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Sight and Sensation: Observations on I.M. Pei's Approach to Composition

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Abstract

This paper examines I.M. Pei's approach to the problem of form and space generation. Although Pei has not set out a comprehensive statement on his process for conceiving architectural form, there are specific ambitions discussed throughout published interviews and evidence of definite circulatory, spatial, and volumetric devices in the built work. The paper reveals clues to Pei's sensibility in this work, a sensibility which, it is argued, privileges dynamic, nonperspectival relations accommodating multiple viewpoints as distinct from what the architect himself characterises as static conditions resulting from single vanishing point perspective. As an underlying proposition, and in order to provisionally place Pei's work within architecture's larger historical trajectory, the idea of a nonperspectival conception of space as formulated by Giulio Carlo Argan is used in an analysis of the composition techniques in Pei's thinking and practice. In order to test this proposition, the paper considers published interviews and undertakes an initial examination of the Everson Museum of Art (Syracuse, 1961-1968), the National Gallery of Art East Building (Washington D.C., 1968-1978), and the Morton H. Meyerson Symphony Center (Dallas, 1982-1989). The paper asks such questions as: Which concepts of space are at work in the projects? What differences in strategy and effect are revealed in the three projects and do they align with Pei's stated ambition to create an architecture of movement formed by multiple viewpoints? More pointed is the question: Do the projects realise different kinds of space and if so is one better aligned to theories of sight or sensation? In addressing an underlying SAHANZ 2018 conference theme concerning the relationship between conceiving and shaping architectural space, the paper reveals untheorised aspects of Pei's manner of composing built form, and makes a modest contribution to scholarship on post-1950s architectural theory.

Introduction

In 1960, after twelve years leading the in-house architecture office at Webb & Knapp, Inc., architect I.M. Pei (b. 1917) decides it is time to open his own office, albeit initially within Webb & Knapp. Operating as I.M. Pei & Partners, the firm grows from its privileged start, supported by the broad range of potential clients Pei encountered with William Zeckendorf while at Webb & Knapp, to one of the most respected and successful of New York practices over the subsequent twenty-nine years and up to Pei's withdrawal from the firm in 1989.

A few years earlier, historian-theorist Giulio Carlo Argan (1909-1992) publishes what might appear to be a curious essay to introduce in relation to Pei. It can be argued, however, that Argan was transmitting ideas 'in the air' and palpable at the time and now useful for a fuller understanding of the origin and significance of Pei's work. The title of Argan's essay, "The Importance of Sammicheli in the Formation of Palladio", doesn't hint at the theoretical leap Argan claims to discover via Palladio. The leap that is, following Argan, between perspective interpretations of architectural form and what Argan comes to call nonperspective (*aprospectico*) or elastic (*elastica*) conceptions of space.¹

In the "Formation of Palladio" paper, Argan provides a high level examination of spatial concepts and strategies of form disposition at work in Palladio. Argan argues that Palladio has a way of conceiving architectural form that is different from a classical point of view, the latter marked by what Argan calls "the traditional perspective concept" of space.² Palladio's nonperspectival or elastic concept of space has its origin, suggests Argan, in the military architecture of Sammicheli. Argan sets out to reveal features of that provenance and its consequences for the theorisation of architectural form and space, the main object of his essay. What is of interest today, and for readers of this paper, are the specific morphological effects and conceptual qualities contained in Argan's categorisation of the two ways of conceiving space and their potential for theorising, making, and interpreting works of architecture.

An indication of the relevance in Argan's categorisation of two manners for conceiving space can be found in a shift he locates in Palladio. Argan claims that Palladio's newness can be found in the latter's establishment of "a new viewpoint in architectural theory... [one in which a new] relationship is established between building and environment, new because it is ... completely non-perspective."³ The building for Palladio, continues Argan, "does not sum up or represent the space [as in classical theories], it exists within it, and

the space, which is no longer thought of as structure [...] counts as pure phenomenal reality, as a sensed and shifting assemblage of effects of light and atmosphere.”⁴

This idea of built form is one that is no longer always already within space and in an a priori relationship. Rather, architectural space and in turn form is now considered a product of a sensed and shifting assemblage of other phenomena. This is the important newness of Palladio and the feature Argan takes to apply to a building on its own as much as to a larger complex of open space and built form.

