

## Biographical Sketch



The Aydelott Travel Award helped Sarah see light transform four pioneering reinterpretations of public space into affective, uniting, informative, and alluring masterworks that teach us that light is consubstantial with life.

A farmer's daughter, she's always intuited the primacy of the sun in our lives. Through her travels, she witnessed the ineffable properties light could impart to spaces cultivated by architects mindful of its many abilities. She hopes to learn from their work how to thoughtfully admit light into the spaces she creates and become better equipped to foster wholesome spaces responsive to the needs and aspirations of those she serves.

Sarah Hoing

**Mentors:**

Daniel Hoing, Hans Herrmann

**Case Studies:**

The Parish of God the Merciful Father

Richard Meier

Rome, Italy

Louvre Abu Dhabi

Jean Nouvel

Abu Dhabi, United Arab Emirates

City Hall

Foster + Partners

London, England

City of Arts and Sciences

Santiago Calatrava

Valencia, Spain

**Institution:**

Mississippi State University

College of Architecture, Art, and Design

School of Architecture

### **Light is consubstantial with life.**

For many people the purpose of architecture is to judiciously partition space into functional units. Juhani Pallasmaa acknowledges and extends this social obligation: "We have a mental need to grasp that we are rooted in the continuity of time, and in the man-made world it is the task of architecture to facilitate this experience."<sup>1</sup> I contend that this is to be performed with and by light, in measure and as measure; for, as Henry Plummer writes in *The Architecture of Natural Light*,

"For those architects now leading the way towards a phenomenal architecture, daylight is understood as something more than a commodity, whether for illumination or sustainability, dogma or propaganda, and material form has become a tool to shape something more important than itself."<sup>2</sup>

I am therefore concerned that materiality should be secondary to the immateriality of a form. I here contend that the masses created are just place holders, mediums through which the transient light can be captured, manipulated and thus experienced by the onlooker. Space, atmosphere and mood are the meat, the substance, while the form serves as the skeleton to which clings the prime mover, erects the meat for performance. Light falls on a barren field all the same as it falls on the works of man, but withholds much of its bounty until it is brought to bear upon a form endowed with intent and purpose. It awaits to be assessed by the whole of a man in the uniqueness of that space and time. Structure should exclaim that it understands its duty, that it serves that duty, and that it stands incomplete without the interaction of light.

That interaction can curate the program of a space and help the newcomer to understand the ways and ideals of those that inhabit the

space. This is why my four studies are buildings dedicated to four distinct human endeavors. At this point in my studies, I am not equipped for discourse drawn from whole cloth on all the greatness there is to cultivate with light. Indeed, I depend upon Plummer and others as cartographers of this greatness. It is therefore the differentiation of these spaces that permits my line of inquiry and I, in turn, produce a visitor's guide to four attractions rather than a new atlas.

## **Notes**

- 1 Juhani Pallasmaa, *The Eyes of the Skin*, 32.
- 2 Henry Plummer, *The Architecture of Natural Light*, 15.

**The Parish of God the Merciful Father**

**Meier's Approach:**

On the outskirts of Rome afloat upon a pool of travertine, Richard Meier's Jubilee Church stands poised like a sailboat cast in the wind. Originating from an international design competition, the concept of the Parish of God the Merciful Father was chosen by Pope John Paul II as that found precious stone which would become the "crowning jewel" of the jubilee. It would celebrate the turn of the millennia, and it was found fitting that the fiftieth church inaugurated in this sequence would lay in the rolling foothills of Rome in the direct jurisdiction of the Holy See.<sup>1</sup> One of industry might be tempted to characterize this surge in church construction as the expansion of the capital base required to maintain the faithful or to spread the faith, but it is more informative to highlight that these structures are especially intended to curate community. To meet this aim of the jubilee, each was required to serve as a worship space and also include a gathering center for the public. The competition's shortlist included names such as Tadao Ando, Frank Gehry, Santiago Calatrava and others, exemplifying the desire to bring the avant-garde to bear upon the traditional design vocabulary available to the Catholic church. Through the selection of Meier's design, he was commissioned his first ecclesiastical edifice and named the first Jewish architect known to record to build for the Catholic church.<sup>2</sup>

Three large, arching concrete shells constitute Meier's grand gesture to beckon worshipers toward the structure. Though Meier reports it was not his specific intention, the repetition of the three sails are

symbolic of the Trinity, the core dogma of the Catholic faith. Their forms are derived from segments of symmetrical circles. Meier's rationale is to create a juxtaposition in form in order to distinguish holy space from secular space. Where the nave is constructed from the spherical partial domes, the community center is rigid and rectilinear. Meier describes this divergence saying, "The circle is used to represent perfection, the dome of the heavens. The square represents the earth, the four elements and the rational intellect." By this, the worshipers are to find themselves at "the core of geometric impossibility" as they experience the collaboration of sphere and cube.<sup>3</sup>

Meier, conscious of the church's context, carefully considered the extents of the set of looming shells. In the simplest sense, he needed to find a respectful balance between fettering the community with too small of an outermost envelope and any extreme height that might be considered ostentatious for the community. Ultimately, this parameter was not determined in isolation. The sun drove the natural approach that lead to many of the choices of scale throughout the structure. This approach proxies projected elevation for height and projected azimuth for length.

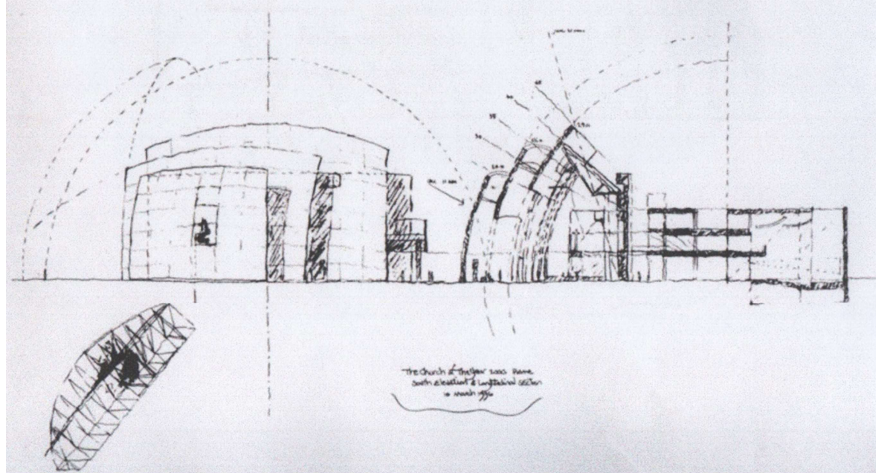


Fig. 1, Richard Meier, Sketch of Elevation and Section, Jubilee Church, Rome, 1996

Placed on the southern facade, the sails provide fortification from the harsh sun, while the glazed skylights separating the masses allow light to diffuse through its interior. Through the doors, the interior perspective of the shells size are again justifiable; their presence is a fearsome "Herculean" feat, yet concurrently they promise sanctuary as if one is "under the protection, under the great wings, of a very mighty force."<sup>4</sup>

Though the design vocabulary of this structure is not found in the lexicon of form administered by the churches of any prior era, I do find similar direct effects of these forms. The rectangular prism subtracted from the innermost sail is sufficiently short to establish the identity of the daychapel and preserve the hierarchy among the inferior spaces familiar to the user of those that may adjoin the nave in the traditional cruciform plan appropriate to a community of this size. From some perspectives, the sails elicit that essential fearsome awareness of height wielded by Gothic churches. The airy forms that separate the

shells are as impressive to the layman as flying buttresses. The apse, the curviest space in most traditional churches and here dedicated to the commissioning pope, is surprisingly, in this, the curviest of churches, surprisingly rectilinear; its existence, wholly concerned with no less than three nested boxes, form an understated reliquary within a glass case within the apse proper.

Despite the strength of these direct effects, these sails would not be near the feat that they are if not for the ineffable light qualities that enliven them. Through his use of the transparent separation of each shell, Meier creates "a luminous spatial experience" so that the rays of sunlight that penetrate the space immaterialize the church's form and "serve as a mystic metaphor of the presence of God."<sup>5</sup>

**Experiential Narrative:**

The bus winds through the rural countryside as I sit, mouth agape, staring at the passing fields littered with the ancient bones of the long-ago city. The scene, which should be so familiar for someone of my own agrarian background, instead mystifies me by its synthesis of the 'archivably' ancient with the workaday present. The rural rolling pastures remind me of my own bucolic upbringing, but the paradigm is shattered by a ruinous column or upon a perpetually stately section of Roman fortification. That such intriguing remnants are guarded by a perpetually disinterested herd of cattle bowls over my inner child.

As the bus screeches to a halt, I exit onto a piazza gleaming with the morning sun. An axial row of travertine benches leads me toward a

quaint entrance into the walled courtyard encompassing the church. As I draw near, I am greeted by far fewer symbols drawn from the rich traditions of this faith than typical of a church. Wholly absent are the throngs of Saints clinging to the form, lending their credibility to the structure. This church will have to testify to its merits without these spokesmen. Its three shells precariously arch into the sky, each holding their stance, it seems, only by the grace of the delicate mullions of the interstitial skylights. An oversized door propped ajar beckons me to enter as the Gloria warbles forth. The interior of the form is constituted of the same stark white materials as outside, but here it readily accepts when wooden pews and screen lend their warmth. The louvered northern wall of the sanctuary is struck by the sun at shallow angle, enhancing the natural variation of the wood. As I sit in the rearmost pew, the Italian readings wash through the space in lullabyic rhythms. I find myself staring up through the glass separation at the moving clouds above; as the striped variations of light streaking the wooden wall wax and wane with their passing, a moire effect occurs in my right peripheral vision.



Fig. 2. Dynamic Light, Jubilee Church, Rome,  
June 24 2019

After the congregation disperses, I venture outdoors to walk in every possible way throughout the walled courtyard. I simply must experience this form in every potential natural orientation. Sharp winds whisk around the convex shape of the sails, best felt by the rapid change in sheer when walking perpendicular to the building's periphery. The change in the air is a pleasant relief to the stagnant, hot air inside. The transitional experience as I move around the form is drastic; the openness and delicacy of the structure completely disintegrates the further I move south. The shells compile into an unannounced, seemingly unitary form and readily create a solid fortification from the sun above

and the street beside. The white aesthetic here is subdued; the white concrete, purportedly insusceptible to discoloration, is disappointingly dappled by deposit and decay. On the other hand, this patina reinforces the notion that these arcs are imbued with lasting strength by appearing older than they are; it becomes all the more shocking that the space within these forms not only survives, but thrives. Other than the church's burly mass, the plaza sits vacant and detached from the rest of its surroundings. The separation causes the area to feel disused and forgotten. This represents a disconnection from its surrounding community, not a reservation of space for the contemplation of the sacred external to the form. Perhaps this is nothing but the regrettable consequence of practical considerations.

