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# Drawing the Barcelona Pavilion: Mies van der Rohe and the implications of perspectival space

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This article investigates a drawing of the interior of Ludwig Mies van der Rohe's 1929 German State Pavilion for the International Exposition at Barcelona. Investigations of the drawing take two forms. The first focuses on a close reading of the drawing, engaging with the work's 'facture', its method of production and its underlying diagram that structures and pilots meaning for viewers. This section develops a conceptual framing for understanding the drawing's critique of architecture's traditions. The second form of investigation takes a more historical approach. Here, investigation of Miesian scholarship in the context of the Berlin *avant-garde* during the mid- to late-1920s seeks answers to the questions that emerge from the drawing. Conclusions drawn in the paper show that there are consistencies in approach, especially with the way that other artists in Mies's circle have interpreted specific philosophical texts of the period. The article shows that, while philosophies that in more political circumstances took on a different influence, for artists of this period these same philosophies opened a critique of art's traditional rationale and the visualising structures implicit in those traditions.

This article examines a single point perspective from the canon of drawings still remaining from Ludwig Mies van der Rohe's practice during the late 1920s. It is a rendering of the interior of the German State Pavilion for the International Exposition at Barcelona (Exposición Internacional de Barcelona), commonly called the Barcelona Pavilion (Fig. 1).<sup>1</sup> Investigations of the drawing here will take two forms. The first will focus on a close reading of the drawing. It engages with the work's 'facture', its method of production and its underlying diagram that structures and pilots meaning for viewers. In the light of conclusions raised by these initial analyses the second focus takes a more historical approach. Here, investigation is of Miesian scholarship in the context of the Berlin

*avant-garde* during the mid- to late-1920s. It is examined to elicit a way into interpreting the imagery of the drawing. What becomes obvious through this broader investigation is that this is not a drawing that has been completed purely for the personal reflections of an architect in the process of designing a building. Instead, as a tool for a more public engagement this drawing can be seen as didactic and instructional at many levels. In this role, the drawing represents a critical and selective reapplication into architecture of ideas and approaches to spatiality, the subject-focus of representation and the role of the viewing subject in that representation.

Texts such as Robin Evans' *The Projective Cast* and his earlier article 'Mies van der Rohe's Paradoxical

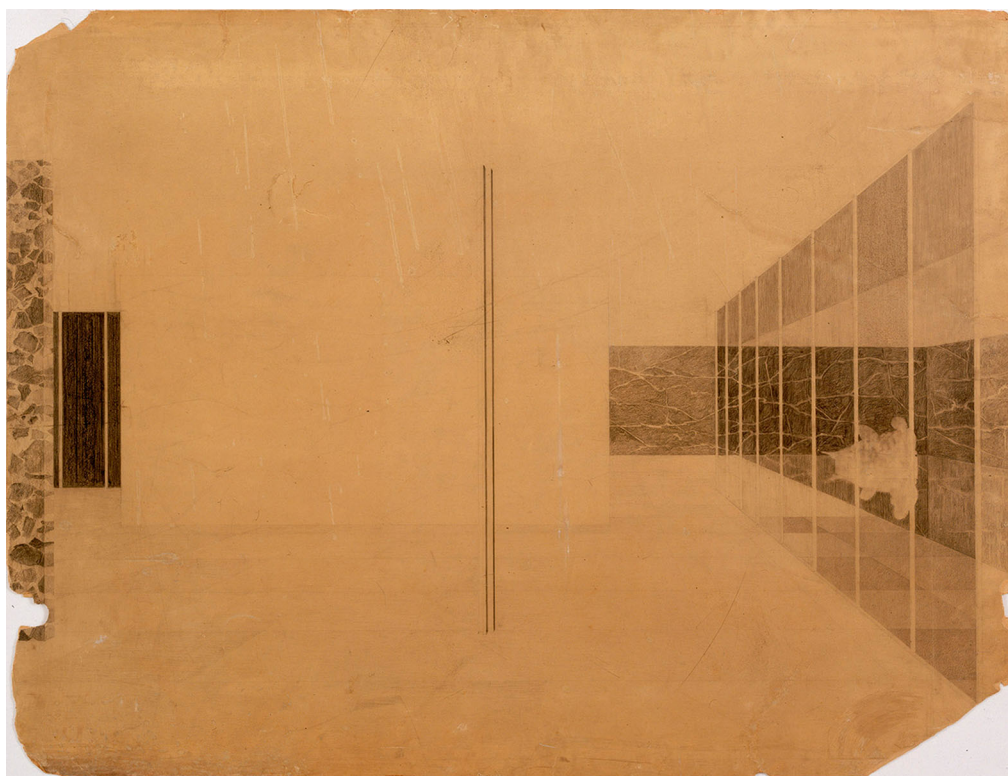
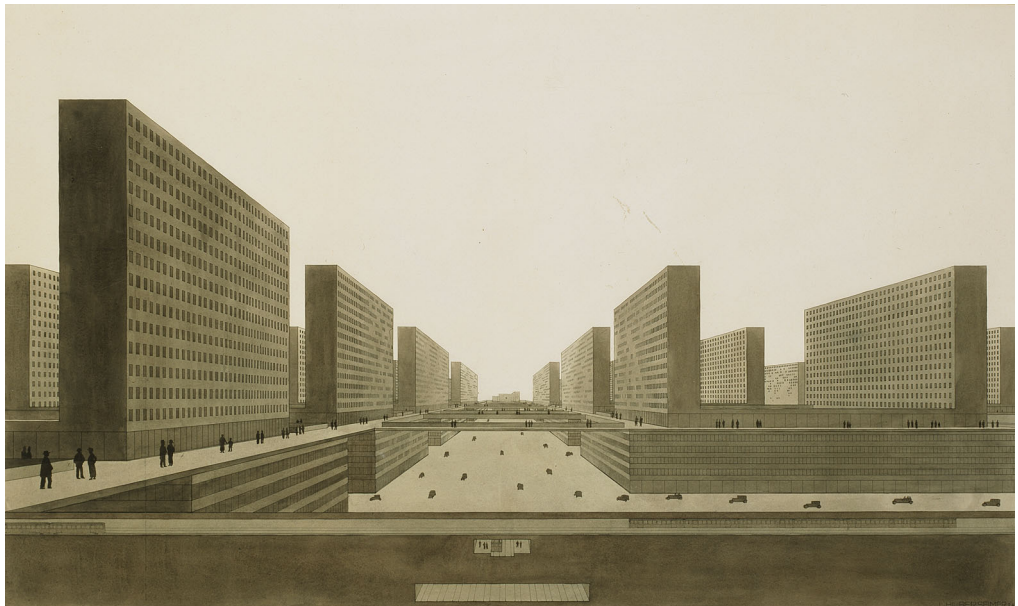


Figure 1. Ludwig Mies van der Rohe, German Pavilion, International Exposition, Barcelona, Spain: interior perspective, c. 1928–29; graphite on illustration board (MR 14.1, © 2015 Artists Rights Society [ARS], New York/VG Bild-Kunst, Bonn).

Symmetries', dismiss this perspective as merely 'optic' rather than 'graphic in character'.<sup>2</sup> Without explaining this further, Evans introduces the reader to the drawing's pictorial ambiguity suggesting that its 'relation to truth is less significant than its coherence as fiction'.<sup>3</sup> It is this 'fiction' and its relation to 'truth' that is of interest for this article. It is important to consider what is gained in the conceptual distance between perspectival notions of the

'view', and this drawing's underlying diagrammatic structure. Each of these aspects develops significance not only for architecture but also for architecture's representation. This drawing was completed at a time when experimentation in the arts was questioning the role of new aesthetic values that were themselves responding to the cognitive or mental processes required for an understanding of modern visual phenomena.

Figure 2. Ludwig Hilberseimer, High-rise City [*Hochhausstadt*]: perspective view, North-South Street, 1924 (Gift of George E. Danforth 1983.992, The Art Institute of Chicago).



Interpreting the scenography of the image through its multi-layered conceptual diagram reveals new understandings of architectural representation. It opens again the concerns raised by Bruno Reichlin in his critique of Ludwig Hilberseimer's *Hochhausstadt* drawing of 1927 (Fig. 2).<sup>4</sup> Reichlin argued that Hilberseimer's perspective drawing confused notions of 'the diagram' with those of 'the view'.<sup>5</sup> This, as Reichlin reported, had been a matter also raised in some dismay by Hilberseimer himself as he had alluded to the drawing as 'only a diagram'.<sup>6</sup> Reichlin found the double coding of Hilberseimer's drawing problematic. In

his critique, a diagram was characterised as a 'condensed set of instructions', whereas a view was a static single representation of an external or imagined reality, one fixed in time.<sup>7</sup> Thus, for Reichlin, Hilberseimer's recognition of his drawing's problematic visual state introduced a consequent claim of incongruity in the drawing's conceptual origins.

Against this position, this article will argue that this very state of being both representational and diagrammatic is the architectural drawing's conceptual setting. Rather than being confined to a representational type, the 'diagram' of a drawing will be seen here to structure its visual representation

as well as enable an understanding of the architectural ideas it represents. This article generates therefore a more complex consideration of the term 'diagram'. The diagram of a drawing can be understood as structuring representation, whereby a complex network of nodes and intersections emphasise adjacencies of importance for viewer apprehension of meaning.<sup>8</sup> As well, and because architectural drawing works beyond representation as its conceptual 'ground', the structuring diagram of architectural drawings provides a unique setting for recognition of architectural experimentation.<sup>9</sup> In these terms the structuring diagram of individual architectural drawings, especially those known as presentation drawings, moves them from being the simple precursor of a realised building to become an independent operation that is recognised for its piloting of architectural ideas. The idea of representation in architecture is thus repositioned. It is now renegotiated as an after-effect of a continuously experimental discipline rather than a practice referring purely to picturesque attributes of its image.

Mies's drawing of the Barcelona Pavilion takes the form of a finely finished and complete pencil rendering on art-board. Even though at first viewing there is a privileging of scenography, the drawing also provides a complex layering of information that works beyond the pictorial. The final artwork is large and its finely detailed rendering suggests both a time commitment and a distinctive level of skill from the hand of the architect.<sup>10</sup> Although the art paper of the drawing has yellowed with age and has been damaged by water, it is evident that this is not a sketch used simply for an architect's personal con-

sideration. There is a palpable commitment to inviting the viewing subject's close attentive investigation of detail. This is seen particularly in its sense of depth conveyed through shade and shadow, the accuracy of its detailing and precision, and the drawing's controlled rendering of the surface materiality of its scene. Even the representation of the cruciform column, misinterpreted by Evans as simply two bold lines, can be seen on closer inspection accurately to project a cruciform profile connecting with the floor precisely at the intersection of the jointing in its travertine stone flagging.<sup>11</sup> In this architectural accuracy the column's outline has not been applied *post facto* to the rest of the scene. Instead it is carefully integrated in the construction of the image without any evidence of confusion in line work or consequent erasures. This is seen most clearly at its drawn intersection with the freestanding wall. The lines drawn to denote the floor and ceiling edges of the freestanding wall stop short of the column's outline, supporting its natural foregrounding.

The misinterpretations of Evans and others could be the result of having seen the drawing in publications or prints, where it suffers from significant reduction in scale and thus detail. However, what this anomaly does open for consideration is the interface between the viewer and drawing as differently prescribed in reference to the distance the viewer has assumed from the drawing. A close or distant proximity introduces different responses in relation to the image. The implications for meaning able to be derived from the drawing modify through these affects and form an important part of this investigation.

### **The scene's relationship with the plan—finding the diagram**

From Panofsky there is a claim for the rationality of the perspective technique, its tie to optics and its implicit understanding of the mathematical and geometric unification of the space-object relationships. Based on the structuring of Brunelleschi's fifteenth-century experiment regarding linear perspective, Panofsky's concept unified the viewing subject and the implications of their single ocular sensibility within this single geometric construct. Whilst this understanding of perspective emanated from L. B. Alberti's fifteenth-century treatise *De Pictura*—that painting was a striving for representations of things that are seen—it does not completely characterise what happens in architectural perspective drawings. For architectural practice, perspective is a projective technique and its conceptual understanding is modified through its engagement with the architectural plan.<sup>12</sup>

As a consequence, perspective representations in architectural practice work partially like paintings—being a two-dimensional view of objects in space—taking on attributes of the painterly, including a painting's relationship to the socially defined subjective will of the artist.<sup>13</sup> They are also unlike paintings, and correspond to the logic and geometries most often projected from and controlled by a plan and other associated orthographic drawings.