For Argan, classical architecture’s perspectival conception of space achieves unity through abstract proportional associations, assuming an a priori geometric structure as a precondition, one bounded and made tangible through the continuity of the wall plane. This is in contradistinction to a nonperspective or elastic conception of space understood as a physically discontinuous realm, whose unity is a posteriori and perceptual, relying on the body’s movement and the ground plane rather than the wall. The latter is thus capable of infinite extension in its swerve from the vertical surface to the ground plane.

One way of seeing architectural form leads most readily to an ensemble of homogeneous relationships; the other finds its manifestations in heterogeneous states. A perspective conception of space for Argan leads to a system of parts in favour of a larger whole, with spatial units such as rooms as well as linking elements attached one to the other via perspective connections in a striated plan. Palladio’s nonperspective idea of space propels spatial units to the surface - in plan though more powerfully in certain projects in section and elevation - with parts never coalescing into a whole. In this non-perspectival point of view, spatial units follow a logic of “unrelatedness or absoluteness among singular forms,”⁵ continues Argan, finding one manifestation in Palladio’s en suite plan disposition.

It is worth citing Argan at greater length to better understand the context and implications of this last statement.

Our contention is that Palladio not only is turning away consciously from the perspective interpretation of architectural form but is also deliberately disconnecting and disintegrating it, to produce, out of the destruction of all a priori relationships, the quality of unrelatedness or absoluteness in the individual forms.⁶

Here Argan further broadens, without development or further explanation, the formal-spatial reach of the Palladian leap. This characterisation of Palladio's potential impact as displaying a blurring and a posteriori resolution, though only a temporary one for Argan given that parts never coalesce, remains for him suspended in a state of disintegration. To push the latent implications in Argan's essay even further is to suggest that Palladio could actually motivate the disintegration of form as a consequence of the absolute independency of building parts.

CONCEPTUAL ASPECTS	Space is structured	Space sensed amid a shifting assemblage of light and atmosphere effects
	Space as geometric structure or grid	Space as datum or field
	Transitional conditions abound	Elements are confronted one to another with no transition
	Realised in the continuity of the wall plane at the horizon	Rendered as a ground of undulating levels
	Homogeneous configurations in a closed form	Heterogeneous dispositions in an open configuration
	Architectural form generated by a space concept	Singular spaces generated by architectural forms
	PERSPECTIVE CONCEPT OF SPACE (economy of sight)	ELASTIC CONCEPT OF SPACE (strategy of sensation)
FORMAL PARAMETERS AND DEVICES	A form generation process with a bias toward isolation and hierarchy	A strategy of assemblage with a preference for blurring and enfolding
	Rooms are distributed in a striated plan	Rooms are arranged in en suite patterns of interstitial space
	Spatial units are attached via perspective connections, generally plan based	Spatial units are propelled to the surface in plan and elevation
	A system of parts in favour of a larger whole	Parts never coalesce into a whole, retaining their independence
	Logical relationships established with exterior conditions	Significance is largely internal according to a logic of absoluteness
	Form relationships exist a priori	Relationships among forms are settled a posteriori

Table 1. Conceptual and formal aspects of a perspective concept of space versus an elastic conception of space

Table 1 attempts to summarise the distinguishing conceptual and formal properties contained in Argan's dense prose and set out aspects of the underlying sensibilities aligned with what he argues are two ways of conceiving architectural space. Acknowledging that such differences are never pure, and before turning to the work of Pei, Table 1 is intended to serve as a map of the key elements and themes evident in Argan's text further developed below.

Three Propositions

Three propositions underlay the larger research ambitions. To extend Argan's categories, and to introduce the first proposition, it can be claimed that an architectural temperament on the side of a perspectival conception of space is aligned with notions of the painterly plane and an economy of sight. Moreover, it is suggested, again following Argan, that a sensibility more attracted to the values and effects of an elastic conception of space, with its attendant conceptual and formal implications, is one bracketed by theories of assemblage understood as the rendering sensible of forces in a strategy of sensation. And it is acknowledged that, while Argan doesn't explicitly develop the sight versus sensation dialectic, it is nascent in his essay.

Secondly, it is postulated that each of these terms and their associated descriptors refers to a different architectural sensibility in twentieth century discourse. In other words, it is suggested that an analysis of projects according to this pair of terms and their concomitant traits may contribute to revealing aspects of mid and late twentieth century practice little considered or invisible to date.