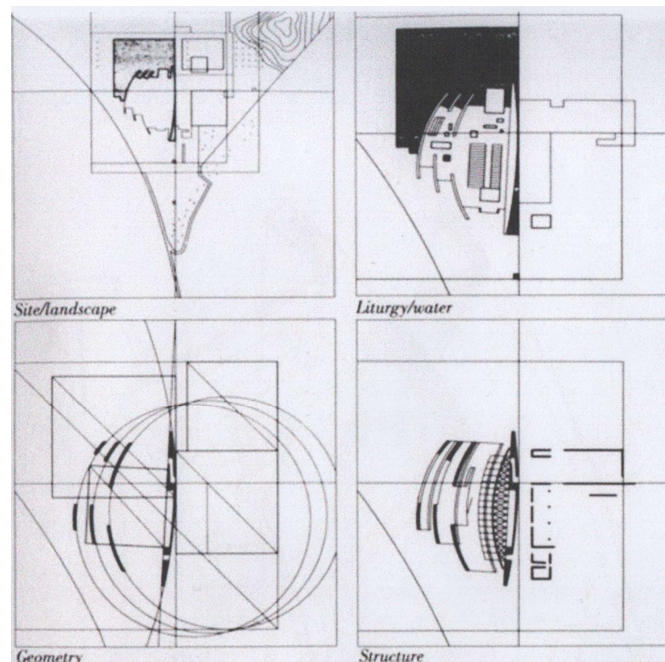


Fig. 3. Richard Meier, Various Plan Sketches, Jubilee Church, Rome, 1996



Fig. 4. Light Analysis: Segmentation of Sun Movement, 10AM-8PM,  
Jubilee Church, Rome, June 24 2019

Throughout the day, I flit about, within and without, eager to catch any secrets the structure may reveal as it performs its workday pastoral function. There is newfound clarity within the space, a product of cooler light from above. The sails protect the space almost entirely from direct southern sun, but the sun's high elevation due to the proximity of the summer solstice admits rays to bathe the top third of the north wall by way of the zenithal skylight. Either side of midday is busier; the work of the sun upon the space matches the pace of the coming and going penitent. The mullions now create reflections that

mirror the shadows projected into that largest space making the cool, busy north wall a visual reward following reconciliation for the parishioner departing the southern daychapel by way of the nave.

On one of many passes before the lectern, I abruptly halt, suddenly taken in by the volume subtracted behind the crucifix. I knew I was onto something, for, without solicitation, the priest offered "You've come at the right time of year, something special happens to the light here." and raised his palms, as he did to conclude most thoughts, but perhaps in this instance, he was bracketing the crucifix with his deferential gesture.

As the workday draws to a close, I spend a greater portion of my time in stillness within the space, sitting and examining the sun creep through sky. The movements of light displayed throughout the nave move at such a leisure pace that their deviations seem infinitesimal. Time seems to stand as still as the air around me. With the parishioners long gone, my ears ring with silence. The penetrating rays of sunlight elongate the shadows of mullions cast on the wall to their greatest extent. Around five in the afternoon, the sun sinks low enough behind the western most tip of the largest sail, causing the direct rays to disappear. Now that there is no harsh contrast in luminosity of the space, the diffused light seems to be created from the materials of the building; the white concrete, the stone floors, and the warm wood each activate their internal luminaire, emitting an ethereal glow. As the sun sinks further in the sky, the magic I experienced upon my arrival returns. Low rays entering from the western façade awaken the particles

floating about the space and half-past five the Pascal candle suddenly appears to be lit, though the lay ministers are yet to prepare the space. The white interior transforms from a cool, sterile, and functional fluorescence to a warm, comforting, and inviting radiance. The whole space is awakened with an ineffable force whose presence is seemingly palpable. Parishioners begin appearing once again in perfect timing, as if the sun summoned the crowd to witness its performance. Mass begins as the rays sink behind the altar's backdrop. As the Liturgy of the Eucharist approaches the words of consecration, the subtracted eastern volume I pondered hours ago in the presence of the priest becomes a pyramidal horn of Holy light. The somber crucifix takes on a halo, as the southeastern region of the innermost sail shares its secret with those who dare look its way during this moment of concerted reverence: the silhouette of the crucifix projects upon the cruciform juncture of wall in perfect alignment. As the Mass concludes and the faithful depart to the housing complexes to the east, the church itself takes on a halo for those that look toward their returning neighbors.



Fig. 5. Prior Illumination of the Crucifix, Jubilee Church, Rome, June 24 2019

**Interpretation:**

The experiential narrative testifies to the transformative power of light in this space. This space is receptive to transformation on two timescales: diurnally, as the sun progresses across the building and through the space in daily repetition, and seasonally, as the whole of that path bows to the summer solstice.

The diurnal flux throughout the day is one that perpetually changes, like that which was experienced in the Louvre Abu Dhabi, but in a delicate homogeneity that alters on a much slower pace than the dynamic scintillation of the Louvre. Through the careful coupling of orientation and extent of the sails, the building impedes the infiltration of direct sunlight into the gathering space, only permitting the most intense rays to be cast on the northern, wood clad wall. The entirety of the hollow form is illuminated from the diffusion of light captured and reflected by the sails and the inherent whiteness of their materiality. As described through the experiential narrative, each hour brings a unique qualitative experience to the space. This is metaphoric to the activity level within and about the church, and this changing light is conducive to each activity in sequence. The rising of the sun slowly brings the first bit of omnipresent, diffused light into the space. In my experience, the approximate arrival time of parishioners to the first Mass of the day is marked by the first streaking of daylight across the tops of the sails. As the day progresses, the working pious that require pastoral care are tended at the pace of their life within a place appropriately illuminated for the provision of a human service.

At last, the end of the day is marked by the disintegration of the incessant passing of time, and replaced by a homogeneous, eternal warmth. Through this lens, the Jubilee Church courts our perception of time, and the sun's workflow for this space parallels that of its inhabitants. This conjures its most spectacular displays of ephemeral resonance during those processes most essential to the liturgical and sacramental needs of the congregation. Capabilities such as these of a space are what, according to Henry Plummer,

"redefine the relationships of people with the environment and within themselves, [for] a world of phenomena is being created which shares an emphasis on *being* rather than *seeing*, and upon which every percipient is invited to inscribe his or her own experience- a world that is intensely human precisely because it only takes shape through a person's creative imagination."<sup>6</sup>

Throughout the year, the set of cultivatable ambiances within the church grows and shrinks with the length of the sun's path. This highly alters all previously discussed accounts of each hour's relative atmosphere based on the time of year of the observer's experience. This is appropriate for and reflective of a Faith so concerned with season that it removes and inserts segments of its daily Liturgy with the guidance of a Liturgical calendar. My research was conducted merely three days after the summer solstice. No other day of the year would produce precisely the same lighting effects as experienced at any given time and some features would be wholly absent for much of the year.

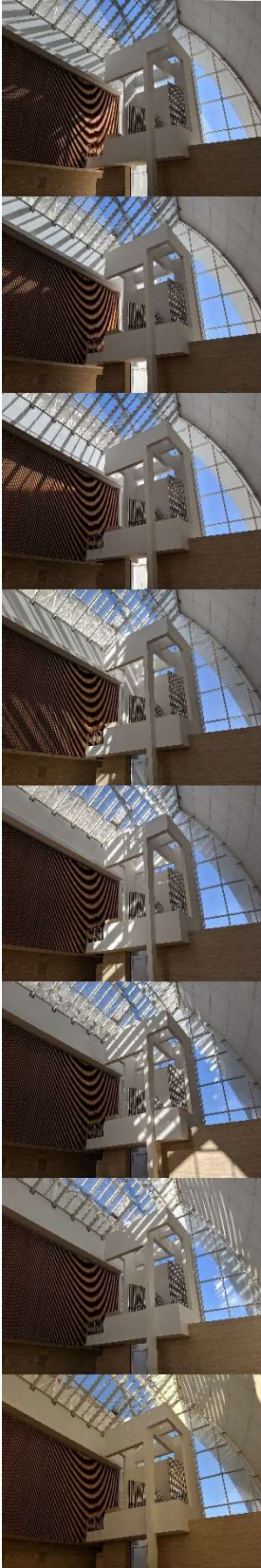


Fig. 6. Light Analysis: Overlay of Sun Movement, 10AM-8PM,  
Jubilee Church, Rome, June 24 2019

That mystifying illumination of the crucifix at the moment of consecration, to my knowledge, has not been published, but it is known to those who inhabit this place. Events such as this are emergent demonstrations of the connection of a time and a space to a wider cosmic order and are reminiscent of prehistoric hierophany - a "manifestation of the sacred," defined by historian Eliade<sup>7</sup> - found by peoples lost to time in creations such as Stonehenge. This cyclic manifestation of "solstitial alignment"<sup>8</sup> with the built environment fulfills a primal, mental need to anchor oneself in the temporal infinite. In *The Eyes of the Skin*, Pallasmaa speaks to this humanistic hunger for immortal importance by quoting the American therapist Gotthard Booth, "nothing gives man fuller satisfaction than participation in processes that supersede the span of individual life."<sup>9</sup>

At any time, this sacred space should allude that the omnipresent God is somehow present here more so than other places. The challenge therefore is to demonstrate this without wielding the cudgel of symbols that might derive their power from one's assumed prior interactions with those symbols. The sum total of one's spiritual journey colors one's vision for what may be perceived as sacredness in a space, not unlike how this space is colored by the passing of the sun throughout the day.

"[T]he house we were born in has engraved within us the hierarchy of the various functions of inhabiting. We are the diagram of the functions of inhabiting that particular house, and all the other houses are but variations on a fundamental theme."<sup>10</sup>



So too may the pious find the many houses of God. Within this house, the particulars of one's spiritual burdens may find kinship with the peculiarities of its implementation of "church". The color temperature of this church cools and warms throughout the day, as parishioners of every stripe filter through the space for reflection and reconciliation. It has been said that one's sin obscures the fullness of creation, and the parishioners here are provided a visual performance of that filter being removed. With each encounter with absolution, the penitent may experience the newness of color in the space upon departing the confessional. They believe that the sacrament of reconciliation makes ready the individual to fully accept the most revered of their sacraments: the Eucharist. By this sacrament, individuals become the community; "communion" is therefore both the consumed artifact and the emergent bond. It was for the production of this artifact, the bestowing of this Presence, that the mystical light conjured by this space gave its all in my presence.

Fig. 7. Light Analysis: Progression of Sun Movement, 10AM-8PM, Jubilee Church, Rome, June 24 2019

Through the careful, deliberate admittance of light to the structure, Meier was able to use illumination to potentiate the function of that space and cultivate the ineffable, numinous qualities that are expected at the altar.

Addressing the intrinsic sacredness communicated by the structure, I first note that Pallasmaa delineates "designated" experiences from "ideated" experiences of sacredness.