In the representation of ideas through perspective, it is the relationship with the plan that becomes important for architecture. In practice, individual drawings are rarely seen in isolation, but are situated in 'sets' that convey a collective architectural sensibility. It is the correspondence between draw-

ings that is often behind interpretations of meaning. Uniquely, architectural perspectives retain the strong register or trace of those other sources in their resulting imagery. Gaining meaning from an individual perspective drawing, or revealing its spatial message relevant to architecture, remains therefore a consequence of an intellectual accumulation of knowledge by the viewer as they browse many drawings.

Even when relocated in an exhibition, perhaps isolated from others in their set of drawings, this implicit presence underpins viewer apprehension of the architecture portrayed. Rather than be controlled through ideas of the picturesque, the viewer of an architectural perspective will expect to answer questions such as, 'What lies behind that wall?' or 'How do I enter this space?' It is an apprehension of the architecture in the mind of the viewer that is at stake in this investigation.<sup>14</sup> To establish an answer, and mentally construct a more complete spatial understanding, they will want to refer to other drawings. As a result, when viewers respond to an image of architecture in perspective they respond also to relationships developed between the things that are seen, relating to a view, and those things not seen but known to exist. These less obvious or absent connections define many of the image's diagrammatic attributes.

In an evaluation of Mies's drawing of the Barcelona Pavilion, it is an acceptance of the potential dominance of a plan that emphasises the drawing's idiosyncratic characteristics. Through a series of analytical investigations of the drawing's formal and technical characteristics, correspondence to plans that were completed during the same period

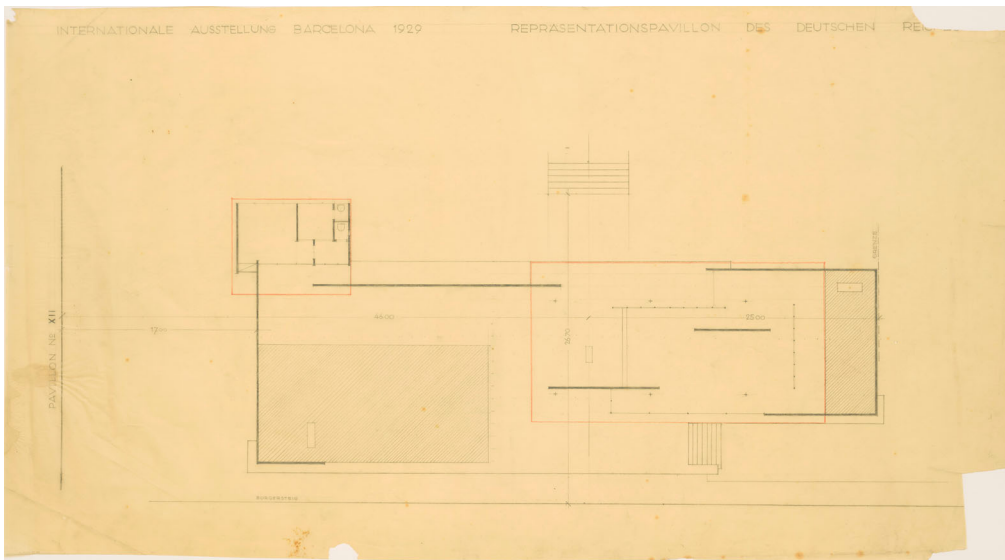


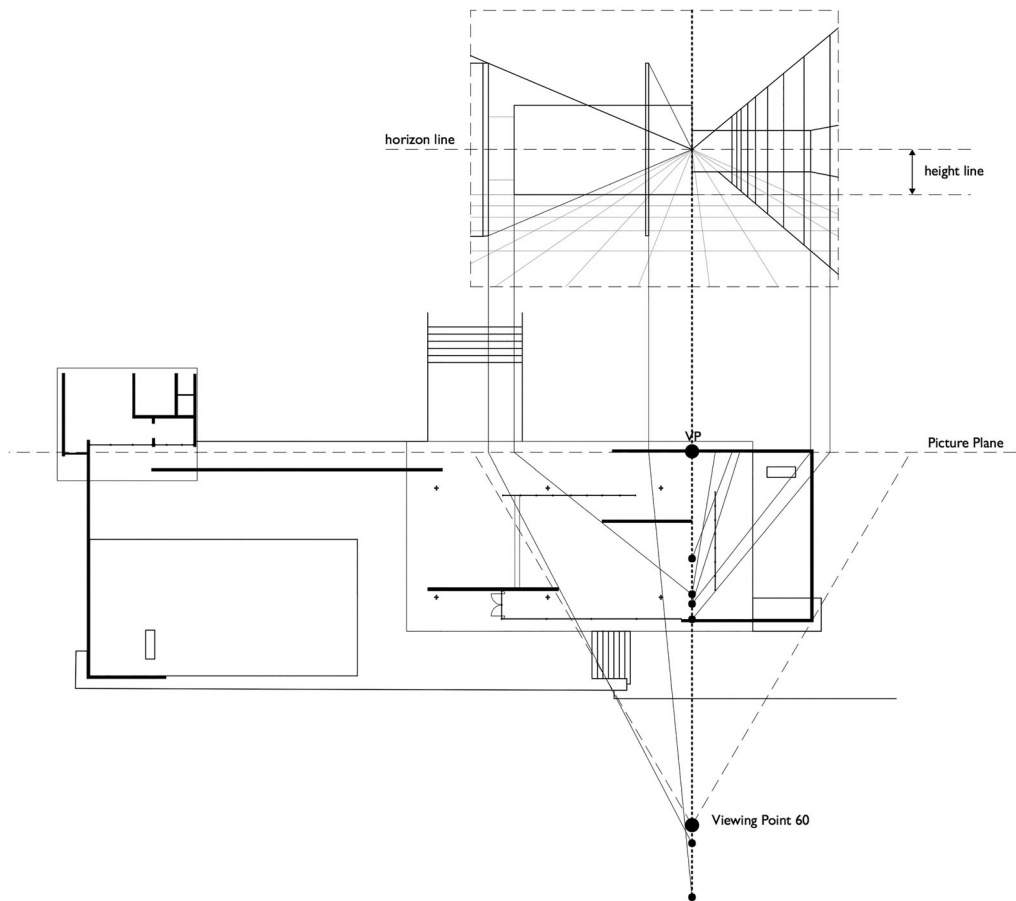
Figure 3. Ludwig Mies van der Rohe, German Pavilion, International Exposition, Barcelona, Spain: plan, 1929; graphite on illustration board (MR 14.2, © 2015 Artists Rights Society [ARS], New York/VG Bild-Kunst, Bonn).

can be recognised. In using a technique of analysis that responds to these correspondences it is important to understand that during the months prior to completion of the perspective there were at least two plans drawn that are still extant, each differing from the final scheme. Each plan is distinctive in its dimensions and resolution of architectural structure.<sup>15</sup> One plan has no columns in the interior of the building, whilst the other introduced a grid of six internal columns rather than the eight columns used in the structural grid of the final building. The analyses undertaken here have used the plan MR14.2 (Fig. 3), dated 1929, that includes the grid of six internal columns and thus correlates with the perspective drawing's lack of the external columns

that were later introduced into the courtyard.<sup>16</sup> This plan has thus been selected as the plan of best fit for this investigation. The final drawing (Fig. 4) is achieved by reverse construction, from perspective to plan, using standard drafting conventions.<sup>17</sup>

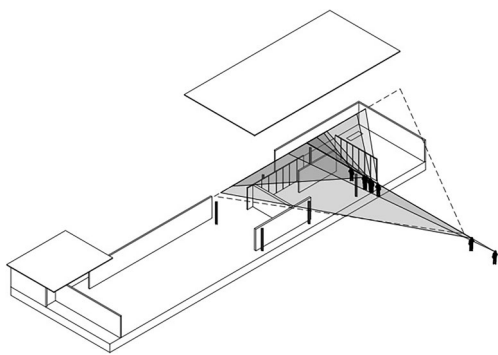
Through this analytical drawing it becomes clear that in an attempt to find correspondent points, any reconstruction of the perspective is unable to be simply realised using projection from the selected plan. Furthermore, it is clear that a 60-degree cone of vision that would define the extent of the 'view', if reapplied to the extremities of the scene portrayed, has not been used to establish its viewing-point. Instead, there is a potential referen-

Figure 4. Investigation of perspectival correlation between plan and perspective: analysis undertaken by Desley Luscombe and drawn by Sophie Harris.



cing of multiple viewing-points. This perspectival mechanism can be best observed where an axonometric technique has been used to form an aerial view of the spatial complexity of what is happening in the drawing's perspectival construction (Fig. 5). At

least six viewing points can be extrapolated as active in the construction of the perspective, even though there is only one vanishing point. Accepting this variance, there is selective correlation developed between plan and perspective that is consistent



with its conventions. All viewing points can be plotted along an axis joining the 'cone of vision' apex and the vanishing point's spatial location if this axis is drawn perpendicular to the back wall of the interior. However, multiple viewing points suggest that the viewer is moving, although not smoothly, along this axis, selecting and depicting a resulting collection of controlled yet sporadic visual investigations. From this analysis, it is clear that there is no single static camera-like engagement of optical logic structuring the view.

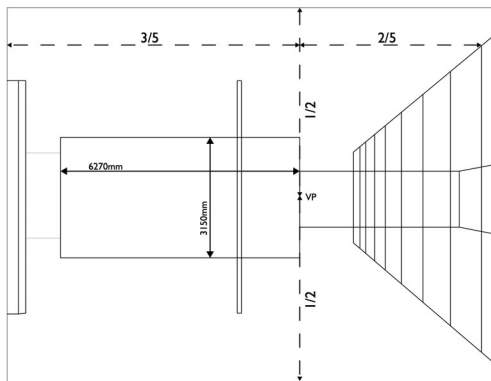
To explain the perspectival construction further, it can be seen that the right-hand side of the image is closer to conforming to the conventions of single-point perspective as if projected from the plan. Viewing points for this side of the image are internal to the space and develop less distortion in the final forms. However, elements on the left-hand side and the location of the rear wall are distorted in their spatial locations and do not easily correlate with the concept of an interior view. Their resulting forms generate other viewing points placed exter-

nally to the building, creating a spatial ambiguity for locating the image's viewing subject. It is as if the subject is floating above ground level and able to see through the exterior façade. The distortions on the left-hand side of the image result in an exaggerated sense of depth to the scene, with the elements on the left brought closer to the centre of the view. The illustrations herewith precisely document the renegotiated relationship between viewer and vanishing point that is necessary to achieve these distortions (figs 4, 5 above). Although questions could be raised as to whether distortions were simply used to locate the required scene on an art board of a pre-existing size, it is because of the investment of time in its rendering and compositional accuracy of proportions that further investigation is necessary.

It is through analysis of the formal attributes of the two-dimensional composition of the drawing that an understanding is gained of other influences in the drawing. For this analysis, an examination of measurements between the two drawings (plan and perspective) has been carried out. Examining the original drawings, what is revealed is that the scaled dimension of the plan is repeated in specific elements of the perspective. This is developed in the manner of an orthographic rather than perspectival relationship (Fig. 6). Using a common architectural scale ruler, dimensions on the plan are drawn at a metric ratio of 1:100. Consistent with this, the perspective drawing's centrally located freestanding wall has a scale of metric ratio 1:10 if considered at the same dimension as the plan. As a consequence, rather than project from the plan, thus retaining a proportional relationship through geometry, the

Figure 5. Axonometric showing the perspectival mechanism: analysis undertaken by Desley Luscombe and drawn by Sophie Harris.

Figure 6. Dimensional correlation between plan and perspective: analysis undertaken by Desley Luscombe and drawn by Sophie Harris.