Finding traces of each in the thinking and work of Pei, it is conjectured finally that these differences can contribute to understanding the formal and conceptual stakes in his work still awaiting analysis. Stated differently, if for the purpose of this paper we accept the interpretive lens of a perspectival concept of space versus an elastic conception of space, transcribed provisionally as a polarity of sight and sensation as described above, then there are heuristic and generative potentialities that may come out as a result of an examination of Pei's approach to composition.

In order to test these propositions, and recognising that the following will only begin to frame a larger study, three projects from different periods of Pei's career are briefly considered below. The projects selected for this paper, together and individually, mark central decades of Pei's professional life, the 1960's, '70's and 80's. Everson Museum of

Art, marking the 1960's, is frequently and not unreasonably claimed by commentators and also Pei himself as a breakthrough project. The National Gallery of Art East Building followed and explores, as indeed Pei argues, fundamentally different form concerns and makes manifest a different idea of space. The Meyerson Symphony Center again reveals different preoccupations and devices, emphatically introducing other spatial themes that Pei continued to explore in the late decades of his professional life.

In a paper of this length, much is abandoned for later consideration and much left out. It is thus perhaps useful, before moving to the case studies, to point out what is not being considered. This paper does not consider Pei's Mile High Center and the question of simultaneity it raises. The paper does not examine this early project as an illustration of what Colin Rowe describes as Pei's mannerist skills, accepting instead as reasonable Rowe's confrontation of Pei's Mile High Center and Giacomo da Vignola's Villa Farnese in Caprarola.⁷ Also, there is no investigation of a recurrent and important turn by Pei to structure as form generator. Evident in the Bank of China Tower (Hong Kong, 1982-1989), Jacob K. Javits Convention Center (New York, 1979-1986), and the Miho Museum (Shiga, Japan, 1991-1997), structural determinants would be another appropriate thematic when interrogating Pei's manner of seeing form and space.

To further clarify, in this paper no attempt is made to integrally articulate the range of potential relationships between Argan the taxonomer of concepts of space and Pei the practitioner. Rather the paper more narrowly isolates the idea of a nonperspectival (*aprospectico*) or elastic (*elastica*) conception of space, and starts to use that term to cast a light on one aspect of Pei's work as a way of extending the logic of Argan's claim to see if and how one might apply a nonperspectival interpretation of architectural form. In other words, here the much more modest and limited notion of Pei's approach to form-space generation is seen as revealing aspects of a specific architectural sensibility, one rendered in a narrow interpretation of the kind of visual and spatial values, stated or implicit, at work.

Pei provides an appropriate preliminary candidate for this study. Pei is relevant today in part because of the renewed professional and scholarly interest in his work that emerged during the 2017 centenary celebration of his birth. There is also some logic to the chronological overlap and thematic alignments with Argan as this paper hopes to suggest.

A brief note on source materials: this paper has relied selectively on over fifteen years of published interviews with Pei contained in the key monographic studies. The interviews, dating from the mid 1980s and over the 1990's, were with Carter Wiseman, Janet Adams Strong, and Gero von Boehm and published in 1990, 1998, and 2000 respectively.⁸ Project information is from these same publications supplemented with data and documents contained on the Pei Cobb Freed office website.⁹ The website contains a great deal of relevant information including summary project histories, photographs, and drawings for all key projects since the firm's founding.

As regards authorship, at its founding in 1960 I.M. Pei & Partners was a medium sized New York firm with seventy employees. The firm grew to some three hundred and fifty at the time of the Grand Louvre project in the 1980's. As is not uncommon in firms working on large scale, complex, architectural-urban projects, design principal and administration principal responsibilities were divided across different partners, with individual architects given responsibility for detailed investigations into key aspects. On the three projects discussed below, Pei is identified in office records and in the *Complete Works* as design principal.¹⁰

Analysis

In this section, preliminary observations are made around three projects in light of the framework set out above. Comments are limited to published statements and project documents as cursory evidence of the space aesthetic or sensibility on display and following the categorisation of ways of conceiving space opened by Argan.