"In the first experience, the subject encounters or confronts an explicit religious or spiritual representation or image, whereas in the latter case the experience of a spiritual dimension arises unintentionally from the special qualities of the individual experience itself. Ideated sacredness arises from the nature of the experience rather than its prescribed intentions."<sup>11</sup>

With its scarce external portrayal of what occurs inside, the Jubilee church fosters an ideated experience for its observers. As previously described, it was not Meier's original intent that his creation's three sails would symbolize the consubstantiality of the Trinity; the users of the space drew that from the form themselves. Since this observation became readily accepted, the congregation has since created an explicit interpretation by illustrating an abstracted elevation of the church, emphasizing the sails, adorning and contorting to a depiction of Jesus onto a tapestry that hangs at the front of the church; a creation that clearly articulates a belief that the sails symbolize the consubstantiation of the Trinity.

The sails inspire sacredness through their physicality, but, more importantly, they aspire to sacredness by being the staff with which Meier shepherds ephemeral light. The coupling of the sails' obstruction

of the harsh southern rays and their interstitial transparency's admittance of zenithal light permits "quiet perturbations" of daylight to not only mark the passing of the day, but also "allow architecture to rise above its physical limitations and mirror... our innermost life."<sup>12</sup> This ascension of physical form is made manifest through the projection of one's self into the space. Pallasmaa best articulates this personal reckoning with extracorporeal self-knowledge by saying the "architectural experience of spirituality... is initiated by a sensitized encounter of the self and the world through the artistic work."<sup>13</sup> I have previously narrated how the Parish links itself to the larger community across multiple timescales through the transience of light and that light's resonance with human activities, but, moreover, the encounter of one's self in the medium of this light can draw upon "artistic qualities, emotions, and associations, irrespective of canonical symbolization."<sup>14</sup> The ethereal light acts as a canvas upon which a portrait is painted of each onlooker, personally stylized dependent upon his or her own experiences.

The fanciful form of the Parish of God the Merciful Father cultivates a rich luminous fruit not bore by the traditional churches of Rome. If we hold to be true that light is the force by which architecture is constituted, then without its presence, a building is devoid of life. Plummer says of gothic cathedrals:

"The stone carcass... was a means to an end, not an end in itself, and, while embodying many beliefs of the Church, failed to convey the fundamental spirit of the building- a situation analogous to the difference between body and spirit, startlingly evident at death."<sup>15</sup>

A body apart from its soul becomes a lifeless corpse; architecture bereft of light becomes a mass destitute of spirit. For me, this reinforces my mantra: Light is consubstantial with life.



Fig. 8. Ethereal Warmth, Jubilee Church, Rome, June 24 2019

**Notes**

1 "Papal See of Roma"

2 Abigail Pogrebin, *Stars of David: Prominent Jews Talk About Being Jewish*, 261.

3 Peter Popham, "Richard Meier achieves a Baroque sense of space and light with concrete construction in the JUBILEE CHURCH in Rome, Italy," 100-107

4 Ivor Richards, "Instrument of Light," 48-52.

5 Ibid.

6 Henry Plummer, *The Architecture of Natural Light*, 15.

7 Mircea Eliade, *The Sacred and The Profane*, 13.

8 Henry Plummer, *The Architecture of Natural Light*, 18.

9 Juhani Pallasmaa, *The Eyes of the Skin*, 32.

10 Ibid, 62.

11 Juhani Pallasmaa, "Light, Silence, and Spirituality in Architecture and Art" in *Transcending Architecture*, 20.

12 Henry Plummer, *The Architecture of Natural Light*, 18.

13 Juhani Pallasmaa, "Light, Silence, and Spirituality in Architecture and Art" in *Transcending Architecture- Contemporary Views on Sacred Space*, 21.

14 Ibid.

15 Henry Plummer, *The Architecture of Natural Light*, 8.

**Figures 1 and 3** Meier, Rykwert, Frampton, *Richard Meier, Architect*.

## Louvre Abu Dhabi

### **Nouvel's Approach:**

Located on Saadiyat Island of the United Arab Emirates, Jean Nouvel's built archipelago houses the middle eastern extension of Paris's Louvre. It is the first installation in a multitude of cultural centers aimed at expanding universal history and culture from the western world to Abu Dhabi. Sharing geographic origins of the museum itself, Nouvel represents the culture and colonial past of the Louvre, designing to hold fast to its pedigree, while also adhering to the new context of its extension into the Middle East.<sup>1</sup> His design intent was to evoke inherent globalization through the architecture. Nouvel quotes, "The Louvre Abu Dhabi was influenced by basic findings. [I want it] to belong to a country, its history, its geography without being the flat translation, the pleonasm that means boredom and convention."<sup>2</sup> He accomplishes his design ambition to craft a culturally responsive design through the creation of a dome, an element familiar to Arabic architectural vocabulary, that enshrouds the complex. This 180 meter diameter dome conjures kinship among other emblematic Arabian edifices such as a mosque or a mausoleum. Nouvel's approach to contextualizing his creation is not to directly imitate or model its Arabian and Islamic heritage, but to use immaterial sources as inspiration in order to "thematize the building in a sophisticated way." Likewise, Nouvel attempts to paradoxically enhance the museum's local identity through the process of globalization.<sup>3</sup>

Not only does this astounding dome link itself to its context by its physical form, but also through the atmosphere it creates beneath its implied boundary. Nouvel speaks to its character saying,

“Louvre Abu Dhabi embodies an exceptional programme in the literal sense of the word. Its vocation is now to express what is universal throughout the ages. Its architecture makes it a place of convergence and correlation between the immense sky, the sea-horizon and the territory of the desert. Its dome and cupola imprint the space with the consciousness of time and of the moment through an evocative light of a spirituality that is its own.”<sup>4</sup>

Underneath, the composition of separate galleries creates a neighborhood that cultivates the interactions among the people, the building, and the site, reminiscent of an Arabian souq or marketplace.<sup>5</sup> This is where my research takes place, outdoors in the veins of the museum city, and inside the universe the dome manifests. The spirit encapsulated here is consequence to the careful craftsmanship of design articulated by Nouvel and his spectacular use of the qualities of architecturally defined light.

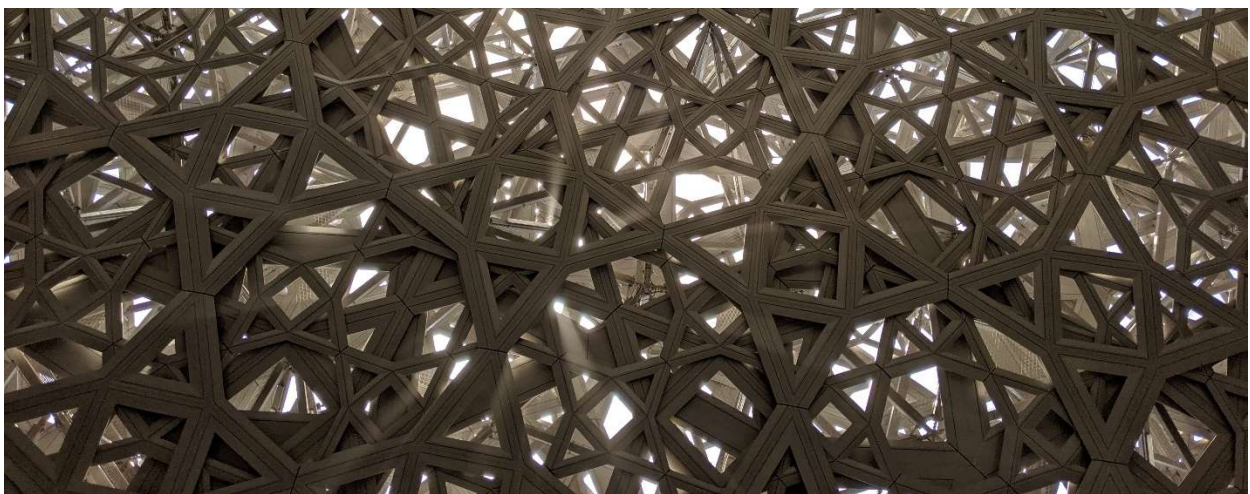


Fig. 1. The Dome, Louvre Abu Dhabi, Abu Dhabi, June 2 2019



Fig. 2. Shaded Walkway, Louvre Abu Dhabi, Abu Dhabi, June 2 2019

**Experiential Narrative:**

The heat is scorching. Visible waves of heat muddle my vision as I make my way across the black pavement. I squint as I draw nearer to the intensely white masses afloat the glassy water. A long, shaded pathway creates a mesmerizing trail of patterned light, leading me into the complex. I quickly make my way through the interior lobby, a pristine

space so cold in comparison to the outside conditions. Women clothed seamlessly in black stand in stark contrast to the glowing whiteness that surrounds them. I escape through a door onto a bridge ablaze in the sun, leading directly to the monolithic shell suspended above the archipelago of masses. The walkway terminates in a wall and forces me to turn sharply, causing the underside of the dome to open into a mystical world of light and shadow. A starry constellation rains down, creating a labyrinth of puddles constituted of light, scintillating across every surface. It's unbelievable. Never have I experienced this particular sensation of beauty; it is an emergent phenomenon, the spoils of war from a conflict of perceived scales. The vast masses connect through an entanglement of pathways all suspended above the water, all dotted with light that rains down from this magnificent dome that I cannot quite wrap my head around. It seemingly floats in place yet is massive in size. It is the creator of the immense beauty of atmosphere that constitutes the space underneath; for it is the medium from which this experiential light flows. Not only does the dome create this spectacular show of lights, but also keeps the harsh Arabian sun from baking the space. No longer does the immense heat beat down; under the dome is a breezy oasis. Reflections from the omnipresent waters dance along the roof as the subdued sounds of the pools colliding with the immersed structure create an alluring ambiance.



Fig. 3. Kaleidoscope of Light, Louvre Abu Dhabi, Abu Dhabi, June 2 2019

Standing under the parasol of raining light reminds me of standing by a pond at night. No complexity is seemingly present yet shining down from the peaceful night sky is a constellation of stars. The universe in all its splendor, on display before my eyes; is that not complex? The most diverse, intricate entanglement of everything known and unknown to man vividly on display, yet it is serene and cunningly lucid. Like a night sky, the dome is simple in beauty, but also an extremely complex arrangement of pieces and parts.

Time passes slowly, yet I am constantly reminded of its inexorable passing as the kaleidoscope of light saunters throughout the space. The passing of time experienced through the perpetual changing of patterns across every surface was epitome of peace. I sit leaned against a



concrete railing, watching time pass as the puddles of light grow larger and smaller, creep up walls and across floors, appear and disappear. The temperature increased greatly when struck directly by the rays, so I positioned myself in the shadows but within minutes, a beam would make its path across my refuge.

As the sun began to set, its reflection on the surrounding waters lit the underside of the dome. This created a completely different atmosphere; the light I experienced was now a double reflection from the sun interacting with the water then the underside of the dome, rather than the earlier interaction of direct rays of the sun piercing through the medium of the dome. It made for a more solemn mood. No longer were the surfaces dotted with light, but a ubiquitous glow diffused throughout the space. The colors of the sky reflected in the shiny metal of the dome changing the space's color. No longer was it stark white, but a warm peachy glow as the sun sunk further in the sky.