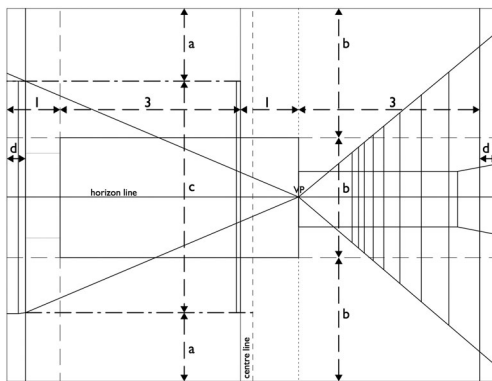
perspective of this freestanding wall takes on some qualities of an elevation. Both plan and perspective use dimensions for this wall that approximate a width of 6270 mm. It is this wall that in perspective also approximates the dimensions of the floor-to-ceiling height of approximately 3100mm—a height that is consistent with the size given for the onyx slabs mentioned by Mies.<sup>18</sup>

While these dimensions are not identical with those of the realised, or now re-created building, there are notable approximations between the selected drawings (considering stretch and warp of the paper stock). Again, conforming to this dimensional accuracy, and confirming its verity as a technique, the grid divisions of the travertine floor have been established by inserting fine pinholes spaced at a scaled dimension of 1090 mm (1:10) and located just in front of the freestanding wall. In production of the drawing, the placement of pins in these locations would guide the perspectival diminution of each line of the floor's travertine flagging

by the action of the architect placing a ruler between the vanishing-point pin and these pins. The primary relationship between drawings is an orthogonal and dimensional correspondence.

Consistent with this logic, the distance from the freestanding wall to the perpendicular glass wall separating the interior from the external court and reflection pool is also a scaled measure. The significant point here is that there is a single line of dimensional correspondence between plan and perspective that lies along the base of the freestanding wall from its left-hand edge continuing toward the glazed wall beyond its right-hand extremity. As a simple perspective construction technique, this line of dimensioning, if consistently applied across the whole image, was one that traditionally had been used as a short cut in developing single-point interior perspectives. However, for Mies's drawing, the precision of the dimensions is abandoned beyond the important structuring reference of the freestanding wall. This is clearly evident in the representation of the wall at the extreme left foreground that frames the scene. The location of this wall is related primarily to a pictorial apparatus rather than any accurate perspectival depiction. The correlation between plan and perspective drawing is thus partial or selective, and guides the viewer to an understanding of how parts of the drawing were created while at the same time opening the question of the effect that might emerge from these relationships.

Continuing the investigation of the drawing's important formal characteristics, it becomes obvious that layered on this loose perspectival construction are pictorial controls that emphasise the



drawing's state as a two-dimensional composition. These divisions assign prominence to the structuring of the image and the positioning of certain elements, and combine to support the idea that the art-board size and the image are integral dimensionally. These compositional structures show less relationship with the plan but nonetheless determine the build-up of important diagrammatic effects in the drawing, adding emphasis to specific attributes of its rendering. This structuring of the image draws attention to proportions that in their intersection with perspectival construction reinforce the scene's representational meaning. The structuring divisions of the drawing are illustrated herewith (Fig. 7).

A selection of the most important of these divisions includes the example of the proportioning of the freestanding wall. It is located equidistant from the top and bottom edges of the background art-board. The wall is thus  $1/3^{\text{rd}}$  of the height of the art-board and is placed centrally in its represen-

tational field. Such clarity suggests that the art-board was not a predetermined size but has been tailored to the image. A second example, the vanishing point's location at mid-height of the background art-board is in a simple proportional relationship horizontally located  $2/5^{\text{th}}$ s across its width from the right-hand edge. This location ensures an asymmetry to the resulting composition. Here the relationship with the plan is ignored and the image begins to differentiate a response to artistic practices reminiscent of the logic of the painterly composition in Renaissance painting.<sup>19</sup> This structuring draws attention to the double coding of the image's diagrammatic origins. It becomes obvious through analysis that the drawing's structuring systems emphasise an asymmetrically prescribed scene across the width of the image.

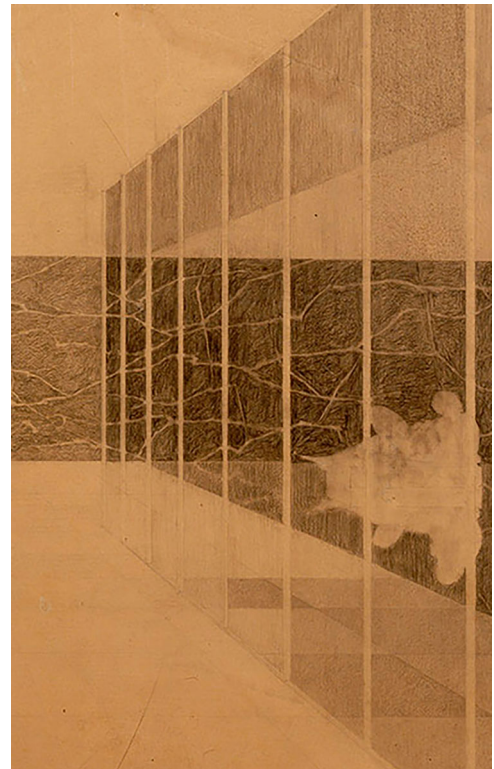
However, returning to the issue of the drawing's relationship to the viewing subject and the impact of close or distant viewing raises further complexity for an interpretation of the image. When viewed from a distance there is a crucial emphasis on abstract compositional qualities of the drawing. There is a distinct chevron in the graphic emphasis to the right, which is visually halted by the barrier delivered by the vertical shadows on the central column, the dark horizontal shaft of rendering of the background wall, and the left foreground wall. In a move against total asymmetry, these structuring systems correspond to a bilateral symmetry, top to bottom, around the perspectival horizon line determined by the placement of the vanishing point. This effect is simple to observe if the image is placed on its side. The counterbalance between symmetry and asymmetry defined through this chevron

Figure 7. The proportions and compositional divisions structuring Mies's perspective: analysis undertaken by Desley Luscombe and drawn by Sophie Harris.

Figure 8. Detail showing the rendering of the marble of the background wall and pool, Ludwig Mies van der Rohe, German Pavilion, International Exposition, Barcelona, Spain: interior perspective. c. 1928–29; graphite on illustration board (MR 14.1, © 2015 Artists Rights Society [ARS], New York/VG Bild-Kunst, Bonn).

becomes key in any consideration of the historical positioning of single-point perspective and its relationship to the classical traditions from which the technique emerged.<sup>20</sup> Dynamic balance enhances the drawing's abstract and diagrammatic sensibilities.

When viewed in close proximity there is a crucial second interaction with the drawing. It is the visual significance of the detailed pencil rendering of its architectural materiality. The techniques used embrace a more traditionally referenced recognition of the spatially explicit tonal values of shade caused through the effect of natural light. Details can be observed that respond to the effect of the material quality of glass, external atmosphere and the sun.<sup>21</sup> The desire for abstraction, or an optical geometric rigour defined by the compositional structure of the image, is now transferred to viewer recognition of the sensory apprehensions of its content. By being made to respond to this wealth of rendered detail, it becomes necessary to respond also to architecture's material necessity, its surfaces and their setting within a corporeal environment.<sup>22</sup> Consistent with perspectival naturalism, the intense graphic finishes applied to the veining of the marble on the back wall of the Pavilion conform to changes that would be expected as the wall extends from the interior to the exterior, seen naturally or through glass, when it is seen directly or in muted sunlight.<sup>23</sup> The glazing of the wall dividing the scene between interior and exterior also presents differences in tone responding to the shadow of the underside of the cantilevered external roof-plane in comparison with its softly tinted material quality when seen in direct light. Its measure of trans-



lucency further contributes to the understanding of atmosphere on the scene beyond. The view through the glass registers architecture's material presence as being responsive to the effect of light in nature's atmospheric change.

Close proximity to the drawing reveals more paradoxical combinations of elements. Seen through the glazing, the centrepiece of the view is of a sculpture located in a reflecting pool (Fig. 8: detail). This sculp-

ture forms the slightly muted 'subject' of the scene. It is tonally rendered to depict the qualities that a volume generates as it is reflected, a form that registers the cut of the surface of the water between real and mirrored images.<sup>24</sup> The pool's dark presence registers the importance given to water's reflective capacity and its mirroring of various materials. This is seen most clearly in the continuation of the marble wall into the pool and the reflection of its veining. The travertine flagging is rendered externally as a subtly differentiated chequerboard that takes on characteristics of material that has perhaps been moistened by rain or water from the pool. Its form continues internally as a finely gridded definition of construction joints. It is through these subtleties, and their contrasting juxtaposition with more abstract elements, that the experimental nature of the architecture emerges.

Counteracting the natural spatiality of the right-hand side of the image the line work on its left is of a more forceful abstract graphic intensity. The rear wall on the left is simply developed through repetition of thick vertical lines applied between what can be construed as window mullions. Whilst the effect of the line-work references the potential material folds of the velvet curtains, perhaps like those subsequently used elsewhere in the building, the incorporation of mullions detracts from any easy conclusion about this representational purpose. These curtains are represented as if beyond the surface transparency of the wall's framed glazing. The application of these strongly drawn lines remains more graphic than representational. The left-hand wall in the foreground that frames the view is rendered in fine detail represent-

ing stone of a different origin to the marble on the right side of the image. However, this detail produces very little spatial register for the scene. Its effect is more abstract, texturing a framing of the view. Also avoiding any spatial register is the ceiling of the room. Its surface denotes absence rather than materiality.

The interplay of representational and abstract characteristics is brought together by the presence of two dominant vertical shadows of the column introduced in the near centre of the image. These shadows fall as though there is a strong light projected from the left foreground of the image. However, they register the impossibility of this effect. Being an interior element it would be impossible to achieve these shadows naturally, without the continued line of cast shadow across the floor. The shadows are instead projected on the column's edges, only adding to the abstract effect of the column's dislocation with the scene. When viewed at a distance these dark vertical lines act as a centring device in the abstract two-dimensional structure of the image, and also halt the directional thrust of the chevron of detail on its right. If viewed at a distance, it is this chevron that dominates as though its abstracted arrowhead points toward the column. Symmetrically aligned above and below the central horizon line this chevron directs attention from the image's edge back into its centre—a counterpoint to the rendered materiality that moves the attention of the viewer to the extremities. Within this abstract spatiality the shadows on the cruciform column float as the scene's architectural 'figure'.

Concluding this analysis, the major diagrammatic influences on the drawing emerge from a complex

relationship delivered by its two-dimensional geometric characteristics and an orthogonal relationship developed between plan and perspective image. Through this analysis, the structuring of the drawing has been shown to deliver different meaning as it interfaces with specific distances of viewing subjects.<sup>25</sup> Its abstraction is often countered by a development of subtle representational qualities. In this context it is important to open the investigation to questions of the relevance that the perspectival technique and its conventions bring to the meaning of this image. Why does the image use perspective techniques? And, what benefit is gained through perspective's tie to ocular perception?

Given these questions the following investigation will further develop an understanding of the complex diagram underlying this drawing. Approaches emerging from Hubert Damisch's *The Origin of Perspective* are employed in order to explore the importance of perspective conventions to the structuring of the drawing. Interpreting the drawing through perspective is not with the aim of simply returning it to a claim for its modernity. In this avoidance Martin Jay, for example, explains the problems associated with claiming perspective and its tie to the photographic gaze as the 'scopic regime' of the Modern. Pertinent to this article, he concludes:

Rather than erect another hierarchy, it may therefore be more useful to acknowledge the plurality of scopic regimes now available to us. Rather than demonise one or another, it may be less dangerous to explore the implications, both positive and negative, of each. In so doing, we won't

lose entirely the sense of unease that has so long haunted the visual culture of the West, but we may learn to see the virtues of different ocular experiences. We may learn to wean ourselves from the fiction of a 'true' vision and reveal instead the possibilities opened up by the scopic regimes we have already invented.<sup>26</sup>

For this study, Damisch's exploration of Renaissance panels shows how each example of perspectival art and its depiction of an embodied ocular experience can contribute to a complex portrayal of the scene's relationship to a viewing subject. Rather than simply reference an 'objective truth', Damisch's approach emphasises the importance that the specificity of viewing distance has for the scene's interpretation and the implications of changes to that relationship. Rather than to look simply for attributes of conformity or non-conformity with the geometries of perspective, it is the intention here to examine these subtle hierarchies evident in Mies's drawing.