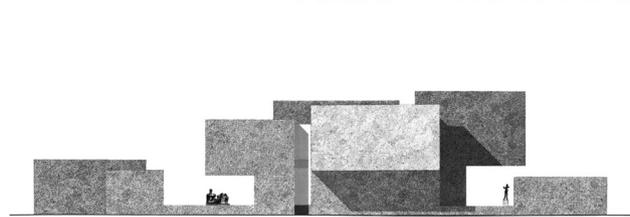
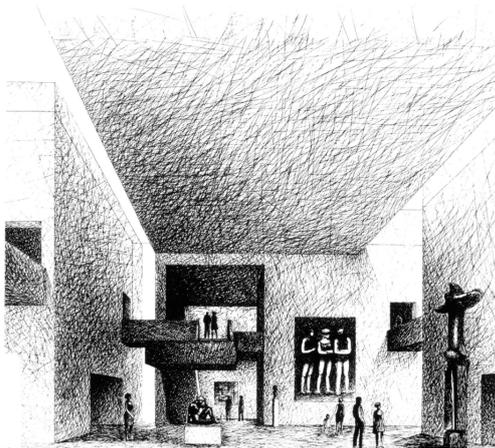
Everson Museum of Art

Figure 1. Presentation sketch of sculpture court, Everson Museum of Art, Syracuse, New York, 1961-1968 (<https://www.pcf-p.com/projects/everson-museum-of-art/>, accessed 25-02-2018 © Pei Cobb Freed & Partners Architects LLP). **Figure 2.** Rendered presentation elevation, Everson Museum of Art, Syracuse, New York, 1961-1968 (<https://www.pcf-p.com/projects/everson-museum-of-art/>, accessed 25-02-2018 © Pei Cobb Freed & Partners Architects LLP).

Historians, commentators, and Pei himself, often place the Everson Museum of Art as a breakthrough or beginning project. In terms of chronology and brief type it is a departure; it was the first of the cultural projects. Located on the edge of downtown Syracuse, and without a significant collection to house, the project was intended to launch the revitalisation of the area into a cultural precinct. The project had a slow gestation primarily for financial reasons according to project histories.¹¹

Two initial aspects can be identified: one, the detachment of the ceiling plane visible in the concept sketch, and a clear feature of the building as built; two, the pinwheel plan that extends centrifugally from the sculpture court into the large site via sunken courtyards, low terracing, and selective planting. This manipulation of the ground gives presence and extends, given the relatively modest footprint, the building's hold on the site.

For the purposes of this study, however, it is Pei's claim that the design was influenced by his interest in Cubism that draws first attention: "I admit that some of my work was influenced by Cubism, such as ... the Everson Museum..."¹² Beyond Pei's many references in interviews to Cubistic influences in his thinking, should we take Pei at his

word and if so, which are the distinguishing principles and devices evident in the project? On which side of the Arganian polarity, if either, does the project fall?

The rendering of the interior sculpture court provides a point of departure. (Fig. 1) The separation of volumes and the use of light sleeves or skylight bands in plan and section result in more than an apparent sliding of the building's interior, one move duplicating the centrifugal motions of the pinwheel plan. It perhaps shares aspects of that autonomy that Argan identified in his essay on Palladio. The project's specific state of "unrelatedness or absoluteness in the individual forms"¹³ is emphatically suggested in published renderings from the period and more so in elevation or section than in plan.¹⁴

When asked some thirty years after the fact, and in support of this reading, Pei sketches not the plan, as he so often does, but the elevation, highlighting the importance of the four gallery hoods and other museum elements extending out into the site. (Fig. 2) The four gallery hoods pin wheel out from the double height internal sculpture court, isolated and absolute in their material presence according to period photographs and as suggested in the presentation rendering. Too easily might one claim that they illustrate Argan's "mere manufacture"¹⁵, building form and its setting conceived as "completely nonperspective", with space conceived as "pure phenomenal reality, as [that is] a sensed and shifting assemblage of effects of light and atmosphere."¹⁶ Photographs of the just completed project on the office website suggest this condition.

This use of specific tower forms at Eversons is also aligned, according to Pei in conversation with Boehm, with the manner in which Cézanne builds up a painting, though this is harder to defend.¹⁷ Though perhaps, continuing this line of inquiry, the hooded towers separated and each different one from the other do establish a kind of shifting assemblage of absolute objects; although not flattened as in a Cézanne painting but one still given to similarly charging the air with effects of light and atmosphere.