Fig. 4. Light Analysis: Progression of Sun Movement, 10AM-8PM, Louvre Abu Dhabi, Abu Dhabi, June 2 2019

When the last golden ray sank below the horizon, an audible buzz filled the area as hidden lights within the dome awakened. All day long, the dome served as a medium to conduct external light, yet now, in the darkness of the night, it is its own source of light, remembering and reciting a familiar sparkling constellation not only from underneath, but also upon its outer shell, cast into the night air as I depart, following me across the waters to my island dwelling beyond.

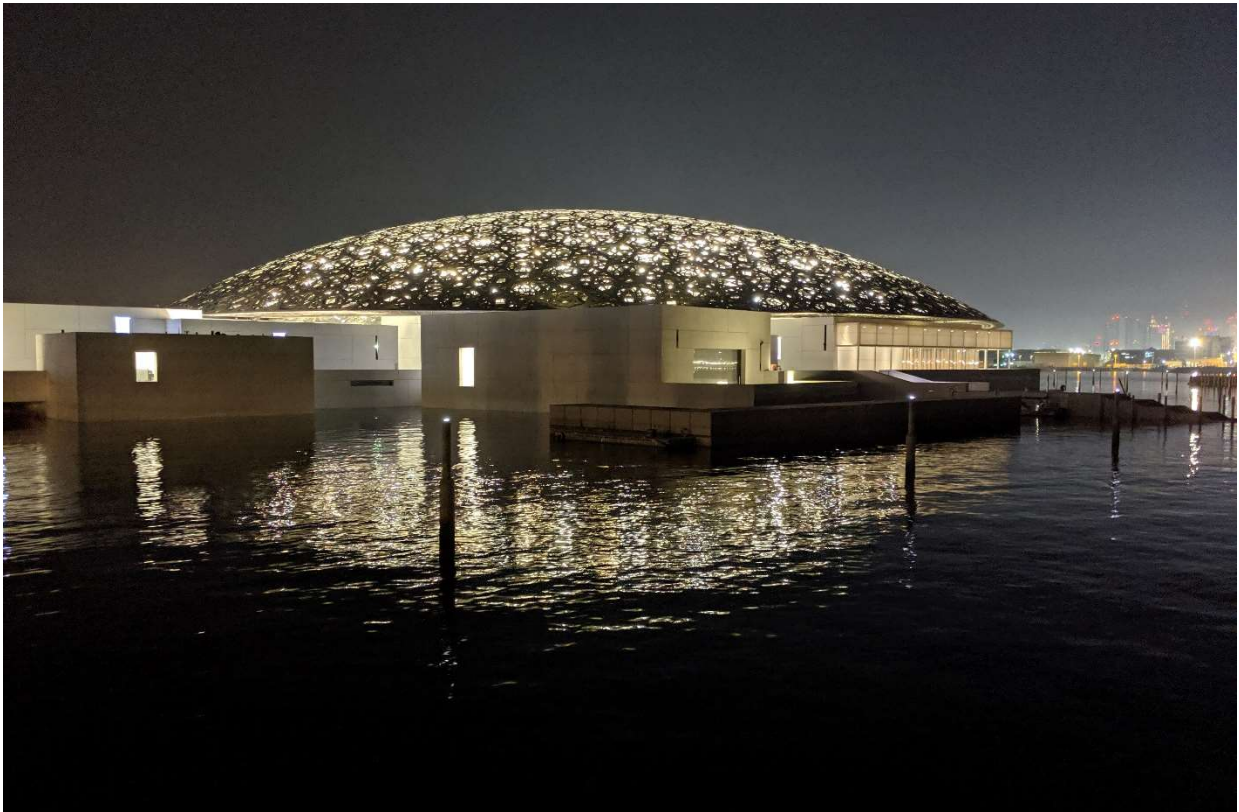


Fig. 5. Created Constellation, Louvre Abu Dhabi, Abu Dhabi, June 2 2019

**Interpretation:**

The most astounding quality of light experienced in the Louvre Abu Dhabi is the visual passing of time while standing amidst the kaleidoscope of light rays. French philosopher Henri Bergson proposes that there exists two types of time: "duration" and "real time."<sup>6</sup> Real time is thought of as "clock time;" the one-dimensional passing of seconds, minutes, and hours, as a clock measures units of passage.<sup>7</sup> "Duration" on the other hand is experiential. It is "voluminous and filled with tensions, whose particular building up and ways of breaking or diminishing or merging into longer and greater tensions make for a vast variety of temporal forms."<sup>8</sup> At the Louve Abu Dhabi, the dome's most effective means of separating the concept of duration from real time for the would-be observer are the collusion of the several apparent shells to variously admit or reject light in orientations and intervals that are not readily anticipated by the observer. This meters time's passage in a manner inaccessible to the observer and transcendent of the generally accepted metronomes, clocks, and pendulums of our workaday interactions. This feeling of surrender to a distant contemplating force was reflected in an observation from a visitor: "The shells of the dome are like the concentric spheres of the heavens from ancient times. And so we here are influenced by when the stars align."

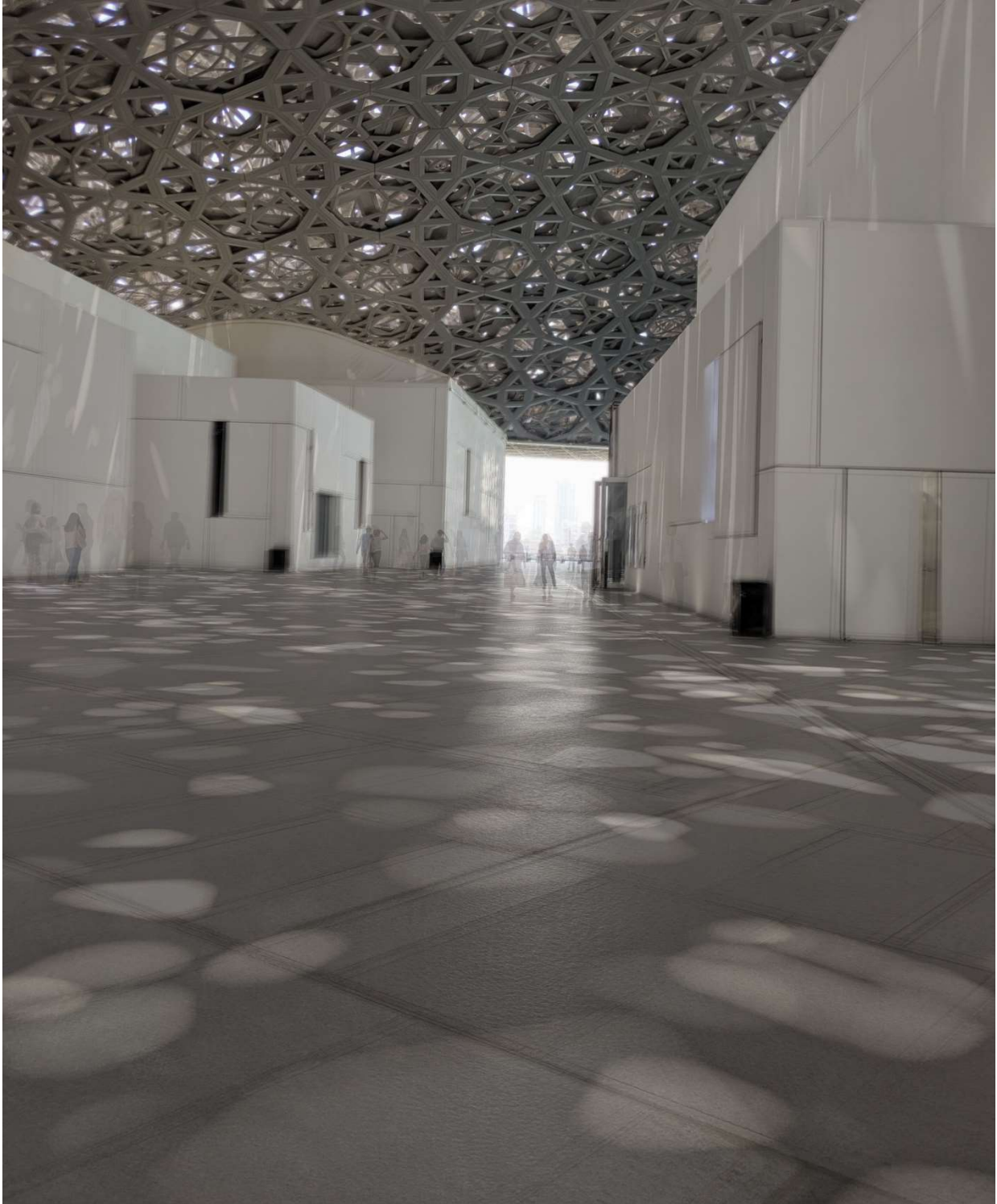


Fig. 6. Light Analysis: Overlay of Sun Movement, 10AM-8PM,  
Louvre Abu Dhabi, Abu Dhabi, June 2 2019

Whereas the Church of God the Merciful Father's materials and form were the enabling properties of that structure to melt away temporal divisions and conjure the omnipresent, the observer at Louvre Abu Dhabi is wholly immersed in the complexity of time's passage and is overwhelmed by the innumerable infinitesimals that are illustrated here to construct space and time itself. Here, the observer is yielding not to an ethereal homogeneity of space and time as at the Jubilee Church, but to a calculating, distant force of such precision, power, and scale to make one unable to discern its constituent mechanizations. Each speckle is a projected automaton, a tiny creature given fleeting life by a massive, looming apparatus of unknowable organization.

To impart to a space such dynamism and a sense that there exists some moderating force to impart a closed-circuit control upon the state of the environment, one may consider, as Henry Plummer does, aspects of architecture that are more process than state.<sup>9</sup> In Plummer's *The Architecture of Natural Light*, he describes "radical and irreversible transformations of human perception"<sup>10</sup> by imparting visual information that strongly couples to our innate self-knowledge rather than permitting us to enumerate the physical facts of the space and hold them externally as a simple description of the built environment that surrounds us. As Plummer puts it: "The impact is not merely visual, for their rhythms correspond to our own diurnal flow of moods and bodily cycles."<sup>11</sup> Under the dome, the complexity with which the

space evolves is challenging to the physiology of a human, delivering the message that one is not capable of comprehending all the forces that act upon this domain.



Fig. 7. Light Analysis: Segmentation of Sun Movement, 10AM-8PM, Louvre Abu Dhabi, Abu Dhabi, June 2 2019

In stark contrast, that process found within the Jubilee Church evolves not only on time scales responsive to human activity but also through continuously differential transformations of state intuitive to the observer. It is that ease of intuition that allows the Jubilee church to comfort the parishioner and facilitate pastoral care. We are creatures of continuity so much so that we externalize rapid internal changes by making such exclamations as "It hit me like a bolt from the blue!" The scintillating, quantized, countless features that flit in and out of existence here are not analogous to the familiar processes found in our compiled self-knowledge and thus are we challenged to learn.

