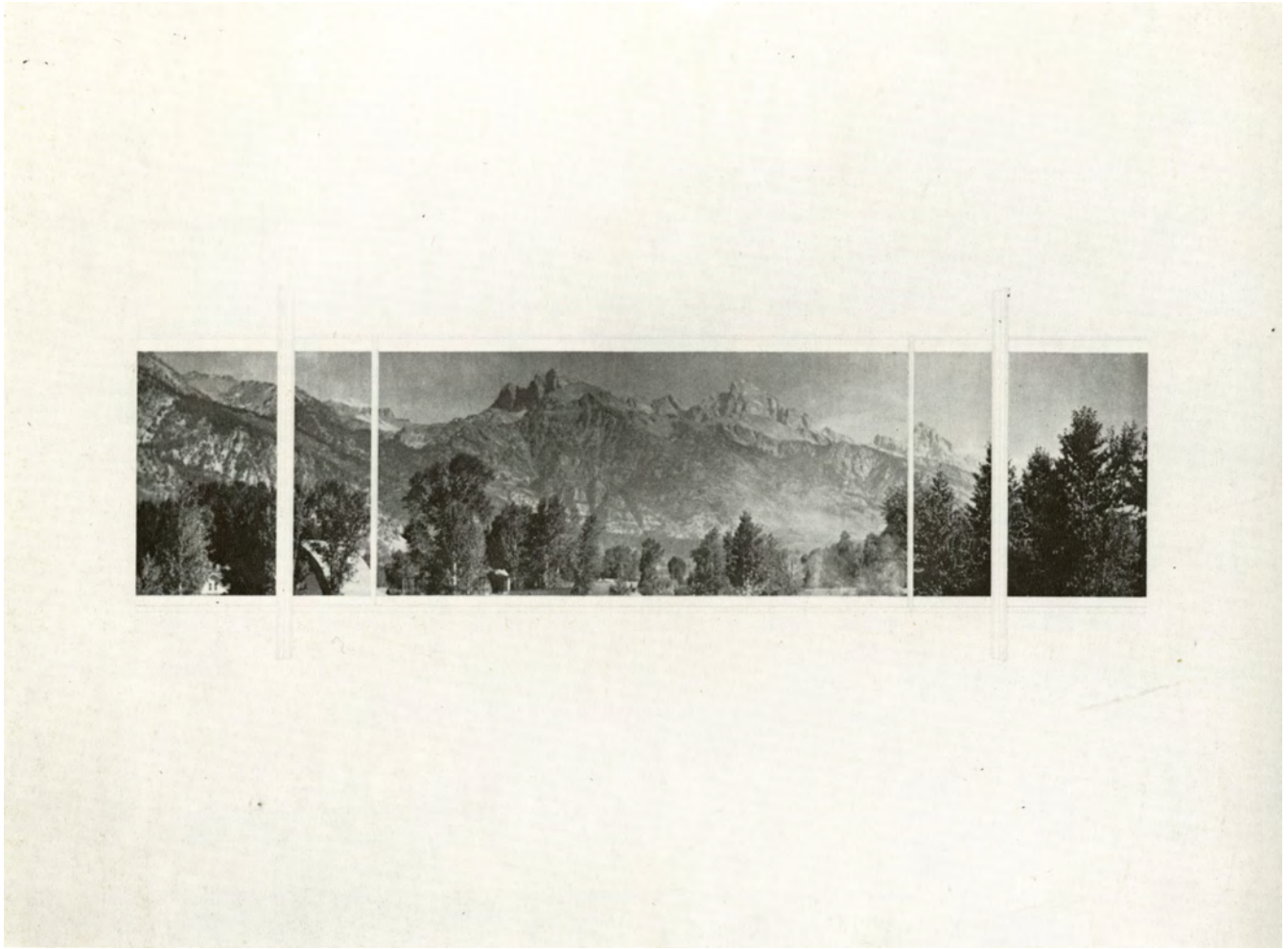


figure 5  
Resor House

Rosemarie Haag Bletter, "Mies and Dark Transparency", in *Mies in Berlin*, ed. R. Terence (New York, NY: Museum of Modern Art, 2001) pp. 14.