The longer views afforded to it, and the more charged natural setting, may have provided the National Center for Atmospheric Research (Boulder, Colorado, 1961- 1967) that came immediately before the Everson Museum of Art, greater potential to achieve such ambitions. But the Everson Museum of Art, even with its modest setting, is equally telling of Pei's particular approach.

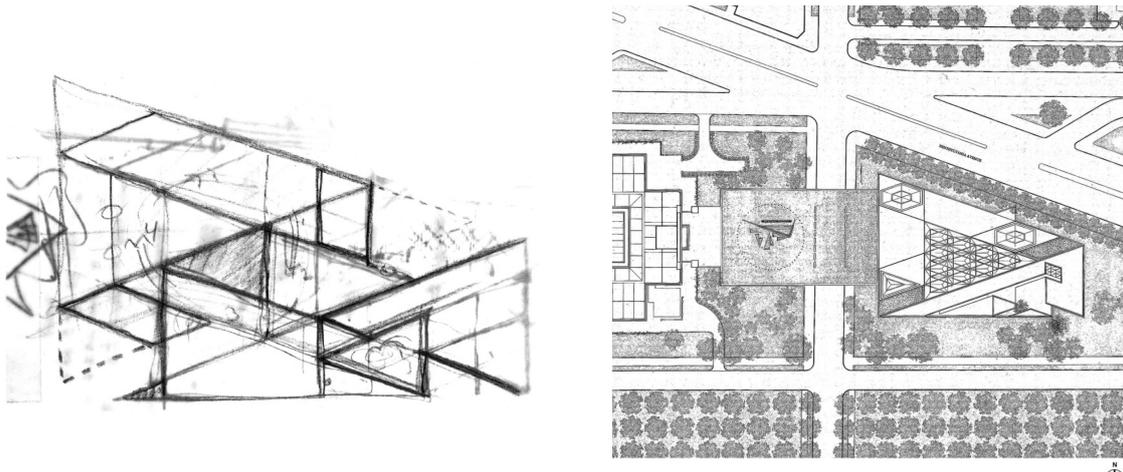
National Gallery of Art East Building

Figure 3. Concept sketch, National Gallery of Art, East Building, Washington D.C., 1968-1978 (<https://www.pcf-p.com/projects/national-gallery-of-art-east-building/>, accessed 25-02-2018 © Pei Cobb Freed & Partners Architects LLP). **Figure 4.** Site plan, National Gallery of Art, East Building, Washington D.C., 1968-1978 (<https://www.pcf-p.com/projects/national-gallery-of-art-east-building/>, accessed 25-02-2018 © Pei Cobb Freed & Partners Architects LLP).

The commission for the National Gallery of Art East Building came to Pei in 1968 and the decade-long project occupied the office for much of the 1970's. Occupying a rhomboid shaped site on the Mall in Washington D.C., the building is an extension to the National Gallery of Art, providing contemporary administration, conservation, museum storage facilities, public amenities, and a study centre. (Fig. 4) The extension more than doubled the available exhibition space, adding 56,000 m² (600,000 ft²) to the original 42,000 m² (450,000 ft²) building.

In an interview with Janet Adams Strong some twenty years after the project's completion, Pei emphasises the idea of space when talking about the East Building. "The introduction of an additional vanishing point... allowed me to move beyond Mies and [the] limited spatial possibilities of an orthogonal grid – which is not to say we were better architects but only that we were able to build upon what had gone before."¹⁸

The appearance of the diagonal in Pei's early sketch (Fig. 3) may seem an obligatory response to site conditions. According to historians, previous studies for this site over the decades had all assumed a small rectangular building as the

appropriate response to an addition to the original building.¹⁹ As he discusses in interviews with Boehm, however, Pei's initial response was to resist the triangle. As he describes it, Pei sought to "overcome" the triangle.²⁰ So there is, perhaps, a tale of overcoming, but rather than it being the triangle which is finally overcome, it is the limitations Pei came to feel in the orthogonal grid that perhaps most distinguishes the East Building in relation to Pei's shifting aesthetic temperament and in particular, the regular, orthogonal grid of Mies, so much studied by the younger Pei.