By this are we made receptive to the works of humankind here gathered. By this too are we encouraged to engage those humans found under this dome, perhaps of peoples we have not yet come to understand. As we contemplate the actions we do not understand of the structure upon this space, we are reminded of our incomplete knowledge of the ways of man. In this space, we are induced to interact as much with one another as any exhibit. Countless times over did I see people begin an interaction with a request to help capture a photo, as is common to attractions, only for the process to become iterative to an extent that would be seem absurd if not here. Invariably, each simple interaction blossomed into a dialog on the magic of the changing space, the overwhelming freedom of choice of framing, the process that led one here, and ever more intimate and insightful topics. With few exceptions, each wound down due to some external prompt and concluded with some gesture suggesting more familiarity than one might expect.

Many visit this space in pursuit of a "selfie", a visual product to peddle in the marketplace of social media to earn for themselves the attention of their peers. Pallasmaa articulated his fear that contemporary architecture has become similarly preoccupied, to ill effect. "[B]uildings have turned into image products detached from existential depth and sincerity."<sup>12</sup> This grand dome is not a mere image product, rather, by the virtues of its functional, extant depth, it produces innumerable permutations for any chosen frame, if that is what one seeks. Moreover, for the visitor more taken with the

complexity implemented above than projected below, the layers conjure the sincerity of the heavens, the intentionality of creation, and the purposefulness of what is to transpire in the lives of men. The visitor is justified to find above "the concentric spheres of the heavens." Pallasmaa justifies his assessment of the "contemporary cultural condition" through the words of Fredric Jameson, who describes our era as having a "fixation with appearances, surfaces and instant impacts that have no sustaining power over time."<sup>13</sup>



Fig. 8. Tangible Light, Louvre Abu Dhabi, Abu Dhabi, June 2 2019

The Louvre Abu Dhabi cultivates a lasting change of state in the human by understanding its "connection with the language and wisdom of the body,"<sup>14</sup> and it is light that this space wields to challenge that self-knowledge. Pallasmaa senses a "growing hegemony of the eye" in the wake of "Western ego-consciousness" which is "gradually increasing separation of the self and the world."<sup>15</sup> On Saadiyat Island, in a space expressly dedicated to the respectful cooperation of the previously siloed and geographically self-centric products of human expression, Nouvel has fashioned space wherein vision can unite us and invite us to exercise, among those outside our tribe, our other capacities.

Beneath the dome, light consummates our intuition of place through an appeal to utility and an awareness of analog found in the proximal built and unbuilt environment. The coruscating puddles of light come into being in the blink of an eye and the same has been said of the many man-made islands that are breeding along the coast of these United Arab Emirates. In this space Nouvel utilized pre-cognitive responses to commonplace stimuli to evoke an inherent understanding of use. As articulated in *The Eyes of the Skin*, "Stepping stones set in the grass of a garden are images and imprints of footsteps."<sup>16</sup> These stones do not need to take the shape of feet for one to intuit their utility: we at all times simulate a set of potential interactions with our environment and are induced to performance less by any single familiar outline than by how conducive a unencountered form is to mental rotations and manipulations. It is

the architect's duty to ensure that "[t]here is an inherent suggestion of action in images of architecture... or 'promise of function'."<sup>17</sup>

Nouvel keeps this promise by creating a place to fulfill our needs not unlike the refuge one seeks under a palm tree. Having previously been overwhelmed by the scorch, one is now inclined to accept this new protective force as benevolent and become subsumed by the force's other affectual dimensions. This lowers one's guard, relaxes protocol, and frees the visitor to fulfill their need for human interaction, rest, beauty, and inspiration.

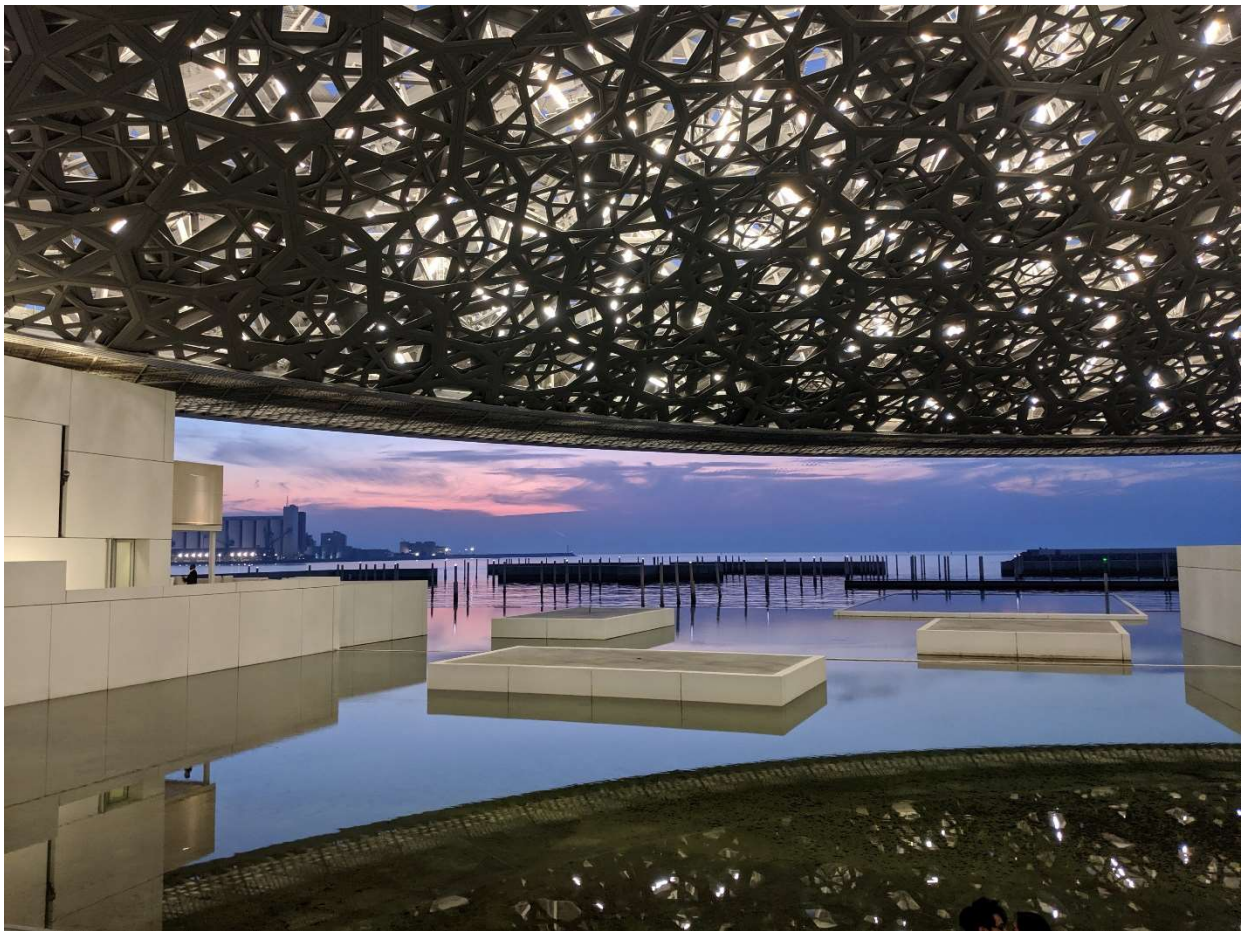


Fig. 9. Solace under the Stars, Louvre Abu Dhabi, Abu Dhabi, June 2 2019

**Notes**

- 1 Btihaj Ajana, "Branding, legitimation and the power of museums: The case of the Louvre Abu Dhabi," 324.
- 2 Jean Nouvel, "Louvre Abu Dhabi"
- 3 Marxiano Melotti, "Heritage and Tourism. Globalization and Shifting Values in the United Arab Emirates," 71-91.
- 4 "Louvre Abu Dhabi, a new cultural landmark for the 21st century, opens to the public on 11 November"
- 5 Catherine R. Skluzacek, "Universality and its Discontents: the Louvre and Guggenheim Abu Dhabi as a Case Study in the Future of Museums," 44.
- 6 Henri Bergson, *Matter and Memory*, 205.
- 7 S. K. Langer, *Feeling and Form: A Theory of Art*, 109, 112.
- 8 Ibid, 112-113.
- 9 Henry Plummer, *The Architecture of Natural Light*, 23.
- 10 Ibid.
- 11 Ibid.
- 12 Juhani Pallasmaa, *The Eyes of the Skin*, 30.
- 13 Ibid.
- 14 Ibid, 31.
- 15 Ibid, 25.
- 16 Ibid, 63.
- 17 Ibid.

## London City Hall

### **Foster + Partners's Approach:**

Situated on the River Thames, London's City Hall is nestled within the "More London" development scheme, offering sanctuary not only to the government officials and staff of the Greater London Authority, but also to the every-man Londoner who might enjoy a managed, yet low-stakes experience by the Thames.<sup>1</sup> Following the disbandment of the Greater London Council in 1986, London fell into fourteen year slump; carrying on without an elected figurehead, grand visions for revitalization were left unimagined and concerted reevaluations of the status quo were left unexecuted. Emerging from this funk in 2000, London adopted a model of elected mayor and assembly not unlike that commonplace in American cities, thus establishing the Greater London Authority.<sup>2</sup>

As is often necessary at many junctures in public life, a physical artifact of much focus was in order, so this new administration, seeking a clean break from the old guard and explicit demarcation of their new order, hosted a design competition to bring London's best to their table. The chief design ambition articulated by the new leaders was simple: the form of the building must parallel the transparency of this governing body.<sup>3</sup> This competition, however, asked not solely for some shiny trinket, some edifice to admire in isolation. Rather, each proposal must have disclosed a curation, iterated by those best equipped to improve the urban fabric, that embodied an open dialog with that of "Greater London." Furthermore, the product must have communicated a fullness of

understanding of the implications their implementation would have had on the immediate context of the building and, most importantly, for the city as a whole and as an identity.<sup>4</sup>

The design proposal found to best fit GLA's design scope was that of Foster + Partners, a firm well represented in the city's skyline. Their innovative plan, coined as the London Bridge City Scheme, imagined City Hall finding its new home upon the Thames by the iconic Tower Bridge and opposing the storied and fearsome Tower of London, landmarks most consider mandatory for any truly "London" experience.<sup>5</sup>



Fig. 1. Foster + Partners, Exploratory Sketches, City Hall, London, 1998

The chosen site presented a wondrous opportunity to showcase this city hall as the next landmark of London's increasingly rich skyline. With the intent of arousing the avante-garde, the GLA asked Foster + Partners to push their preconception of the design envelope and create an edifice fostering an iconic aura.<sup>6</sup> In response, Foster + Partners developed an ellipsoidal volume not unlike a rugby ball, a structure whose form conjured teamwork and, as implemented, inspired community by

its accessible, approachable shape as it interfaced with the site. The envelope fulfilled the GLA's obsessive pursuit of transparency and adhered to Foster + Partners's self-imposed ecological principles to boot.