### **The vanishing point and the spatiality of the scene—the implications of the perspectival diagram**

In Mies's drawing, the dominance of the vanishing point over the scene is clearly referenced through a well-worn remnant pinhole used as a ruler guide in completing the drawing. The vanishing point of an architectural perspective defines the drawing's visual response to a representation of space and the locational relativity of the viewer to its architectural subject. This point can be considered in one sense an artefact of the drawing, only existing on the surface on which it is projected and purely

reflecting the geometry that architects use in order to construct the illusion of spatial depth. However, it can also be considered in a symbolic sense for its referencing of a notional infinity, an actual distance within the scenography of the drawing's representational field. This implied distance has been proposed by Damisch to be important to how perspectival scenes can be interpreted.<sup>27</sup>

To advance investigations of Mies's drawing, Damisch's study of the fifteenth-century *Città ideale* images in the Urbino and Baltimore panel paintings provides an approach that looks beyond perspective's link to the visual truth implied by *camera obscura* or photographic mechanisms. In questioning the assumed role of infinity as origin, Damisch asked whether there was any significance given to the relative spatial depth of each vanishing point. He acknowledged that each painting had located the vanishing point at different representational depths toward spatial infinity. This finding was based purely on the visual effect of the pictorial image, its location of elements and exterior/interior setting. Separating the notion of the vanishing point's symbolism from that of origin, Damisch proffered the idea that the panel-paintings could be interpreted as a series of propositions on the viewing subject's changing relationship to a spatial infinity: a conceptual relativity in the mind of the viewer. This viewer, and their role in the symbolism of the view, became an important artefact of the image's perspectival structuring.

In Damisch's conclusion, the panels as a group could be seen to reference a pseudo-scientific proposition about spatial relativity, and a viewing subject's sense of self with regard to that relativity.

Without further explanation Damisch's understanding of what is available in viewing the panels splits the function of a viewer internal to the construction of the view and the viewer who might examine all three images for their comparative differences. For Damisch, the concept determining each vanishing point extended beyond its geometric function within the two-dimensional boundaries of the painted surface to take on symbolic value in relation to the group. This power of narrative over the geometric rationality of infinity changed an understanding of perspective. It recognised the possibility of a scientific rigour in the construction of the interior viewing subject's response to the view that was not necessarily the mirror of the viewer external to the painting.<sup>28</sup> This viewer external to the works could be conceived from a different premise. Whether this was an intention of the artist cannot be considered from this historical distance. It was nonetheless an effect that emerged from the Urbino and Baltimore panels when compared.

The meaning developed in his analysis of the panels recognises a different optical project from that of Brunelleschi's perspectival model.<sup>29</sup> Subsequent to Damisch, relationality between the image and its range of viewing subjects could be considered as now key to an understanding of meaning in perspective imagery. Explaining the difference in this understanding compared with that of Brunelleschi, Damisch described the vanishing point for the *Città ideale* images as an element conceptually maintained 'between that which is a matter of geometry, in the strictly mathematical sense of the word, and that which has to do with another kind of geometry, one that's imaginary—or symbolic'.<sup>30</sup>

In considering the importance of combining optical geometry with this symbolic sense of the world, his interpretation of the *Città ideale* images focussed on the impact of a selected 'correct' distance for the vanishing point and a narrative that was consequently inferred for the spatiality of the scene and its internally implied viewing subject.

Turning attention once again to Mies's drawing, the following engagement with it takes up the question of how the vanishing point of this single image, with its combination of up to six different locations for the viewing subject internal to the scene, might also structure a conceptual framing for understanding the image's speculations on architecture. What is under investigation in Mies's drawing is this sense of the symbolic.

In Mies's drawing, the vanishing point is located at the precise coincidence of the edge of the main free-standing wall and its mathematically defined correspondence with the rear wall of the internal space of the scene. Because of its coincidence with two spatial planes, it forms an ambiguous and ill-defined depth of field for the scene.<sup>31</sup> This is combined with viewing points external to the interior of this scene. Questions arise such as, where is the attention of the viewing subject to be resolved: on the mid-field or the wall defining the most distant plane? How would the viewer apprehend the importance of sequencing in the scene's architectural spatiality, especially the space between these two planes? And, does the development of a fractured and collaged view constructed around this ambiguous spatiality suggest pseudo-scientific attributes in the images consistent with those found by Damisch in the Renaissance panels?

In Mies's drawing, it is the relativity of the geometries defining the vanishing point and the multiple viewing points that prompts parallels with Damisch's conclusions. In recognising the importance of positioning the vanishing point in the *Città ideale* images, Damisch explains the structuring of viewing subject external to the scene as having similarity with a Serlian principle of theatrical scenery.<sup>32</sup> He recounts that Serlio had a precise location for the horizon and the vanishing point for his stage scenery. However, this spatial point was not necessarily one, as has been previously assumed, that located the most privileged position in the theatre seating. Damisch claimed that it was to take a further century before such geometry was guaranteed. He concluded that within Serlio's scenery, rather than the vanishing point being static in its correspondence with the viewing subject, it was primarily up to the "subject", even if the prince himself, to get his bearings within the configuration of the scene'.<sup>33</sup> The implication here is that the viewer external to the perspectival structure was open to choose independently his or her own resolution for viewing the scene, taking the role of responsive inquirer. This resolution can be seen as analogous in part to the characterisation of the viewer of the scene in Mies's drawing.

By multiplying the notion of viewing subject, Mies's drawing establishes an important split between the viewer internal to the scene, whose various locations order and structure its specific collage of events, and those viewers who are spectators to the drawing as a two-dimensional artefact. For Mies's drawing, this separation of viewers is distinct in that the external viewer can move spatially in

the context of examining the image. Here the external viewer strives to get his/her bearings in order to grasp the complexity of what he/she sees, while the viewer internal to the scene is implicitly constrained by the geometries of its construction. Rather than resolving a privileged position opposite the vanishing point, the viewers external to the work instead remain outside the perspective's single geometric logic.

What becomes evident is that both viewers, internal and external, assume different roles in the development of the image's symbolism or narrative. The internal viewer, accepting the spatial ambivalence determined by the placement of the vanishing point, is structured to change location and select elements for the drawing's subject focus. In a more pseudo-scientifically constructed set of spatial relativities, this privileged eye selects adjacencies of elements and actively collages spatial arrangements of importance in order to present important symbolic messaging about the architecture the drawing portrays. The external viewer is in a complex association with this internal logic, moving to comprehend its continuously ambiguous spatiality with regard perhaps to his/her recall of the plan. This external viewer is required actively to seek orientation and resolve their lack of bodily correspondence to the montage/collage of architectural spaces communicated by the drawing's internal eye. The displacement of these roles indicates the drawing's origin as a doubly negotiated experience that embodies a construct of technically instructive qualities meant didactically to inform its external viewers.

This relationship between viewers is one of negotiation because the viewer examining the artwork

can never be in a location coincidental with all the multiple viewing points of the viewer internal to the structure of the work. The external viewer is impelled to keep questioning the verity of what they recognise superficially as an architectural space that does not comply with other information at hand. The internal viewer, taking the didactic position of the architect, mirrors the role of an instructor. This role is one that elicits inquiry and dialogue through the defined structuring of his/her, the architect's, presentation of the conceptual import in the architecture of the building. The simultaneity of this understanding of relationality prompts the viewer external to the image to engage with the inconsistencies of visual data as he/she works to resolve what they know from other sources.

The vanishing point in Mies's drawing can be understood therefore as contextualised by layered information that is relative to and references the double engagement of the viewers, an engagement that is temporal. The configuration of this scene acknowledges the temporality of the internal viewer as sporadic and purposeful, bringing together images of what is considered important to the structuring of architectural apprehension. It is as though from a stable and wide field of view there is captured, in a series of disconnected but relatable instances, a composite view where elements are actively relocated, collaged and spatially collapsed in order to make a single temporal moment of remembering essentials of architectural meaning. This act of the repositioning of architectural elements defines new hierarchies of importance. In this, the drawing itself becomes a pseudo-scientific experiment that moves its

imagery beyond a perspectival proposition. The resulting network of nodes and adjacencies reinforces its diagrammatic effect, enhancing some relationships between elements over others that may have otherwise been privileged through perspective's optical geometry. The temporality of the external view is more didactic in responding to this sense of the image's interiority.

Focussing on the subject of the image in its perspectival setting can further emphasise symbolism emerging from the complex polarity developed between the drawing's abstraction and its finely detailed rendering of architecture's material surface. As already suggested, Mies's drawing has a level of luxuriant material detail defining its specifically architectural subject. Reconsidering this now in relation to the perspectival structuring of the image, this graphic information is often inconsistent with the tonal diminution usual in perspectival spatiality. Even though the drawing is large in dimension, and possibly because of the combination of this with its fine detail, the viewer of the artwork is encouraged to stand close, be attentive to individual lines, shades and reflections, and to move their body to maximise an engagement across its expansive height and width. Because of this apparatus of reception the perspectival spatiality of the image is reduced and viewer focus is again on the idiosyncratic abstract formal qualities of these material surfaces.

Whilst in these details the material form of the architecture predominates, there are strange reversals also revealed in the resulting two-dimensional quality of composition. Close up, the viewer is unable to perceive the image as a whole. The

view's reception becomes selective. It becomes apparent that in the application of light and dark tones, a series of figure/ground ambiguities are developed. The importance to the scene of each drawn element appears to slip into and out from register.<sup>34</sup> Tonal opposites reinforce an attraction-repulsion in the implied layering of elements. An example can be seen in the freestanding wall that can be considered either as void, and thus in one sense 'ground' or, in another as 'figure'. Repeating this complex negotiation of figure/ground, the strongest recognition of 'figure' is not of architecture but the sculptured scene beyond the transparent glazed wall to the right. Transforming an understanding of figure to the literal figure of a sculptured form is a device used to further the investigation of the architecture. This movement between figure and ground reinforces the didactic control of the image. As Penelope Curtis has claimed more generally, Mies's designs use sculpture, positioned as a spatial device, in order to draw the attention of the viewer to spaces beyond those immediately observable.<sup>35</sup> The sculpture in this drawing, a reclining figure, is purposely positioned to look back towards the interior of the pavilion directing the viewer to follow its architectural gaze to the space between the verifiable locations of the vanishing point.

Whilst this effect follows well-known iconographic strategies, other figure/ground relationships are more abstract. Seeking a resolution of figure/ground through tone and detail has reinforced a dynamic asymmetrical balance to the image where elements appear to have a tenuous spatial stability. Layered upon this tension are the two vertical lines

that denote shadows. These elements return attention to the rather ephemeral central cruciform column, taking the role of the architectural 'figure' of the scene. Tension develops between this architectural figure and the sculptured scene beyond the interior. Perhaps recognising this ambiguity Robin Evans alluded to the image of the column as 'more like a stretched cord than a compressed column'.<sup>36</sup> This comment recalls Peter Eisenman's suggestion that the 'white absence' of the cruciform column in the later completed Resor House drawings of the 1940s remained a figuration of absence rather than material form.<sup>37</sup> However, for the scene presented in the Barcelona Pavilion, this column registers a greater sense of materiality. In recognition of architecture's spatiality it is this juxtaposition between abstraction and the figuration of absence, layered within a representation of architecture's materiality, that impedes any simple spatial verification. Mies's experimentation with architecture, although fundamentally tied to its material essence, emphasised instead the spatial ambiguities that prompt the viewer's apprehension of its abstraction and capacity for spatial reversals.

These attributes are not presented as simple binary opposites to be recognised in a graphic representation. Collectively, they are the defining characteristics that separate Mies's drawing from Hilberseimer's *Hochhausstadt* drawing. For Mies's drawing, the piloting of meaning through an internal diagram, and the ephemeral qualities of the freestanding wall and column, reinforce architecture's metamorphosis from concept to experimental spatial and material form. The drawing's complexity reminds the viewer that it is the physical

nature of architecture's apprehension, as well as the necessary cognitive engagement determined through that physical nature, that defines its autonomy from other arts.

This logic emphasises the material nature of architecture and the distinctiveness of that materiality within an abstract construct. It is a relationship that is not binary but provides the possibility of reversing the implied spatial diminution of architecture's perspective to present a paradox. It is this attribute that could not be offered by the more abstract representational forms like the axonometric, a technique that was so eagerly taken up by Mies's colleagues of the time. The axonometric privileged abstraction and could never encourage responses in the manner of perspective's tie to this material and spatial phenomenology.