Evidence of overcoming an obligation to Mies, and the liberation Pei found through the triangular grid in the third vanishing point, can be seen at various stages of the East Building project and in turn suggest that an elastic conception of space is at work.

There are many formal aspects one could focus on when examining the East Building: the development and character of the flexible museum pod-towers, diamond shaped and modelled into elongated hexagons; the internal void around which the study centre was formed; the ambitions to manipulate light while avoiding shadows when developing detailed designs for the atrium skylight. For the purposes of this paper, however, it is the implied multi-point perspective in Oles' 1969 view from the entry that is most telling. And Pei reinforces this aspect: "I knew that if I could only bring the extra vanishing point into play I could create more exciting spaces."²¹

A sequence of three renderings over the development phase dated 1969, 1970, 1971 contribute to telling the story of this space. The dynamic swirl of space pulling up from the main entry and the lower level connector into the atrium garden is clearly felt in Oles' renderings. Reproduced in the *Complete Works*, one can imagine that the perspectivist was pushed by Pei to visualise the resultant space as dynamic. This ambition was more fully crystallised when the architect made the decision to open up the ceiling via skylights, departing fully from the Everson Museum of Art and a perhaps Cubist aesthetic.²² This decision to change the ceiling from coffered concrete to triangulated glass fundamentally changed the project and pushed the character of the space in a different direction from the Everson Museum of Art. The shift can be attributed in part to the triangular grid and three vanishing points which, as Pei had noted in an earlier interview: it marks an approach different from the orthogonal grid organising the early museum.²³

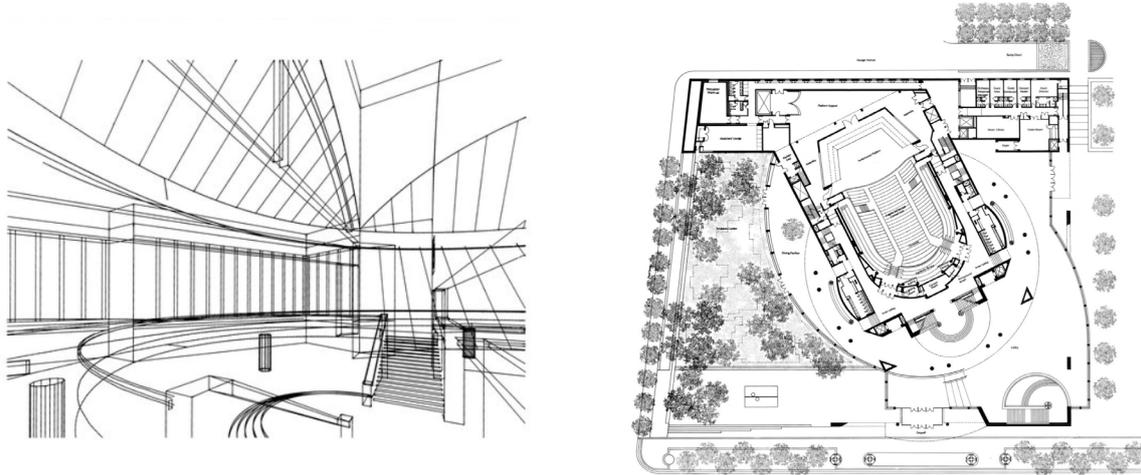
Meyerson Symphony Center

Figure 5. Concept sketch with an early use of computer aided drawing, Morton H. Meyerson Symphony Center, Dallas, Texas, 1981-1989 (<https://www.pcf-p.com/projects/the-morton-h-meyerson-symphony-center/>, accessed 25-02-2018 © Pei Cobb Freed & Partners Architects LLP). **Figure 6.** Ground floor plan, Morton H. Meyerson Symphony Center, Dallas, Texas, 1981-1989 (<https://www.pcf-p.com/projects/the-morton-h-meyerson-symphony-center/>, accessed 25-02-2018 © Pei Cobb Freed & Partners Architects LLP).