**Experiential Narrative:**

The air is crisp though it is the middle of summer. Standing aside the river Thames, the expanse of London lies before me in all its grandeur. The river is busy with boats. A wake-restricted segment, the interaction of opposing river traffic is reminiscent of the undulating shoulders of one deftly navigating a concert crowd. As the waves break upon the bank, the scattered packets of energy make for good visual metaphor for that crowd just behind me. The space around me is bursting with activity. Who knew that a government facility's plaza could draw such a crowd... a content one, that is, hip and abuzz with friendly, youthful energy.

A seasonal bar hosts an exhibit of assorted lounge furniture; no seat is left empty for more than an instant in the coming and going of patrons who seem to comprise no particular cohort filtered by time. Young and old, student and professional, tourist and local, sports fan and public reader, lounge cat and scene chick, all somehow seem to be found here at all hours. A sunken amphitheater displays live coverage of the favored sports teams.

## London City Hall

The form of the building is inviting from all sides; there is no suggested preference for a front or a back so that pedestrians approaching the space from street have a different but equal experience as pedestrians approaching from the river. The smooth, unobstructed shape of the building as it meets the plaza allows circumambulation about its base. This, coupled with the building's transparency, lessens the intrusion of the building's footprint upon the open community space. Attention was paid down to the detail of the hardscape, creating a hierarchy of value the nearer one draws to this intriguing orb.



Fig. 2. Light Analysis: Segmentation of Sun Movement, 10AM-5PM,  
City Hall, London, July 16 2019

## London City Hall

The full force of this cosmopolitan city inhabits this space and energizes it with a euphoric bliss I have never before perceived in the analogous campuses of other cities. The proximity of City Hall to the heart of the city allows for this immense density, and this strategic siting gives it greater opportunity to curate their interactions and greater mindshare to influence sense of community. Businessfolk cast aside their blazers in order to steal a moment's rest and stretch out upon the vibrant green grass before heading back to work. Tourists negotiate that perfect pose with Tower Bridge to capture an enviable instant with that namedrop of a backdrop before continuing their stroll along the river. Here, the passing of time is metered by the passing of pedestrians, for no sun is to be found in the pewter London sky.

Concluding my most recent observation sequence, I step away from the last of my capture posts in this round, the one alongside the concrete railing of the river, and head towards the ground level entrance of the City Hall. Just inside these glass doors I find a wholly different aura. A moment ago, the unfettered, natural ebb and flow of humans was all copacetic. Naivete flees as I suddenly face the security measures staring me down as the rotating door mandates my processing. I flush, embarrassed that I had been so lost in contemplation to take leave of my own sense of self-preservation and not anticipate what was, in all reality, a quite modest implementation of facility protection given our current security climate. The staff sense my hesitation and are quite quick to assure me

that my presence is quite welcome, but that precautions must be taken in a building of this nature.

Once I have cleared the hurdles, I begin to gradually ascend the shallow helix inscribing the outermost reaches of the space to the congressional chamber. This path lends weight to the journey and would inform the petitioner that her concerns would be heard with respect from



Fig. 3. Form Follows Function, City Hall, London, July 16 2019

a place of informed perspective and remind the whole of the assembly to approach their duty with a deliberate mind.

As I ascend, I avail myself of new perspectives of the world without. Newness is found unfailingly with each step. The ramp plateaus as I reach the Chamber. The beauty of what lay before me when standing at the riverfront is again on display, only from a quieter perch. Here I am freed of the burden to continually participate in the hubbub below, but I never lose sight of the community that surrounds me, and they never surrender their fair share of my mind. Though my vantage is higher, it weeds out any notions of superiority that might try to sprout at elevation.

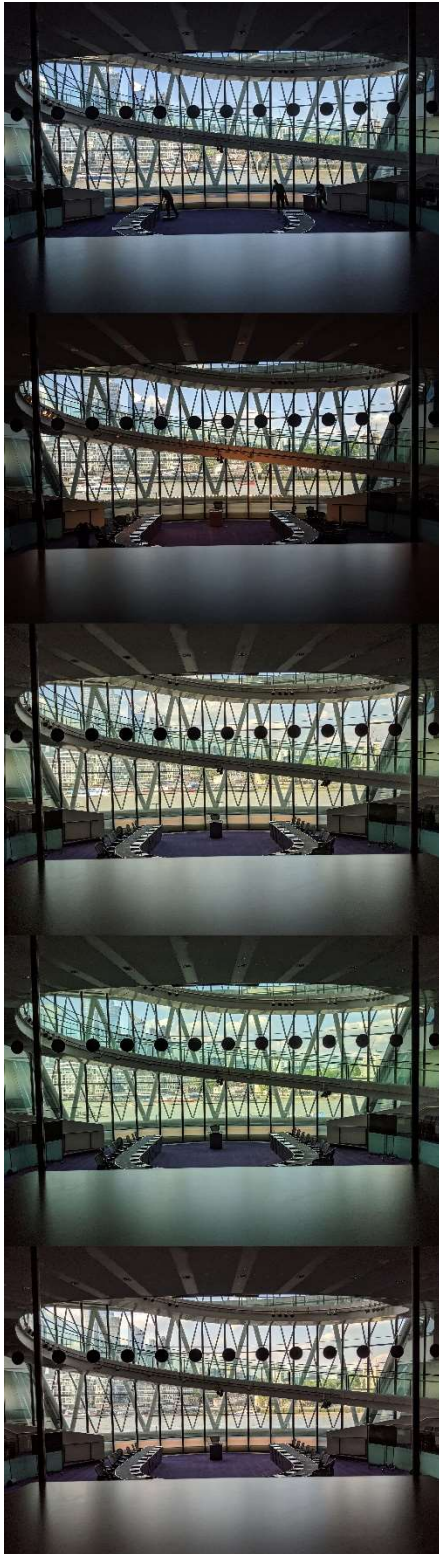
I return to that riverside post to crack this egg. The rectangular glazing of the approach transitions to triangular curved pieces that frame the view of the river for both the chamber and the purposeful spiral that augers those public servants to their duties. Each support, every joint, and all subordinate units of this structure inhabit that particular beauty that emerges when form follows function and collimates with aesthetic, quietly serving the two masters without either belaying any order of the other.

**Interpretation:**

Fostered through, by turns, innovative and thoughtful design coiteration, the final form achieved key performance indicators that exceeded expectations. Though not required by the GLA, its designers took it upon themselves to ensure that this space responsibly consumes resources. Solar studies were employed to generate a thermal map of the buildings surface in order to optimize the glazing system.<sup>7</sup> The site selected lent itself well to optimizing not only beauty but also efficiency; proven through the thermal analysis, the optimal facade to utilize clear glazing techniques is, by happy coincidence, the facade that overlooks the river and heart of the city, providing uninterrupted sight-lines of that evolving cityscape. On the southern facade, each level incrementally juts out, creating a small overhang to shield the story below.<sup>8</sup> Altogether, these optimizations allowed for City Hall to use only a quarter of the energy of an appropriate reference design lacking those efforts.<sup>9</sup>

City Hall explicitly extends a gracious gesture of invitation to the public by establishing a second point of contact between the Hall and the outside world by way of a sunken amphitheater. With special attention paid to the building's interaction with the site, Foster + Partners cultivates the environment outlined in the Greater London Authority's idealization of urban development. Through the lower form's adherence to radical radial accessibility for the public, it offers

## London City Hall



itself as a natural place of interaction and social gathering, providing degrees of ambulatory freedom uncommon near government structures. This commitment to physical accessibility also serves as a metaphor for City Hall's commitment to be responsive to the community it serves, legitimizing its authority. By the innovative use of underground services, the public realm is preserved with no vehicular impedance.<sup>10</sup>

The GLA was established to lead its people out of their extended dormancy. It is therefore appropriate that the icon they chose to mark this era of rebirth suggest the form of an egg, for the egg, too, was seemingly lifeless, but, in truth, was all the while sheltering the next generation. It, in this way, both embodies the potential of the community to grow under the aegis of the state, and the state, inhabiting an egg, to coevolve with the people.

Fig. 4. Light Analysis: Progression of Sun Movement, 10AM-5PM, City Hall, London, July 16 2019

Transparency of process is both a central aspiration and a legitimizing property of the public institutions in the contemporary West. These two roles can strongly couple in practice to create either a virtuous or a vicious cycle in the life of an institution. The GLA understood architectural metaphor's ability to cultivate this notion in the mind of those within and without, and this structure does well to exclaim a radical commitment to transparency.

As I continued to the explore and tease out those effervescent qualities of a space with which one might resonate I simply could not help but feel the utter absence of light's space-making phenomena. Under that pewter London sky there was no dynamic interplay of light, even in this most receptive of spaces. There was seemingly no temporal connection to grasp within the space; the dearth of transitory light cut my anchor and I was afloat in unbounded time. I cannot blame Foster + Partners for the gloomy London climate, but I feel free to complain to the government: Where is the couch we were promised? Hidden away on an old archive of the city government's website, a PDF of a flyer promoting the City Hall campus promises access to "London's Living Room" on weekends. This was the marketing name for the lounge on the ninth floor. Much to my dismay, it is now open to the public only once per year. It is otherwise busy entertaining those who pitch in extra to foot the GLA's bills by way of private leaseholders and service providers. If the security and monetary concerns of the GLA could be met on any given day while permitting public access to and economic activity within the London Living Room, the

purposeful movements of a steady stream of people could serve as one's metronome in the absence of solar cues in this space. This potential is maximized if the auger is the mandatory method of circulation for the able, analogous to the Hudson Yard's celebrated Vessel.