As the viewer external to the image might consider the bearings of their own body with regard to the configuration of this scene, the space becomes doubly apprehended: as a view of an interior it is understood for its tactile material presence; as an abstract composition it takes on a dynamically animated spatial configuration. Together these attributes structure the drawing's architectural meaning. The drawing recognises architecture's necessary cognitive as well as physical/haptic reception. Implied in the vanishing point's structuring of the image, the drawing narrates the precision required in architecture for the selection of material surfaces, their defined placement as separate and distinct individual elements, and consideration of their subtle response to the specificities of temporality and natural light over the course of the day. However, the vanishing point's structuring also

upends this surety with reversals and distortions that recognise the possibility of architecture's abstract sensibility.

Mies's drawing delivers a narrative for architecture that is defined by tensions. It is constructed as a pseudo-scientific depiction of inter-relationships and oppositions. These are manifest between, figure/ground, materiality/abstraction, spatial regression/advance of its elements, and flow/stasis of its ocular reception. Each opposition is in complex, competing and often subtle hierarchies. It is through these visual tensions, layered within a structure defined by the vanishing point and its implied viewing subjects, that architecture is portrayed, not by singularity or simple constructs, but by a multiplicity of layered meanings enabled through the transformative nature of a moving and intellectually engaged viewer.

**The question of Mies's practice in 1927–9: experimentation and the implications of the drawing's layering, collage, density and slippage**

In undertaking a close reading of Mies van der Rohe's perspective drawing this paper has thus far revealed how a drawing's underlying diagram can guide reception of its meaning. However, the questions not raised through this type of analysis now require consideration if interpretation of meaning is to proceed. In this section a more historical approach is taken to examine sources close to Mies during the mid- to late-1920s, his involvement in the *avant-garde* art community in Berlin, and his writing and architectural work of the period. Important, are questions that respond to whether, and

why, Mies might engage with the type of graphic experimentation evident in the drawing and what this experimentation might reveal.

The following investigation responds to the two attributes raised as important in earlier sections. The first is the drawing's emphasis on architecture's materiality as controlled within an equally important overarching abstract spatial structuring of those materials. It questions why each element's material form was so important that it was delicately rendered, an act in contrast to the popularity of white or primary coloured abstraction evident in *avant-garde* architects' work of the period.<sup>38</sup> The second is the framing of the composition within a montage of sequenced views, a framing that reinforces spatial reversals and the flow/stasis of the ocular reception of experienced architectural space. Investigation will now question whether there is any evidence for earlier conclusions made in this article: that this attribute of the drawing implies a moving viewer internal to the image's perspectival structure.

From Mies's writing and practice of the period there is scant archival material that remains. What is necessary therefore is a more speculative questioning of evidence that emerges from the context surrounding Mies's practices, including the writings of his colleagues, his readings and literary purchases, and his professional interchanges and collaborations. What these sources provide is an opening to the possible reading of the image, one that would be consistent with the hierarchy of the diagrammatic structuring of the drawing. It is from these sources that the drawing's meaning emerges.

There is general recognition that during the 1920s, Mies had worked within a network of influences focussed on the *avant-garde* artists and writers circulating through Berlin.<sup>39</sup> Fritz Neumeyer lists as being important Mies's active collaborations and leadership with the *Novembergruppe*, the *Deutscher Werkbund*, *Der Ring* and his collaborations on the post-expressionist periodical *G: Material zur elementaren Gestaltung* ['G: Materials for Elemental Form-Creation']. Each of these groups would have provided access to a broad range of experimental art, artists and ideas. In this context Mies's directorship of the Weissenhof-Siedlung Estate in Stuttgart and the *Gewerbehalle* ['Trade Hall'] of 1927 would also place him in contact with a number of *avant-garde* architects of the period. Added to this context of art and architectural practice, Neumeyer also refers to a number of philosophical texts in Mies's possession as a potent source for ideas and the basis for dialogue with other *avant-garde* activists.<sup>40</sup>

Many of these sources have drawn significant study including K. Michael Hays's critique of Mies's photomontages of the 1922–28 period where he suggests direct links with Dada's 'antagonism against a priori and reasoned order', and Lutz Robbers' and Spyros Papapetros's claim for Mies's distinctive response to experimental film of the period.<sup>41</sup> However, what is most evident in Mies's work of that time is that, while being open to the ideas emerging from this intellectual milieu, such an environment did not conclude with his aligning to a single specific movement. More evident were his active and applied responses to a broad range of ideas. These responses aimed to recognise rel-

evance for architecture's unique contribution to society and its autonomy from other arts. In this there was specific attention given attitudes emerging from the new media arts such as film and photography that had an inferred architectural spatiality.<sup>42</sup>

Neumeyer has suggested that there is evidence during the late 1920s of a change in Mies's positions on architecture. According to Neumeyer, by 1927 Mies was to divide his approaches between those buildings that related to 'life and in a general sense' and buildings that were 'intimately connected with specific spiritual atmospheres that we perceive as characteristic cultures'.<sup>43</sup> In these terms Neumeyer saw a division between the 'technical' specificity of Mies's earlier understanding of architecture and this new emphasis on what he terms 'spiritual will'. It was at this time, in *Die Form*, that Mies emphasised the necessity for recognition of the starting point of form-giving derived from 'life' rather than an architectural formalism modified by locale. In an interchange with Walter Riezler's critique of a house by Josef Hoffmann,<sup>44</sup> he wrote:

We do not value the result but the starting point of the form-giving process. This in particular reveals whether form was derived from life or for its own sake. That is why the form-giving process appears to me so important. Life is what matters. In its entire fullness, in its spiritual and concrete interconnectedness.<sup>45</sup>

This engagement is distinctive from the conservative approaches to form that proposed that architecture was derived primarily from a notion of historically validated formal plasticity in much the same manner as sculpture. Mies here reorients an under-

standing of architecture away from form being a response to traditions or place, to one focussed on the spiritual and concrete interconnectedness of life's full requirements.

Important to Neumeyer's argument is his proposition that at this time Mies's approach can be best understood against a backdrop of a small tract by Siegfried Ebling, *Der Raum als Membran* ['Space as Membrane'].<sup>46</sup> In Neumeyer's view, the tract combined the philosophy of Friedrich Nietzsche, in particular his requirement for 'authenticity' and 'intensity' of life, and Raoul Francé's development of a theory suited to a concept of 'biological architecture'. Francé was interested in seeing nature as a hierarchical system that could be used as a model of thought for other activities.

In response to these influences, Neumeyer suggests that Ebling's tract isolated two approaches that were important to Mies's changing attitude to architecture. Mies was to summarise these in a letter to Riezler.<sup>47</sup> First, there was a claim in architecture for 'a naturalism that already recognised the existing as form', and secondly, 'an idealism of will that aims at a subjugation of the given'.<sup>48</sup> It is this recognition that natural materials have form, and that this form, as 'the given' in architecture must be subjugated to an idealism of will (architecture's controlling rationale), that provides the basis for interpreting specific aspects of the drawing of the Barcelona Pavilion.

However, these statements to Riezler also open an understanding of Mies's reference to the building of the Barcelona Pavilion as an example of *Darstellungsraum*, a representational space of German culture. This implies an understanding of type

suggesting that architectural form must respond to the idealism and subjugation of its socio-cultural setting not as mere formalism or *Gestalt* but as having a more active and controlling spiritually intense rationale. To open a consideration of this construct, it is instructive to consider Eduard Spranger's work 'Types of Men' [*Lebensformen: geisteswissenschaftliche Psychologie und Ethik der Persönlichkeit*]. This text was part of Mies's library of the time but has seldom been seen as significant.<sup>49</sup> Whilst Neumeyer sees a further response to Dietrich Kerler's 1925, *Weltwille und Wertwille* ['World Will and Will to Value'],<sup>50</sup> in Mies's terminology, it is Spranger's theories that provide a way of understanding his response to Ebling and Riezler in terms of the 'spiritual and concrete interconnectedness' essential in architecture.

Spranger's text had been in development from 1914. This earlier version had been dedicated to Alois Riehl, who had commissioned Mies's first built house and is a connection that could have been the source of his interest in the text's final publication in 1922.<sup>51</sup> Spranger's thesis developed categorisations of types of individuals formulated by what he called spiritual collective totalities (*geistige Einheiten*) including: the theoretical, the economic, the aesthetic, the social, the power-loving and the religious type. This provides an understanding of the importance of the terms 'spiritual collectives'. Each individual would express these types differently but be defined primarily through the dominance of one, guided through the ethical moral norms that bind each society. Using this as a metaphor for architectural thinking that extends Mies's reliance on Ebling

and Francé begins to explain the unique characteristics of the Barcelona Pavilion, and the question of how architectural form could represent the 'authenticity' and 'intensity' of contemporary German culture.

In this metaphoric repurposing of Spranger's ideas each material could be considered as an expression of different combinations of attributes of natural type—each material's capacity to express the dominance/subjugation of distinctively natural characteristics. The collective totality of architecture, each programme for use being distinctive in combinations of materials and spaces, would appropriately bring together these differing qualities of materials to form a rigorously intense spatial representation of, in this case, the German spiritual ideal in architectural terms. An understanding of this general attitude to type within a totalising system that brings together considerations of materials with understandings of spatiality opens the interpretation of specific attributes of the representation of the architecture in the perspective drawing of the pavilion.

The hierarchy and logic of this more complex understanding of type is made more specific in the light of a critique by Theo Van Doesburg of Mies's and Lilly Reich's 1927 exhibit at the *Gewerbehalle*. Van Doesburg describes his impressions of the exhibition hall and in doing so highlights the power of bringing together the natural expressive quality of materials within an abstract construct that references its appropriate application to represent the spiritual collective of the German peoples. Without necessarily aiming to refer to Spranger, Van Doesburg related material use to an ideal collective type and the hierarchy of purpose that consequently

referenced that type's moral authenticity. Recognition of this relationality in architecture would result in its resonant formation bringing together the objective state of the sensible world (real materials) and a viewer's visual understanding of that world contextualised by the 'moral' norms of an ideal social mentality (materials located within an overarching order, directionality and atmospheric modification of that hierarchy of thinking). Van Doesburg wrote:

This glass hall, also executed after a design of Mies van der Rohe, owes its creation to the unequivocal task of displaying fragile material (semi-transparent and opaque glass of different colours) in such a way that it would be shown to full advantage. This was realised best by raising glass plates of enormous dimensions straight in the free space as walls, unprotected from top to bottom, without base board, profile or ornament. These glass plates are mounted in narrow, flat frames of nickel-coated steel. The problem was a sober one, but the solution reached the highest point that blessed, inspired visual artists can attain, and that only in very special moments: conquering the material with all of its faults, such as weightiness, resistance, and transience, with the maximum of the energy force of the material itself.

Every material has its own energy force, and the challenge is to enhance this energy force to its maximum by proper application. The opposite is: violation of the material by wrong application, whereby a relatively large percentage of the energy force is lost. Weighing one material against another in respect to their energy and

character, and proportioning them well, most certainly belongs to the essence of the new architecture. Only in this way can modern architecture bring to realisation what it has to offer in involuntary beauty.<sup>52</sup>

Here, Van Doesburg recognises in Mies's work the notion that each material used in architecture has an 'energy force' that, returning to terms expressed in Mies's letter to Walter Riezler, would substantiate its natural 'form', or in Spranger's terms, its economy of representation that would conform to its typology and potential for use as expression in architectural terms. This 'energy force' made each material recognisably appropriate for its purpose holding within its use those attributes of type that recognise the 'moral norms' that enable the making of architecture to conform with the 'making of man' as bound within specific social and moral norms. Rather than architecture reacting to a *gestalt* this modifies its creation to directing specific cultural expressions and ideals. What it suggested by Van Doesburg is the importance given to material affect in the formation of architecture, its spatiality and the atmospheres that could be harnessed and controlled within its rationalising systems. This totality would become expressive of an ideal and spiritual collective.

Important in Van Doesburg's critique was recognition in Mies's work of the 'energy force' of glass. Rather than leading to a sentimentalising of the architectural object through a response to beauty, Mies's use of glass provided architecture with a specific sense of the intensity of the German collective ideal through its spatiality, transparency, refraction of light and reflection responding to its relationality with other materials. The materiality of

glass worked to animate the overarching understanding of the space's unity of representation and precise idealism.