You cannot look and understand it [the lobby of the Meyerson Symphony Center]. You have to walk and, as the space unfolds, you're drawn.²⁴

The search for an architect for the Meyerson Sympony Centre was started as early as 1980, shortly after the National Gallery of Art East Building's completion. According to office records, Pei was awarded the commission in 1981. As in the Everson Museum of Art, it was intended to revitalise an emerging arts district, in this case on the edge of Dallas' downtown. The project opened in 1989, coinciding with Pei's withdrawal from the practice he founded to focus on smaller scale projects without the pressures of the large office. Different from almost every other project attributed to Pei as lead designer, the Meyerson Symphony Center had a second architect – Russell Johnson of Artec – independently responsible for the design of the symphony hall and in fact engaged prior to Pei's being on board. Others have written at length on the disquiet and somewhat compromised relations between the acoustic ambitions of Johnson and the visual and spatial ones of Pei.²⁵

For the purposes of this paper, it is Pei's conception of space in the project's development that is of interest. "I knew that if ... I could explore curved surfaces with their infinite number of vanishing points, I could create even more exciting spaces..."²⁶ This statement by Pei, published a little over a decade after the Meyerson Symphony Center's completion, neatly encapsulates the ambition, at least retrospectively, for the architect. It is made with defensible context if one reflects on the architect's experience in a series of projects that experiment with curved surfaces including the Choate Rosemary Hall Science Center (Wallingford, Connecticut, 1985-1989), the Creative Artists Agency (Los Angeles, 1986-1989), and the German History Museum (Berlin, 1996-2003).

Whatever the sequence or influence, the Meyerson Symphony Center signals a different conception of space at play, one that departs even further from the static, one-point perspective Pei so often dismissed in interviews. The multipoint perspective put into motion - thanks in part to the triangulations and resulting triangular grid of the East Building - are clearly not enough for this project. Pei's way of thinking about space led to a further differentiation in comparison to early projects, and in consequence, a revised architectural sensibility can be claimed to be at stake.

For the purposes of this paper, and returning to Pei's comments that opened this section, observations are limited to the major entry lobby for which Pei had most control. A cursory review reveals a number of key features. A preoccupation with curving surfaces and their infinite vanishing points may be the purest realisation of Argan's elastic space conception. Oles' published study drawings evidence the trajectory of ideas and support this reading, now transitioned from the East Building's hand-drafted views to Pei's first use of computer aided drawings.²⁷ (Fig. 5) A more emphatic concern with creating a shifting assemblage of effects of light and atmosphere also pulls Argan back into play. And in pulling Argan back in, the Meyerson Symphony Center does share some of his elastic space qualities and values (see Table 1): space is a shifting assemblage of light effects, dispersed in a heterogeneous disposition, the result of a strategy of assemblage with a bias to blur edges over a process favouring isolation and hierarchy.

Perhaps most provocatively, and as Pei himself suggests, the Meyerson Symphony Center operates according to another idea of space, one facilitated by computer aided drawing. It is neither Cubist nor Neo-Plasticist; it is neither perspectival nor elastic. It is, to go quickly and recognising the need for further elaborations, both beyond sight and exceeding sensation. Perhaps in its exploitation of infinite viewpoints it is a variation on an idea of space still to be examined.

Concluding Observations

Out of this cursory consideration, and having framed the elements of the study, it is possible to return to the previously stated propositions. It is evident that no single concept of space is present in the three projects considered. There is however evidence, depending on the element considered, of a bias toward one or another sensibility. The shorthand translation of perspectival and elastic conceptions of space into tendencies toward sight and sensation was only alluded to in a general way and requires further development. Whether these categories have specific value in relation to mid twentieth century practice and discourse is also still to be properly tested. There does seem to be resonance with Pei's work, especially in the case of the National Gallery of Art East Building. And there appears to be merit in further interrogation of Pei's embrace of the dynamic richness in multipoint perspective generally and the triangular grid in particular.

Meyerson Symphony Center's exploration of curved surfaces and infinite vanishing points escapes Argan: this seems clear. If not an evolution – Pei himself positions its provenance squarely with the German baroque - then it does require a third concept of space that can be provisionally called scenographic. This is in response to Pei's own characterisation of it as depending on the need for one to walk to unfold, or draw in, the building space.²⁸ It is also consistent with Argan's description of an aspect of Palladio's way of seeing architectural form on the one hand and manner of conceiving the problem of space on the other. Space is no longer conceived as existing a priori but comes into being as a "product"²⁹ of relationships that require movement or time to set up. Further elaboration will need to await subsequent study, one worth pursuing especially in light of the other projects that Pei realised in his late phase of activity.