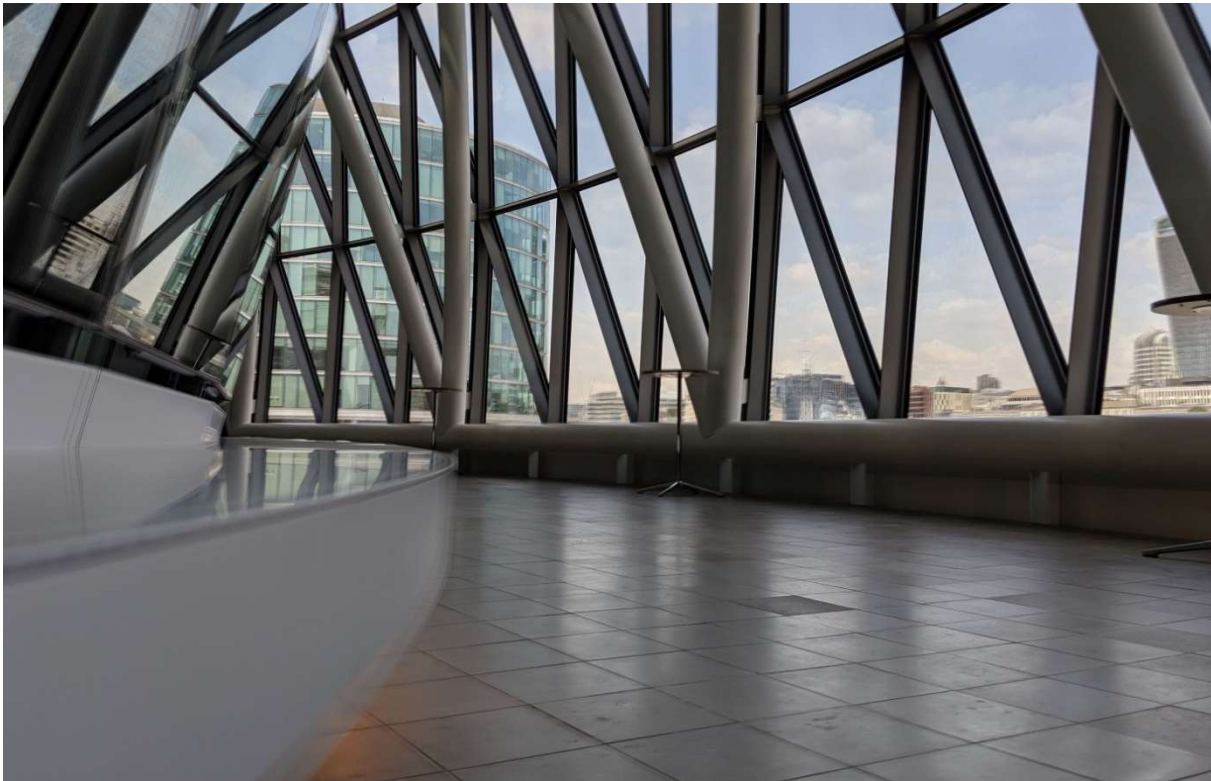


Fig. 5. Light Analysis: Overlay of Sun Movement, 10AM-5PM, City Hall, London, July 16 2019

The stark emptiness of the space about the auger for the bulk of the day inflicts lethargy. If I had had the good fortune to experience light conducting this space, I might at this moment be blissfully ignorant of what I have come to know. The people of this space deserve better than luck, for, according the Greenwich Observatory less than five miles southeast, there is no reasonable expectation for light to give its all to the space on a regular basis. Fostering a dependable

base of visitors to City Hall would nicely supplement the paltry 1,410 hours of sun she receives.<sup>11</sup>

The missed opportunities for interaction among people within this space exemplifies the insult to the health of the space dealt by the security measures that stakeholders may be induced to implement. It is my hope, therefore, that we come to meet these challenges through increasingly distributed, passive, and noninvasive measures to, in turn, maximize utility, minimize human conflict, and minimize human discomfort. That spiraling staircase, that auger, the striking architectural feature that originally sparked my interest in this building, stagnantly occupies the space beyond the point for which one may readily claim "clearance"; visitors are allowed to witness its splendor but once a year. Fashioned to be a lively display of transverse across space, the form floats lifelessly above the chamber.

**Notes**

- 1 "Inside City Hall," GLA Promotional Flyer, 3.
  - 2 Joseph Zimmerman, "The Greater London Authority: Devolution or Administrative Decentralization?" 2-6.
  - 3 "Inside City Hall," GLA Promotional Flyer, 3.
  - 4 Don Barker, "Foster's New City Hall."
  - 5 Ibid.
  - 6 Andrea Gonzalez, "LONDON CITY HALL |A Holistic Design Approach," 3.
  - 7 Ibid, 5-6.
  - 8 Ibid, 6.
  - 9 Foster + Partners, "City Hall"
  - 10 Don Barker, "Foster's New City Hall."
  - 11 Greenwich Observatory, "Greenwich Park," Average Tables.
- Figure 1** Foster + Partners, "City Hall"

**City of Arts and Sciences**

**Calatrava's Approach:**

Sited on a dried riverbed outside the city of Valencia, Santiago Calatrava's City of Arts and Sciences harbors the continual expanse of knowledge of the arts and sciences through its own expansive campus design. Calatrava, a native of the historical city, acquired the commission set forth by Valencia's government subsequently after winning a design contest for the creation of a telecommunications tower on the same site.<sup>1</sup> The site was once the bed for the river Turia, but, after a devastating flood, the land was left barren. In the spirit of revitalization, Valencia aspired to transform this two kilometer stretch of desolation into a lively center of culture and education.<sup>2</sup>

Calatrava openly accepted the great responsibility of not only designing a project of this size and complexity but also the additional pressure of designing in his own hometown. His design ambitions were to construct the new icon of Valencia; an icon that would draw attention to itself and to Valencia and propel the historic city into the twenty-first century through a futuristic design.<sup>3</sup> Instead of a standalone structure, he was tasked with the creation of a multi-complex campus that would in and of itself be a city within a city.<sup>4</sup> Encompassed within its grounds stands an aquarium, a science museum, a planetarium, a center for the performing arts, and more. Calatrava's approach to cultivate an aesthetic for the campus was to make ubiquitous his infamous style.<sup>5</sup> Grandiose structures composed of repetitive zoomorphic bones stand in

## City of Arts and Sciences

linear progression, creating an axial connection between each structure. Calatrava aspired to pay homage to the site's context as well as to speak to its proximity to the sea; he did so through large, shallow pools spanning the plazas. The materiality and color of the light blue, Spanish mosaic tiles used throughout the complex also relate to the Valencian context.<sup>6</sup>



Fig. 1, A Whale's Skeleton, City of Arts and Sciences, Valencia, June 29 2019

Principe Felipe Science Museum is the epitome of Calatrava's signature style. The 241 meter long, "spatial tour de force"<sup>7</sup> is constituted of a singular architectural element used in repetition in

## City of Arts and Sciences

order to lay the framework of the structure, not unlike a spine. All structural bones of the building are fabricated of white concrete. Calatrava employs only two other materials: glass and steel. Zoomorphic qualities are extended to these materials as well; the glass acts as the building's skin, while the steel functions as muscles, holding fast the skin to the bones.<sup>8</sup>

Additionally, two other parallels to nature are evoked in this structure: the eye and the tree. The eye is a reoccurring theme throughout the campus of the City of Arts and Sciences, clearly denoted in the L'Hemispheric by its overall form, derived from an eye, and dedication to ocular learning, by functioning as a planetarium. Adjacent, the Museum Felipe presents this ocular form in both ends of its construction. Other than its characteristic shape and, perhaps, the brise-soleil's ability to "blink", the ocular forms found here do not contribute to the function of the larger form, unlike the active symbolism of the skeletal framework.

The third parallel, however, does hold true to some intrinsic function. The columns that construct the internal framework of the Museum Felipe are formed in the likeness of a tree. These columns create and support a protective, overhead enclosure, similar to a forest of trees creating a canopy, curating and cultivating the biome. Lastly, animals in nature use the trunk of a tree to gain higher ground; through the implementation of vertical circulation inside the column's core, the visitor here can use the trees of this forest to explore.<sup>9</sup>



Fig. 2, Ocular Receptors, City of Arts and Sciences, Valencia, June 29 2019

**Experiential Narrative:**

I stand before a realized version of someone's utopian vision. The scene is almost too much for me to bear at once; my senses are overloaded with the site's understatement of what it holds. Each structure is mystifying in and of itself, but the coinciding existence of each, placed in axial alignment, leaves me flabbergasted, for there is strength in numbers, a limit to my peripheral vision, and inherent impracticality in my taste in shoes. With so many awe-inspiring things to look at, my head darts back and forth, flailing and failing to satisfy my visceral

need to take in as much information as possible. It is hard to narrow my focus to the building I have chosen to study.

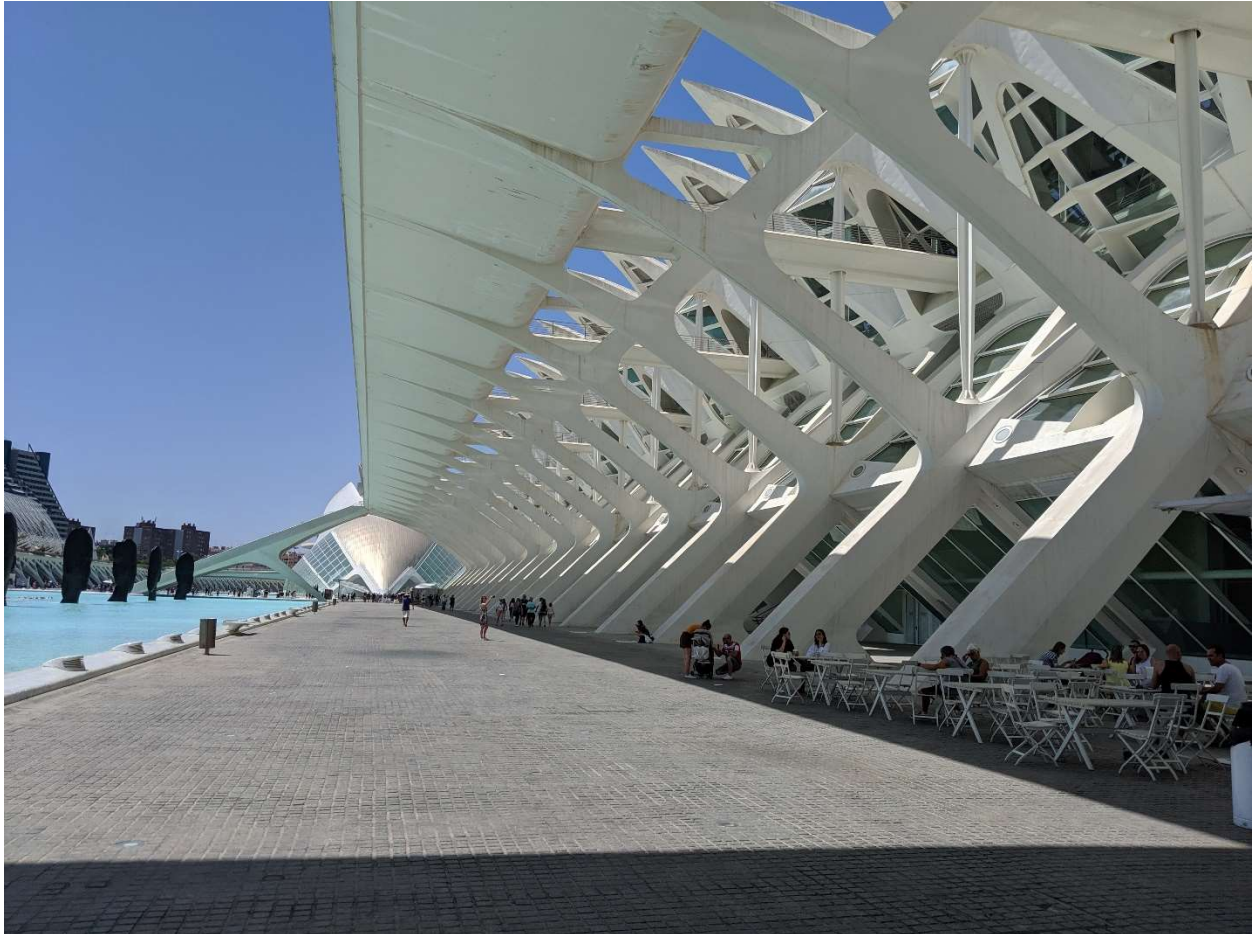


Fig. 3, The Bones, City of Arts and Sciences, Valencia, June 29 2019

As I approach the museum, I feel as though I have walked onto a movie set. It is not helpful that this exact structure was chosen as the set for the movie *Tomorrowland*. I am bewildered by the mystifying cantilevered walkway adorning the southwestern facade, a trendsetter whose kinship is found in various details throughout the campus, down

to the scale of the benches. In hope of experiencing this feat of architecture from all perspectives, I quickly trek to the base of the stairway in order to ascend its heights. As I approach, a retractable belt stanchion greets me at the stair's base; I am appalled to find that the walkway is barred to the public. The refusal of human interaction with an essential element of the structure's architecture is quite an absurd gesture. This disconnect between human and structure is evident in other spaces throughout the campus. Ground level interaction with L'Hemispheric is prohibited as well, with entrance being refused from fifty meters away and guarded by a security officer.