This co-dependency of material with light can be further explained by Hans Richter's writing on the importance of light in film. In the 1926 issue of *G* Richter had made the claim for light's animating purpose,

The true sphere of film is that of the moving space, the moving plane, the moving line. This space is not essentially architectonic or essentially plastic but rather temporal—that is, light creates light-spaces that are not voluminous, but whose sequence creates space out of what would be—if the temporal sequence were interrupted—merely plane, line, or point.<sup>53</sup>

In conclusion, what Van Doesburg recognised was that for Mies, the material 'glass' could take the role of architecture's animating force because of its material quality and its interaction with natural and changing light. Providing understanding of the importance of glass's transparency, semi-transparency or reflectivity recognised the typological importance of glass to the Barcelona Pavilion's capacity to express *Darstellungsraum*. It is this overarching concern that subjugated the effects of glass within the hierarchical representation in architecture of a society's construction of an ideal, moral self.

In the drawing of the Barcelona Pavilion the complexity of this material quality in the representation brought the notion of architecture's hierarchies and material relationalities into focus within the type *Darstellungsraum*. Architecture could uniquely embody recognition of the transformation of the natural world into a spatial order

that was cultural at its core. It would stimulate the viewer therefore to see the role of pure and structured abstraction in the environments of their experience as an ideal of spiritual collectivity not just as an artefact appealing only to universal principles, but also as embodying cultural iconography and meaning. For a considered understanding of a viewer's spatial environment this structured representation could not ignore that quality in the materials from which architecture was constructed. The subjugation of given individual material types instead was represented within a totalising structure and abstract system that as a whole conformed to broader cultural ideals.

Van Doesburg's responses to Mies's interiors, and the added understanding of this effect provided through Richter's comments, are consistent with Mies's contemporaneous use of other materials in the block of flats of the Weissenhof-Siedlung Estate completed in 1927. An example can be seen in Mies's incorporation of plywood panels in flat interiors. These can be seen as conceptually the opposite of glass, but also distinct from other building materials in their requirement for helping to define a distinctive social attribute of German social ideals. As documented in a review by Sigfried Giedion, the use of plywood panels recognised their material's energy force and its humanism in the capacity for walls to be easily moved by inhabitants, demanding physical and cognitive response in the making of new spaces as needs changed.<sup>54</sup> This simple example reinforces the understanding of materials as expressive type constrained by a totalising system that is applied through recognition of architecture as being capable of 'intensifying life'.

These ideas begin to explain the manner of rendering used for the material surfaces of the drawing of the Barcelona Pavilion. Whether glass, onyx or travertine, each material was recognised as having an inherent, natural and pre-existing 'energy force', one that, if appropriately considered within a 'spiritual collective totality' that defined unique architectural settings, would transform viewer response, interpretation and action to one of empathy with German culture and its collective ideality. Architecture's expression of society's moral ideals would reinforce its implicitly rational and spatial order in the same way members of society were understood to conform to norms within that society.

For this idea to be comprehensible it was important that architectural representation through drawing remained naturalistic, optical and perspectival. Using perspective for the drawing of the Barcelona Pavilion was important to the logic of Mies's concept of *Darstellungsraum* and its embedded and recognisable spatial order guaranteed through relationality of materials to the whole. Perspective enabled architecture's implicit spatiality to register as signifiers of higher meaning the significance given to each individual material and its atmospheric and spatial importance. Recognised in the drawing's fine edges, grid lines and the frames that define edge conditions, the hierarchies distinguishing each material are in support of architecture's unique understanding of a spatial order that referred as much to an ideal social typology as it did to programme, signifying within this order the subjugation required for architecture's embodiment of moral norms. This structuring of the image also provided the context for spatial registers that prompted

viewer responses as seen, for example, in the orientation of the sculptured figure and its implicit directionality.

Turning now to the framing of the composition with its fractured sequence of views, this creative repurposing of perspectival techniques would have to be in response to more than a simple pictorial effect if it was to explain the importance of a moving viewer and the consequent montaging of its elements. During the years prior to this drawing, the dominating emphasis of perspective in representation was a hotly debated issue. Three examples summarise the range of ideas that were highlighted amongst *avant-garde* artists. The first comes from comments made in 1926 by Kasimir Malevich in support of Viking Eggeling's film 'Orchestration of the Line'.<sup>55</sup> These comments afford an understanding of the debates at the time that focussed on the limits of the perspective technique for any art-form or potentially for the ordering of architectural space. Malevich claimed:

When the laws of perspective were established, a tightrope was created for the visual arts. There was no exit to be found from the academic offices in which old classical bookkeepers fabricated various 'intelligible' duplicates. But when it became necessary for art to make room for the growth of its body, it had to explode wedge-shaped perspective. One had begun to see the world in a different manner; we brought the variety of its movements to light and set ourselves the task of expressing all this. Thus are the systems and laws of our present knowledge.<sup>56</sup>

In this statement, Malevich reiterates the necessary tightrope that perspective demanded through its

tie to optics. The question in the new art forms of this time, specifically film and photography, was one focussed on how to deal with painterly traditions and with the affect of the camera, without repeating the failings of 'old classical bookkeepers' in their attempt to fabricate duplicates of reality.

A second example of the questioning of the perspectival apparatus in exhibition design, one that more closely aligned with Mies's drawing, can be seen in Herbert Bayer's drawings, 'Diagram of Field of Vision' and 'Diagram of 360 Degrees Field of Vision', published during the 1930s.<sup>57</sup> These drawings, that were immediately relevant to architecture, suggest a level of interest applied to the critique of traditional perspective geometries and the positioning of the viewing subject internal to those geometries. Unlike Malevich, Bayer exploited the implied optics of a moving eye within his perspectival construct. In Bayer's images, the body of a man is given a single eye from which he is shown to observe multiple directions in a spatial field. Installations at the *Deutscher Werkbund* Exhibition of 1930 can be seen to respond to these multiple observations by tilting exhibits at differing angles and heights from the prescribed viewing subject. This reconsideration of the viewer liberated the design of architectural spaces from their previous reliance on fixed single perspectival rationality. New possibilities were explored in viewer movement that reinforced the spatial flow of the exhibits themselves.

A third example can be seen in the experimentation of Hans Richter, who during these years collaborated with Werner Gräff to develop a new

understanding of spatiality in film and photography. This was a further development from Richter's early experimental films. Richter's and Graff's affiliation with Mies during this period, especially 1927–28, importantly situates an understanding of Mies's structuring of the drawing of the Barcelona Pavilion.<sup>58</sup> To summarise their association, during 1927 Richter filmed elements of the Weissenhof-Siedlung Estate in Stuttgart and the *Gewerbhalle* ['Trade Hall'], incorporating these shots in his 1929 film *Die neue Wohnung* commissioned by the Swiss *Werkbund* (SWB).<sup>59</sup> In contrast to this film, and also produced during 1927–28, was his *Vormittags-spuk* ['Ghosts Before Breakfast'], a Surreal film portraying usual objects in ironic ways.<sup>60</sup> Werner Gräff had in this period worked closely with Mies on the Weissenhof-Siedlung exhibitions, producing the two publications *Innenräume* and *Bau und Wohnung* to which Mies wrote an introduction.<sup>61</sup>

In 1928–29 both Gräff and Richter worked together to direct an important *Werkbund* Exhibition *Film und Foto* that was indebted to a new vision [*Neues Sehen*]. This Exhibition presented new approaches to visualisation delivered from Dadaist, Constructivist and Abstract sources to open to question the possible irregularity of the everyday and consequently to question the dominance of singular understandings of perspective.<sup>62</sup> The aim in both photographer and film creator, Gräff and Richter, was to produce unconventional images that would stimulate the viewer to reconsider what could be understood through new approaches to visual reception of the world. In 1929, in a catalogue essay associated with the exhibition, Gräff produced a photographic primer that

John Willett subsequently claimed was 'to demolish every recognisable rule of photography and prove that there is no reason on earth for the camera to obey the same laws of perspective and balance as the human eye'.<sup>63</sup>

These three examples brought together artists who worked with Mies during the period just prior to the design and drawing of the Barcelona Pavilion. Isolating them in the context of his reconsideration of the role of perspective in architectural representation and its implied viewing subject is not to suggest their singular or direct influence but to show the prevalence of the ideas raised in artistic practices.<sup>64</sup>

However, in opening interpretation of the drawing's framing and composition within a fractured sequence of views, further investigation is required to move understanding beyond the possibility of a simple artistic response by Mies to criticism of perspectival techniques. To enable this investigation it is useful again to return to a second text by Eduard Spranger, *Psychologie des Jugendalters* ['Psychology of Adolescence'] published in 1924. This was a very popular text from its inception. Spranger's proposition saw the individual soul of the adolescent as being whole but relying on the amalgamation of many specific intellectual and physical functions. He believed that inadequacies in the adolescent could be eliminated through a retraining of the mind, to remove undesirable or confusing characteristics. This was carried out through the unification of bodily with cognitive training. As a set of ideas these propositions had significant impact on the way *avant-garde* artists developed a new pseudo-scientific role for their artistic production.<sup>65</sup>

It is the contextualisation of Spranger's ideas into art practices that can be seen as important in understanding the visual structure of Mies's drawing.

In 1924, also the year when Spranger's book was published, Hans Richter hypothesised the consequence of Spranger's ideas in relation to abstract film. Richter associated the idea of re-training the individual's 'spiritual will' by introducing a conception of life that required rehabilitation of the processes of an individual's mental cognition.<sup>66</sup> For Richter, this was to produce a new purpose for artistic practice. Extending Spranger's ideas for his own purposes, Richter's *Die schlecht trainierte Seele* ['The Badly Trained Soul'] suggested the retraining of the soul required individuals to respond to more primordial or functional understandings of the exterior world in order to develop their spirit's 'authenticity' and 'intensity'.<sup>67</sup> He proposed that emotional responses to the world, the individual's sentimental feelings, were to be eliminated with the aim of intensifying life's meaning. Richter explained that, in viewer reception of his earlier experimental films *Rhythmus 21* and *23*, the re-training of the soul could occur, immersing the viewer in purposeful response demanded by simultaneous sensory (perceptual) as well as cognitive movements.<sup>68</sup>

Richter claimed that the abstraction of forms in his *Rhythmus* films was aimed at reducing viewer reception to simple and unified sensory-cognitive responses as prescribed by the continuous movement and the new spatial relationships made available by the time-based projection of film. His suggestion was that, in entering filmic space, a viewer's spiritual or creative capacities would

emerge purified by the 'elemental and regular aspects of . . . sensory functions', as viewers responded to the abstract clarity of what he/she saw.<sup>69</sup> Cognitive responses would be controlled by the film's abstraction and metered sequencing rather than any sentimentality of emotion or compassion for the content generally exploited in feature films of the time. Film's functional regularity would bring about a controlled intensification of sensory responses and 'feeling' regulated by time and the rhythm of projection rather than the passive and uncontrollable responses of what he called 'ready to wear feelings from past or non-existent centuries'.<sup>70</sup> The re-trained soul would emerge synchronised with and attuned to the context of a modern sensibility: its authentic and intensified life force.

It is the combined use of technology and filmic materials to heighten the sensory intensity of the viewer, disorienting their understanding of the ordinary, that is a concept recently evaluated in Richter's films by Gabriel Tropic. For an explanation, Tropic returns discussion to Richter's *Die schlecht trainierte Seele*, for his understanding of the 'spiritual' in society and art's necessity in the process of re-training the soul.<sup>71</sup> Tropic describes this understanding of the 'spiritual' in society as a move between 'the sensuous-perceptual practices of cognition and the sensuous-productive practices of art'.<sup>72</sup> For Tropic, this fusion of practices did not present the idea of man's capacity to feel but instead it 'refer[ed] simply to the movements made by consciousness in the act of perception'.<sup>73</sup> By submitting to this practice, the dormant capacities of the mind would be exercised.<sup>74</sup> Extending Tropic's analysis, the conse-

quences of what Richter visualised in his films showed that cognitive movement (the sequencing of thought) was subjugated to the order of the mechanised visual field of film, to the point where identification of spatial mechanics became didactic.