There is therefore, and as a form of provisional conclusion, a heuristic and generative utility realised in extending forward Argan's categorisations of a perspective concept of space and an elastic conception of space as an interpretive lens in relation to the projects considered. It is also a contribution to the study of architecture's recent past and its contemporary expression. More broadly, and to return to opening conference themes, it is a contribution to the examination of relationships between conceiving and making architectural space, one deserving further elaboration

Image credits

Figures 1-6 © Pei Cobb Freed & Partners Architects LLP.

Table 1 © the Author.

Endnotes

¹ Argan, Giulio Carlo. 1955. "L'importanza del Sammicheli nella formazione del Palladio," in *Venezia e l'Europa. Atti del XVIII Congresso Internazionale di storia dell'arte, Venezia 12-18 settembre 1955*. (Venezia: Casa editrice arte Veneta, 1955), 387-389. An English translation is published in 1970 as: "The Importance of Sammicheli in the Formation of Palladio" in Creighton Gilbert (ed.), *Renaissance Art* (New York: Harper & Row Publishers, 1970), 172-179. In notes that follow, page references are given firstly to the English translation followed by the Italian in italics.

² Argan, "Formation of Palladio," 175/388.

³ Argan, "Formation of Palladio," 173-4/387.

⁴ Argan, "Formation of Palladio," 174/387.

⁵ Argan, "Formation of Palladio," 175/388 translation modified.

⁶ Argan, "Formation of Palladio," 175/388.

⁷ Colin Rowe and Robert Slutzky, "Transparency: Literal and Phenomenal, Part II," first published in *Perspecta* 13-14 (1971), 287-301, reprinted with introductory comments in Colin Rowe, *As I Was Saying: Recollections and Miscellaneous Essays, Volume One, Texas, Pre-Texas*, Cambridge (Cambridge, Mass., London: The MIT Press, 1996), 77-83.

⁸ Carter Wiseman, *I.M. Pei: A Profile in American Architecture* (New York: Harry N. Abrams, Inc., 1990). Gero von Boehm, *Conversations with I.M. Pei: Light is the Key* (Munich, London, New York: Prestel Verlag, 2000). Philip Jodidio and Janet Adams Strong, *I.M. Pei Complete Works* (New York: Rizzoli International Publications, Inc., 2008).

⁹ Pei Cobb Freed & Partners Architects LLP office website: <https://www.pcf-p.com/>.

¹⁰ Jodidio and Strong, *Complete Works*, 354.

¹¹ Bruno Zevi, *leoh Ming Pei* (Paris: Fernand Hazan, 1988), 58.

¹² Pei cited in Boehm, *Conversations*, 45.

¹³ Argan, "Formation of Palladio," 175/388.

¹⁴ See the pencil rendering of the elevation reproduced in Boehm, *Conversations*, 46.

¹⁵ Argan, "Formation of Palladio," 174/387.

¹⁶ Argan, "Formation of Palladio," 174/387.

¹⁷ Pei cited in Boehm, *Conversations*, 61.

¹⁸ Pei interview with Strong, 26-09-1996, in Jodidio and Strong, *Complete Works*, 146.

¹⁹ Jodidio and Strong, *Complete Works*, 134.

²⁰ Pei cited in Boehm, *Conversations*, 67.

²¹ Pei in discussion with Strong, 26-09-1996, cited in Jodidio and Strong, *Complete Works*, 136.

²² Jodidio and Strong, *Complete Works*, 138, second rendering.

²³ Pei cited in Boehm, *Conversations*, 68.

²⁴ Pei cited in Jodidio and Strong, *Complete Works*, 191.

²⁵ Wiseman, *I.M. Pei*, 270. See also Pei's comments about the use of curved shapes: "The curvature in Dallas makes the space more fluid and sensuous." Pei in an interview with Strong of 26-09-1996, cited in Jodidio and Strong, *Complete Works*, 191.

²⁶ Pei discussing the East Building, interview with Strong, 26-09-1996, cited in Jodidio and Strong, *Complete Works*, 146.

²⁷ Jodidio and Strong discuss this in *Complete Works*, 191.

²⁸ Pei interview with Strong, 26-09-1996, in Jodidio and Strong, *Complete Works*, 191.

²⁹ Argan, "Formation of Palladio," 175/388.