Disheartened by these recurring rejections, I approach the entrance of the Science Museum. The striking height of the interior is made clear even from here as the transparency of the skin spills the secrets within. Entering the building, my expectations of grandeur are dismissed; instead of the vertical freedom promised by the exterior of the building, the entrance's low ceilings create a compressed space. I am taken aback and feel my idealized experience has been shortchanged. After hurdling the barriers of admission, I stand before an escalator awaiting my presence. The tracks penetrate a portal so tight that the I cannot grasp a sense of the world that lies beyond until have arrived at the escalator's termination. Here, the space is more expansive, opening to higher ceilings and spanning the entire length of the building without the interruption of columns, but it has yet to present a moment of awe inspiring, colossal feat. I journey throughout the space, interacting

with the exhibits, until the plan finally permits my entrance to the exteriorly showcased enclosure.



Fig. 4, The Promise, City of Arts and Sciences, Valencia, June 29 2019

Finally, the ceiling disappears, allowing delicate ribs of the facade to branch up into the sky while supporting the various sized panes of glass like leaves on a tree. This is the experience for which I was yearning, initially conceived from my first acquaintance with the exterior. Unfortunately, this moment is dampened by the circuitous excursion I was forced to endure in order to arrive at this point. The discontentment felt here intensifies the more I navigate through the structure. The procession through the entire building feels convoluted; as I explore each consecutive floor above, I am often left rubbernecking, confused about my location and unsure of how I am permitted to traverse the space in search of my next destination. With my best effort to separate architecture from postconstruction amendments, I decipher that it is the latter that muddles my perception of natural egress. Worn from a full day of exploration, I leave partially dissatisfied with my experience due to my many obstructed opportunities of interaction with such astonishing architecture. I become pessimistic about the space and coin for myself the term "Calatravasty" to inhabit my feelings: these works are but knock-offs of the forms I was supposed to find. (I have since found others that have expressed their dismay in a similar way, for their assorted reasons.)



Fig. 5, The Trees, City of Arts and Sciences, Valencia, June 29 2019

**Interpretation:**

Not until my return did I fully grasp why my experience with the City of Arts and Sciences was dissatisfactory to the point that I felt the building failed the criteria set forth in my research. It was not that there was any overblown, inappropriate, or unwieldy admittance of light, nor did I feel strongly that the structure itself did not pair with light to conduct function, affecting the user in any adverse way. What I have concluded now from the clarity of hindsight is that this "Calatravasty" I sensed was not a result from Calatrava's design, but rather the unhappy outcome of the administrative decisions of the current stakeholders. By no fault of its own, the structure's ambitions are compromised by those who now dictate how we are to approach and inhabit the space. All this is to the detriment of the impactful interactions between space and the visitor.

Previously mentioned, Calatrava included a metaphoric eye structure to cap each end of the museum.<sup>10</sup> When experienced firsthand, its relationship was not explicit; it seemingly failed to fully embody its natural analog. Only after a chance encounter with some photos I took more for fun than study did I begin to glean the potential of the "eye." Upon further visualization of the space in resonance with its potential interactions with a set of humans, Calatrava's potential original intent was made clear. During my site observations, this "optical" entrance was occupied by an additional exhibit. This confounding exhibit was

physically disjoint from the remainder of the collections. It was completely unrelated to the purpose of the space, that noble pursuit to spread scientific knowledge; indeed, it was a blatant cash-grab, an appeal to fiction, consumerism, and nostalgia that came with a hefty fee upon entrance. This in and of itself watered down the sense of purpose for the museum, but, moreover, its physical location impeded the thoughtful, metaphoric entrance of people into the museum. To add yet another insult to the space, the bottom floor is blacked out to satisfy the sensibilities of the exhibit stakeholders: to carve out exclusivity in its marketable experience and mine rarity in its potential visual products.

As found in human ocular perception, the conical convergence of light enters the lens to be projected upon the retina, is processed by that sensory organ, and is passed along by way of the optical nerve to be interpreted by the brain. The museum's entrance could symbolically function likewise, an eye writ large. The broad world of people converge to a specific point near the front of this "eye" volume, are processed upon an array of admission booths, and are given admittance to the museum to interpret the curated wealth of collected knowledge. This beautiful metaphor is completely inaccessible to the public through its current set up. Since this intended approach and entrance of the building is compromised, thus also is the progression through it. This chiefly explains the disdain felt when traversing its interior. My initial reaction was to blame the architect when I initially encountered the

space's supposed failures. I have since concluded that this not at all the case here. The Principe Felipe Science Museum could, in fact, consummate those missed connections, articulate those intrinsic functionalities, and resonate with the needs and activities of the visitor, but it is currently pressed into the service of different masters. Within this space, money is being paid to purposefully preclude phenomena.

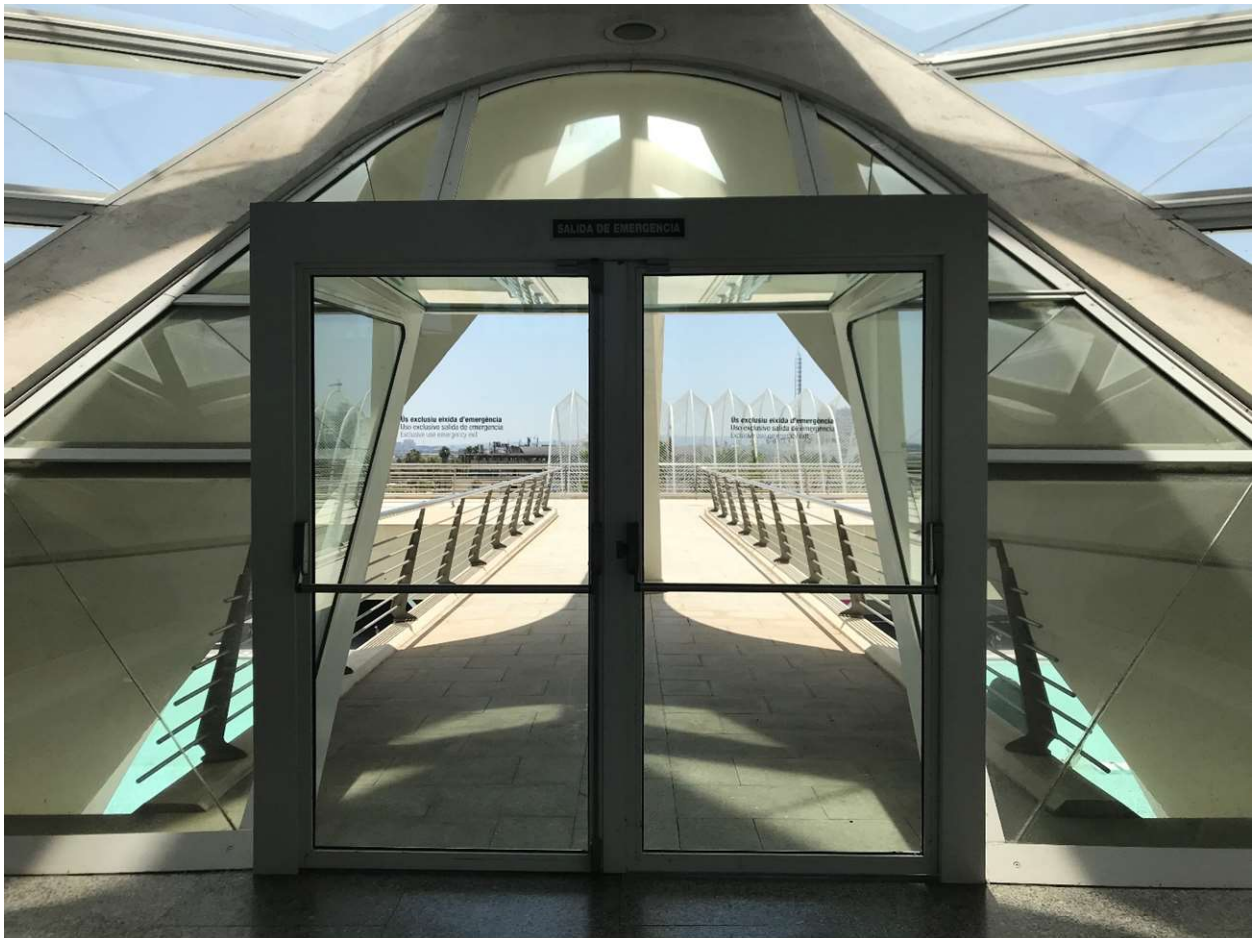


Fig. 6, Emergency Exit Only, City of Arts and Sciences, Valencia, June 29 2019

**Notes**

1 Ani Tola and Armand Vokshil "Santiago Calatrava, City of Arts and Science: The Similarity of the Elements," 3.

2 "City of Arts and Sciences | Santiago Calatrava"

3 Ibid.

4 Boris Strzelczyk, "The City of Arts and Sciences: the new uses of the great works of Santiago Calatrava in Valencia"

5 Ani Tola and Armand Vokshil "Santiago Calatrava, City of Arts and Science: The Similarity of the Elements," 2.

6 "City of Arts and Sciences | Santiago Calatrava"

7 Ibid.

8 Ani Tola and Armand Vokshil "Santiago Calatrava, City of Arts and Science: The Similarity of the Elements," 8.

9 Ibid, 9.

10 Ibid.

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