To explore further the implications of Richter's model, Jacques Aumont has, for example, argued that the reception of film relies on two overarching attributes.<sup>75</sup> For its effect film relies on the temporality of the image as well as the 'spectator's pragmatic situation'. The viewer located in the cinema accepts the camera's view recognising that it 'is directing our attention to this and that by showing it to us as it appears from that point of view'.<sup>76</sup> Aumont highlights the possibility for the collective engagement of audience reception and the possibility of a collective sensory/cognitive experience. In recognising this effect in cinema Bernard Williams further clarifies the difference that lies between a personally imagined or visualised reality and the cinematic apprehension of a space, character or object.<sup>77</sup> For the film to be believed, Williams engenders the concept of 'Cartesian consciousness: an "I" without a body, past, or character'.<sup>78</sup> This understanding accepts the role of the viewing subject as engaged within the mechanism of film's cinematic projection. It is the effect that this engagement has on the viewer that Richter claimed provided the attribute able to be used in re-training the spiritual will of man and it is this effect that is brought into play in Mies's drawing of the Barcelona Pavilion, with its representation of the fractured and somatic recall necessary for an understanding of architecture's autonomy and its new modernity with regard to the nineteenth-century city.

By 1928, introducing a review of the Weissenhof-Siedlung Estate by Wilhelm Lotz, Mies wrote that architecture's new requirement was to transform society through its support for an 'intensification of life'.<sup>79</sup> This notion had empathy for Richter's reading of Spranger, and the role he proposed for the cinematic apprehension of space in the context of retraining of the soul. Rather than taking on the abstraction of film, what was unique for architecture in this new conceptualisation was the necessary relationality between material effect, abstraction and a viewer's understanding of implied hierarchies of ideas through the everyday nature of experience. What is implied through Mies's writing is that only with a resolution of this full understanding of viewer response to architecture could modern cognitive reconditioning take effect and life become 'intensified'. For this to occur, viewer perception of the world, and the things/objects that make up that world, would be required to be re-presented within a new perceptual construct. The drawing of the Barcelona Pavilion with its montaged fragments reflects this idea. This re-presentation of the scene of architecture through a fracturing and reconstruction as montage would enhance the recognition of architecture's fundamental attributes and transform the viewer in this recognition.

In the drawing of the Barcelona Pavilion there is recognition of viewer experience both internal and external to the image, experience that avoids the inertia of perspective's historical geometric structure. The drawing's deconstruction of perspectival conventions demands viewer movements that parallel an active sensory and cognitive engagement with space, one that is directed to the intensification of

its spatial reception. This newly montaged notion of perspectival space could be recognised for its play with opposites, combined within a regulated setting that suggested the body's physical and sensory response that could in turn be regulated by a cognitive identification of what was seen. In this manner, the drawing takes control of a new architectonic spatiality and a new understanding of the individual as transformed from reliance on the sentimental to one intensified through the modern. This effect subtly introduces a didactic role for architectural drawing.

This double logic, introduced in the understanding of viewers internal and external to the image, heightens recognition of an architectural spatiality that had moved beyond the sentimentalising perfection of past scene-making to respond now to a unification of natural form within an abstract hierarchy of meaning. In a response suited to the discipline of architecture, Mies's drawing presents the external viewer with a series of visual phenomena that demand cognitive resolution: reversals of figure/ground, materiality/abstraction, and spatial regression/advance in its elements. Furthermore, the drawing presents an internal viewer that brought to the attention of those viewing the image a response to architecture that reflected the fundamental aspects of this *Darstellungsraum*.

Mies's approach to drawing demanded that perspective was liberated from its classical confines in order to embed within its representational construct a register of the individual's necessary cognitive and sensory inquiry, thereby to influence centrally an 'intensification' of life required for the viewer to take part in the modern. The drawing of the interior

of the Barcelona Pavilion can be seen therefore as a didactic experiment aimed at presenting a visual and architectural response to the 'intensification of life' necessary for moderating the social conditions of modernity.

### Conclusion

What has been revealed in Mies's drawing is a visual exploration of the implications of ocular 'flow', and the spatial response of an animated or moving body for the traditions of perspectival depictions of architecture. From contemporary understandings, Mies's drawing prefigures the changing state of architectural representation from drawing to digital screen. It does this by incorporating the understanding of the temporally defined body—its movement and capacity for continuous reflective recall. But rather than resolve this in a type of precursor to the digital fly-through, Mies's drawing emphasises the psycho-physical distinctiveness of architecture's reception and the requirement for the architect to work didactically to re-train this reception through implied sensory as well as cognitive movement. In this way the drawing achieves spatial multiplicity. Avoiding the sentimentality of perspective's scenography, the drawing situates an experience of architecture as psycho-physical and directed, rather than phenomenological.

It is through a broader understanding of the diagram in this drawing that the idea of representation in architecture has been repositioned. By bringing together the diagram with the perspective—architecture's most representational technique—Mies's drawing locates an experimental practice. Even though, as conventions, the 'view' and the

'diagram' both emerge from two-dimensional structures of representation, the diagram can now be considered as part of the multi-layered, multi-nodal and multi-temporal architectural spatiality implicitly embedded within drawings. In the drawing of the Barcelona Pavilion this recognition of uniqueness is extended to an apprehension of architecture's implicit order and relationality, of its abstraction layered within a complex set of material and tectonic values. It is a type of drawing that was to continue in Mies's practice, repeated in the collages of the Resor House and other projects into the 1940s. The complexity in Mies's drawings was not accidental. The collaging and montaging of elements that forced specific fissures in the logic of the perspectival geometries were carried out to great purpose. Rather than optical in intent as claimed by Evans, instead the perspective of the Barcelona Pavilion responds to distinctive attitudes relevant to Mies's architectural experimentation of the late 1920s.

### Notes and references

1. Attributed to the hand of Mies van der Rohe, this drawing is held in the archive of his works at the Museum of Modern Art, New York (MOMA, Ludwig Mies van der Rohe Collection, Cat. No., MR14.1). When Ludwig Glaeser produced the first collection of Mies's drawings *Ludwig Mies van der Rohe: Drawings in the Collection of The Museum of Modern Art* (New York, Museum of Modern Art, 1969) noting Mies's death that year, it is interesting that this drawing was not valued enough to include.
2. Evans on Mies in, R. Evans, *The Projective Cast, Architecture and its Three Geometries* (Cambridge, Mass., The MIT Press, 1995), p. 360 and, R. Evans, 'Mies van der Rohe's Paradoxical Symmetries', *Translations from Drawing to Building and Other Essays* (London, Architectural Association, 1997), p. 242.
3. R. Evans, 'Mies van der Rohe's Paradoxical Symmetries', *op. cit.*, p. 242.
4. B. Reichlin, 'Spiegelungen Wechselbeziehungen zwischen Konzept, Darstellung und gebauter Architektur' ['Reflections Interrelations between Concept, Representation and Built Architecture'], *Daidalos*, 1, 1 (September, 1981), p. 70.
5. *Ibid.* Whilst the scheme is discussed further in P-V. Aureli, *The Possibility of Absolute Architecture* (Cambridge, Mass., The MIT Press, 2011), pp. 13 *ff.*, the comment by Reichlin remains unresolved. See also, K. M. Hayes, *Modernism and the Posthumanist Subject: The Architecture of Hannes Meyer and Ludwig Hilberseimer* (Cambridge, Mass., The MIT Press, 1992).
6. P-V. Aureli, *The Possibility of Absolute Architecture, op. cit.*, quoting Hilberseimer's comments from, S. Hilberseimer, *Entfaltung einer Planungsidee, Series: Bauwelt Fundamente*, 6 (Stuttgart, 1927), Chapter V, 'Vertikale Lösung: die Hochhausstadt', p. 22.
7. B. Reichlin, *Daidalos, op. cit.*
8. G. Deleuze, *Francis Bacon: The Logic of Sensation c.* 1981; (Minneapolis, University of Minnesota Press, 2002). See specifically Chapter 12 'The Diagram' for discussion of the importance of the diagram for apprehending meaning in paintings.
9. A. Benjamin, 'Lines of Work: On Diagrams and Drawings', *Architectural Philosophy* (London, Athlone Press, 2000), pp. 143–155: he argues the different basis for diagrams in architecture being the site of experimentation for architectural innovation.
10. Attributed to Mies in, M. McQuaid, T. Riley, eds, *Envisioning Architecture: Drawings from the Museum of Modern Art* (New York, MOMA, 2002), p. 70. Phyllis Lambert reiterated that Mies 'recognised the power

- of large drawings to state an idea', in her 'Notes on Mies and his Drawings', in the Catalogue essay associated with the Exhibition, *Mies van der Rohe: Drawings, From the Collection of A. James Speyer*, Max Protetch Gallery, New York (New York, Max Protetch Inc., 1986), 'Introduction'.
11. R. Evans, 'Mies van der Rohe's Paradoxical Symmetries', *op. cit.*, p. 241.
  12. L. B. Alberti, 'Book One', *On Painting*, J. Spencer, trsl. (New Haven, Yale University Press, 1966), p. 43 (see also footnote 8, p. 100 for interpretation of the Latin).
  13. As discussed in J. Cray, 'Modernising Vision' and 'Discussion', in H. Foster, *Vision and Visuality: Discussions in Contemporary Culture* (Seattle, Bay Press, 1988), esp. p. 47 discussion.
  14. This proposition showed similarities with Walter Benjamin's understanding of the uniqueness of architectural drawing. Benjamin calls attention to the architectural drawing's affinity with non-representational artwork, emphasising its capacity to support the apprehension of built space without the 'distancing effect of the edge of image space'. See, W. Benjamin, 'The Rigorous Study of Art' (published in the early 1930s), in *Walter Benjamin Selected Writings*, R. Livingstone, trsl., M. Jennings *et al.*, eds (1927–1934), Vol. 2 (Cambridge, Mass., Belknap Press Harvard University, 1999), p. 670.
  15. Ludwig Mies van der Rohe Collection, Museum of Modern Art, New York (Catalogue no. MR14.3).
  16. Ludwig Mies van der Rohe Collection, Museum of Modern Art, New York (Catalogue no. MR14.2).
  17. Such techniques can be found in various books: for example, F. Reekie, *Draughtmanship: Architectural and Building Graphics* (London, Edward Arnold, 1976).
  18. L. Glaeser, *Mies van Der Rohe, The Barcelona Pavilion, 50<sup>th</sup> Anniversary* (New York, Museum of Modern Art, 1979), unnumbered. See also discussion of the dimensions in, I. Sola-Morales, C. Cirici, F. Ramos, 'Materials and Construction', in *Mies Van Der Rohe Barcelona Pavilion* (Barcelona, Gustavo Gili, 1996), pp.13–14. See also W. Tegethoff, 'The Legend of the Onyx Block', *Mies van der Rohe: The Villas and Country Houses* (New York, MOMA and The MIT Press, 1985), pp. 76–78.
  19. See explorations of this structuring in M. Kemp, *The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat* (New Haven, Yale University Press, 1990).
  20. This is an attribute recognised by Robin Evans in an examination of photographs. Recognising this same attribute in the drawing opens this theme to its relation to classical architecture. R. Evans, 'Mies van der Rohe's Paradoxical Symmetries', *op. cit.*, pp. 258ff.
  21. As remarked on by T. Riley in, M. McQuaid, T. Riley, eds, *Envisioning Architecture*, *op. cit.*, p. 70.
  22. In their consideration of the building Manfredo Tafuri and Francesco Dal Co see this use of materials as a montage of parts, each speaking a different language. Whilst they suggest the enigmatic quality the materials bring they stop short of calling attention to the relationship between a performative response and the abstract structure that informs this response. M. Tafuri, F. Dal Co, *Modern Architecture* (New York, H. Abrams, 1976), p. 155.
  23. Terence Riley has commented on this in, M. McQuaid, T. Riley, eds, *Envisioning Architecture*, *op. cit.*
  24. There is some dispute as to the sculptor of this early visualisation. A summation of views can be found in C. Beckmann, 'The Statue *Morgen* in the Barcelona Pavilion', in, U. Berger, T. Pavel, eds, *Barcelona Pavilion: Architecture and Sculpture* (Berlin, Jovis Verlag, 2006), p. 45. In the same volume, p. 24, Thomas Pavel suggests that the image represented in the drawing 'does not appear as a representation of a concrete figure, but rather as the "big sister" of earlier drawings'.

25. This analysis is cognisant of explanations on the role of the viewer in interpretations of minimalism made by Rosalind Krauss, 'The Grid, The /Cloud/, and the Detail', in, D. Mertins, ed., *The Presence of Mies* (Princeton, Princeton University Press, 1994), pp. 133–147.
26. M. Jay, 'Scopic Regimes of Modernity', in, H. Foster, ed., *Vision and Visuality* (Seattle, Bay Press, 1988), p.20. See also J. Crary, 'Modernising Vision', in the same volume.
27. H. Damisch, *The Origin of Perspective*, J. Goodman, trsl. (Cambridge, Mass., The MIT Press, 1994).
28. *Ibid.*, p. 395.
29. *Ibid.*, p. 379.
30. *Ibid.*, p. 425.
31. This ambiguity is reinforced by the vanishing point's lack of coincidence with the geometric axis of the external urban setting of the pavilion, the Plaça de Josep Puig i Cadafalch. Thus the image's visual axis does not reinforce this Classical axis of its urban setting.
32. See H. Damisch, *The Origin of Perspective*, *op. cit.*, Chapter 12, 'Distancing Maneuvers', pp. 199–235. See original discussion and Sebastiano Serlio's drawings in his 'Il secondo libro di prospettiva', in *L'Architettura, I libri I–VII e Extraordinario nelle prime edizioni*, A cura di F. Fiore (Milan, Edizioni il Polifilo, 2001), II, ff. 64r–67v. This treatise can be found translated in *Sebastiano Serlio on Architecture*, Vol. I, V. Hart, P. Hicks, trs (New Haven, Yale University Press, 1996), pp. 82–85.
33. H. Damisch, *The Origin of Perspective*, *op. cit.*, p. 399.
34. For further discussion on the issue of figure/ground in Mies's drawings, see, P. Eisenman, 'Mies and the Figuring of Absence', in, J. Zikowsky, ed., *Mies Reconsidered: His Career, Legacy, and Disciples* (Chicago, The Art Institute of Chicago and Rizzoli, 1986), p. 707.
35. This is a device continuously used in Mies's designs. See, P. Curtis, *Figuring Space: Sculpture/Furniture from Mies to Moore*, Catalogue (Leeds, Henry Moore Institute, 2007), esp. pp. 6–8. See also, T. Pavel, 'Result: Best Completion', in, U. Berger, T. Pavel, eds, *Barcelona Pavilion: Architecture and Sculpture* (Berlin, Jovis Verlag, 2006), p. 26.
36. R. Evans, *Translations from Drawing to Building*, *op. cit.*, p. 241.
37. For further discussion on the issue of figure/ground in Mies's drawings, see, P. Eisenman, 'Mies and the Figuring of Absence', *op. cit.*, p. 707.
38. See Mertins' exploration of the colours of the Weissenhof-Siedlung Estate in D. Mertins, *Mies* (London, Phaidon Press, 2014), pp. 125 and 130.
39. F. Neumeyer, *The Artless Word: Mies van der Rohe on the Building Art*, M. Jarzombek, trsl. (Cambridge, Mass., The MIT Press, 1991), p. 23.
40. This list can be found at the University of Illinois, Chicago, Library: <http://library.uic.edu/home/collections/manuscripts-and-rare-books/rare-books>
41. K. M. Hays, 'Critical Architecture: Between Culture and Form', *Perspecta*, 21(1984), p. 20. Hays goes on to summarise responses to the Barcelona Pavilion as including reactions to the materials used by Adolf Loos. It is interesting that the most pertinent example would be the Muller House in Prague, which was completed in 1930 (p. 22). See also, L. Robbers, 'Modern Architecture in the Age of Cinema: Mies Van Der Rohe And The Moving Image' (PhD dissertation, Princeton University, 2012) and S. Papapetros, *On the Animation of the Inorganic: Art, Architecture and the Extension of Life* (Chicago, University of Chicago Press, 2012), especially Chapter 5: 'Malicious Houses: Animism and Animosity in German Architecture and Film from Mies to Murnau'.
42. This understanding of autonomy is distinct from that described by K. M. Hays as 'autonomous form': see K. M. Hays, *Perspecta* (1984), *op. cit.*
43. F. Neumeyer, *The Artless Word*, *op. cit.*, p. 158.

44. See the prior issue of *Die Form* and Riezler's response to Mies: W. Riezler, 'Haus Sonja Knips in Wien', *Die Form*, 2, 1(1927), pp. 17ff; <http://digi.ub.uni-heidelberg.de/diglit/form1927/0023/scroll?sid=700e268e55c26f53122c1c2bfdaa7110>.
45. L. Mies van der Rohe, 'On Form in Architecture', published in *Die Form*, 2, 2(1927), p. 59: seen in F. Neumeyer, *The Artless Word*, *op. cit.*, p. 257; in original form at <http://digi.ub.uni-heidelberg.de/diglit/form1927/0023/scroll?sid=700e268e55c26f53122c1c2bfdaa7110>.
46. F. Neumeyer, *The Artless Word*, *op. cit.*, pp. 171 ff.
47. L. Mies van der Rohe, manuscript of a letter to Walter Riezler (Museum of Modern Art, Manuscripts Folder 6): seen in F. Neumeyer, *The Artless Word*, *op. cit.*, p. 178.
48. F. Neumeyer, *The Artless Word*, *op. cit.*, p. 178.
49. E. Spranger, *Types of Men [Lebensformen : geisteswissenschaftliche Psychologie und Ethik der Persönlichkeit]*, (Halle (Saale), Niemeyer, 1922); Neumeyer comments that Mies's copy is underlined: *The Artless Word*, *op. cit.*, p. 139.
50. *Ibid.*, p. 159.
51. Elov Åkesson, 'Eduard Spranger, 1882–1963', *Paedagogica Historica*, 4:2(1964), pp. 279–288. See discussion of their relationship to Mies in Fritz Neumeyer, 'Mies's First Project: Revisiting the Atmosphere at Klösterli', *Mies in Berlin*, Barry Bergdoll, Terence Riley, eds (New York, Museum of Modern Art, 2001), pp. 301–317.
52. T. Van Doesburg, 'Stuttgart Weißenhof 1927, Die Wohnung: 'The Dwelling', the Famous Werkbund Exhibition', *Het Bouwbedrijf*, Vol. 4, 24 (November, 1927), pp. 556–559; reprinted in Charlotte I. Loeb, Arthur L. Loeb, *Theo van Doesburg On European Architecture: Complete essays from Het Bouwbedrijf 1924–1931* (Basel, Birkhäuser Verlag, 1989), pp. 165–7.
53. H. Richter, 'The True Sphere of Film', *G*, *op. cit.*, p. 223.
54. S. Giedion, 'Die Wohnung ein Rückblick auf Stuttgart', *Der Cicerone*, 19, 24, 2(1927), pp. 760–70: seen in D. Spaeth, *Ludwig Mies van der Rohe: An Annotated Bibliography and Chronology* (New York, Garland, 1979), p. 16.
55. K. Malevich, 'Viking Eggeling "Orchestration of the Line"', *G*, IV (March, 1926): see D. Mertins, M. Jennings, *G*, *op. cit.*, pp. 185–186.
56. *Ibid.*
57. Herbert Bayer, 'Diagram of Field of Vision' and 'Diagram of 360 Degrees Field of Vision', seen in M. Staniszewski, *The Power of Display: A History of Exhibition Installations at the Museum of Modern Art* (Cambridge, Mass., The MIT Press, 1998), pp. 28, 33.
58. See discussions in *G* by Richter and Mies on the issue of form. Formalism had been criticised generally as frivolous. *G: Material for Elemental Form-Creation* (July and September, 1923). See also D. Mertins, M. Jennings, *op. cit.*, *G*, pp. 100–109. This type of comment could be in direct reaction to writers such as Paul Frankl, who by 1914 had seen architecture as formal and stylistic: see P. Frankl, *Principles of Architectural History: The Four Phases of Architectural Style, 1420–1900* [1914], J. O'Gorman, trsl. (Cambridge, Mass., The MIT Press, 1968).
59. A. Janser, A. Rüegg, *Hans Richter New Living: Architecture.Film.Space* (Baden, Lars Müller, 2001).
60. *Ibid.*
61. W. Gräff, *Innenräume: Räume und Inneneinrichtungsgegenstände aus der Werkbundaussstellung 'Die Wohnung', insbesondere aus den Bauten der städtischen Weissenhofsiedlung in Stuttgart and Bau und Wohnung: Die Bauten der Weissenhofsiedlung in Stuttgart errichtet 1927 nach Vorschlägen des Dietschen Werkdundes im Auftrag der Stadt Stuttgart und im Rahmen der Werkbundaussstellung 'Die Wohnung'* (Stuttgart, Dr. F Wedekind, 1927, 1928). These two publications were obviously to be con-

- sidered as a pair for the exhibitions because of their graphic style: they are a good photographic record of the displays.
62. See Catalogue, G. Stotz, *Film und Foto: Internationale Ausstellung Des Deutschen Werkbunds* (Stuttgart, 1929). The exhibitions were on display over two consecutive months, June and July, with Richter holding the position of Artistic Director of the film section. Many of his films were shown in short form and some stills were also part of the photographic exhibition.
  63. J. Willett, *The Weimar Years: A Culture Cut Short* (London, Thames and Hudson, 1984), p. 141. See also M. von Hofacker, 'Richter's Films and the Role of the Radical Artist, 1927–1941', in, S. Foster, *Hans Richter, Activism, Modernism, and the Avant-Garde* (Cambridge, Mass., The MIT Press, 1998), pp. 122–159.
  64. The Catalogue for the Exhibition *Film und Foto* included a vast array of photographic and film artists in Mies's direct milieu.
  65. Mertins suggests that Walter Benjamin was also to see this link, explaining that images could be capable of installing new knowledge, new behaviours and the solution to new problems of mass society. See D. Mertens, M. Jennings, Lindberg with M. Christian, trs, *G: An Avant-Garde Journal of Art, Architecture, Design, and Film, 1923–26* (Los Angeles, Getty Research Institute, 2010), p. 95, footnote 70.
  66. H. Richter, *Die schlecht trainierte Seele* ('The Badly Trained Soul'), *G*, III (June, 1924). Seen in, D. Mertens, M. Jennings, Lindberg with M. Christian, trs, *G: An Avant-Garde Journal of Art, Architecture, Design, and Film, 1923–26* (Los Angeles, Getty Research Institute, 2010), pp. 146–149.
  67. *Ibid.* See also Gabriel Trop's analysis of Richter's work: G. Trop, 'The Vitality of Form: Hans Richter and the Training of the Soul', in, K. Fest et al., *Mies van der Rohe, Richter, Gräff & Co.: Alltag und Design in der Avantgardezeitschrift G* (Vienna, Turia + Kant, 2013), pp. 34–42.
  68. Mies viewed a copy of Richter's experimental films in May, 1925, in Berlin at a viewing entitled *Der absolute Film* for the *Novembergruppe*. See L. Robbers, 'Modern Architecture in the Age of Cinema: Mies Van Der Rohe', *op. cit.*, p. 320. See also the Programme, Illustration No. 67, p. 463. He mentions reminiscences of Mies's attendance at films by Georgia van der Rohe, p. 3.
  69. H. Richter, 'The Badly Trained Soul', *op. cit.*, p. 148.
  70. *Ibid.*
  71. *Ibid.*, G. Trop: he refers to this idea also being developed in Christoph Bareither, 'Seelentraining: Rhythmus 21 und die Wirkungspotentiale des Films', in, C. Bareither et al., eds, *Hans Richter Rhythmus 21, Schlüsselfilm der Modern* (Würzburg 2012), pp. 137–146.
  72. H. Richter, 'Die schlecht trainierte Seele', *op. cit.*, p. 45: seen in F. Neumeyer, *op. cit.*, p. 37.
  73. *Ibid.*, p. 37.
  74. *Ibid.*, p. 38.
  75. J. Aumont, *The Image* (London, British Film Institute, 1994), p. 120.
  76. *Ibid.*
  77. B. Williams, 'Imagination and the Self', *Problems of the Self: Philosophical Papers 1956–1972* (Cambridge, Cambridge University Press, 1973), pp. 36, 37.
  78. *Ibid.*, p. 41.
  79. This is a term Mies was to use to explain the times: M. V. D. Rohe, 'On the Theme: Exhibitions', *Die Form*, 3, 4(1928), p. 121; see translation in F. Neumeyer, *The Artless World*, *op. cit.*, p. 304.