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ON THE COVER:

Detail of El Castillo at Chichén Itza, Mexico (article begins on page 23).

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Clarification: The images of Congregation Kol Ami shown on pages 16 and 17 of issue 46.1 (Spring 2013) were part of a proposal by PKSB to renovate the existing sanctuary. A design by Levin/Brown & Associates, Inc. was chosen for the project.



Manna About Town

here in the city does one find God? Historically, the holy, sacred places and spaces where God might "reside" have been sacred buildings at the city's center, fronting the marketplace, rising to dominate distant views of the city. As a typical urban condition, however, in today's secular city the House of the Lord has lost its central dominance; but that doesn't necessarily mean

that God has left town. Holy urban places, disseminated throughout the city, where the spiritual can be encountered on an intimate basis, are actually very common, but not in obvious places. Often they are hidden in plain sight: in narrow alleys, behind garden walls, squeezed between row houses, on rooftops, and in cellars, rather than in a center-point of concentrated sacred space. We can imagine that evidence of the divine falls over the city like manna from heaven, providing spiritual sustenance where we most need it, on the next street corner. This expression of the sacred, where the spirit is immediate and proximate, at our very feet instead of remote and protected, gives us another way of understanding its power.

Evidence of the holy found in out-of-the-way places abounds in old European cities; there one can come across places of veneration in what are the most mundane settings. I recall my delight in turning a corner in an Italian hill town to discover a small shrine covered with age and maybe plastic flowers. In Assisi, at a convergence of two streets that trace their way up the town's steep topography (surely a dangerous

EDITOR'S PAGE * MICHAEL J. CROSBIE

place to walk or ride a bicycle), a painting of a Madonna and Child hovers over the intersection. On the street below pedestrians make their way, seemingly unaware of the sacred presence barely a story above their heads.

A more contemporary example is in the heart of Manhattan, at the base of the Citycorp building. Here, God's place is under the surface, hidden from view. Old St. Peter's Lutheran Church on Lexington Avenue was demolished when the congregation sold its property in the mid-1970s so that Citicorp could be built, with the provision that a new church be constructed beneath the office building. Designed by Citycorp's architect Hugh Stubbins, the new St. Peter's has a presence on the street corner through its pyramidal shape, which pokes up above the sidewalk as if it were the spire of an underground church. Its interior was designed by Vignelli Associates, and is distinguished by works by such artists as Louise Nevelson, Dale Chihuly, and Kiki Smith. One might be shocked to realize, peering through the windows of this somewhat hulking earthbound granite structure, that a church spreads out below your feet. It is as if God has suddenly reached up to playfully grab your ankle.

That the sacred can be found in a thousand different places, hidden in plain sight throughout the city, is counter to the popular notion of the separation of the sacred from the secular. But in *The City of God*, Saint Augustine describes the City of Man and the City of God as forever entangled together in this world. Is this not really the urban condition of all time and all places, as well as the nature of the divine in the world at large?

Michael J. Crosbie is the Editor-in-Chief of Faith & Form and can be reached by email at mcrosbie@faithandform.com



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All new liturgical furniture was sculpted from four varieties of polished Italian marble in a rich crimson hue to symbolize the blood of Christ, and complimented by dulcet tones of rose and mottled beige. The Baptismal Font, Altar, Ambo, Tabernacle and Bishop's chair feature columns incorporated with a shell motif in honor of their namesake, as well as bas relief carvings of St. James, St. Peter and Paul, and the four Evangelists. *Rolf R. Rohn*

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Light, Wood, Water, Steel by Karla Cavarra Britton

A CORE QUESTION CAN SHAPE AN ENTIRE CREATIVE PRACTICE. Behind the work of the Canadian architecture firm, Shim-Sutcliffe Architects, stands the question, "Is there a place for nature and the culture of the local within the modernist project?"1 Brigitte Shim's and Howard Sutcliffe's manner of investigating this question is strongly informed by their preoccupation with "the enduring question of light and its role in a northern latitude." Their design process overall is shaped by a self-conscious focus on research into "geomorphology, climate, and cultural history"² and with an overt motivation to address the nature of materials—especially wood and steel—as this may change through contact with light, water, and the demands of a particular topographical condition.

Given the mythical narratives in which light and landscape may be employed, it is not surprising that Shim-Sutcliffe's architecture has increasingly focused on what may be classified as the "sacred," understood through diverse programs carried out at a variety of scales-from expansive landscapes and a complex network of waterways, to the intimacy of a small cemetery memorial. Although Shim-Sutcliffe's practice is not defined by a concern for specific building types (such as the synagogue, church, or residence), the work nonetheless addresses the manner in which diverse functions may fulfill the need for built environments today to confront the issues of solitude, serenity, contemplation, and the mythical.

To classify much of their architecture as "sacred" thus requires a broad definition

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of the image of the mythical. Such a classification easily includes designs for overtly religious buildings such as the synagogue for the Jewish Reform Congregation Bet Ha'am in South Portland, Maine; the renovation of the non-denominational St. Catherine's Chapel in Massey College at the University of Toronto; and a chapel and retirement home now nearing completion for the Sisters of St. Joseph in Toronto, as well as an unbuilt project for the Fung Loy Kok Place of Worship (Daoist) in Toronto.

Yet the classification of "sacred" also includes projects that more indirectly form mythical narratives through the image of nature, and water, and light. This grouping includes several small landscape projects, such as a contemplative garden and pavilion in Don Mills, and a landscape memorial in North York, both in Ontario. It also includes the as-yet-unbuilt Atherley Narrows Bridge, a symbolically charged terrain along the

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Trent-Severn Waterway that pays homage to the cultural landscape of the fishing grounds of the Chippewa First Nation.

Born in Kingston, Jamaica, in 1958, Brigitte Shim studied architecture at the University of Waterloo, then worked for the Vancouver architect Arthur Erickson, whose professional model remains embedded in her understanding of architectural practice. Howard Sutcliffe, born in Yorkshire, England in 1958, also studied at the University of Waterloo and worked in other Canadian firms before forming a practice with Shim in 1994, based on a shared passion for integrating architecture, landscape—and furniture. The firm has achieved significant recognition both in Canada and internationally.

Shim-Sutcliffe's talent for inflecting new construction with attention to the local, and their commitment to the craft of building, are especially evident in their so-called Integral House (2009), built on an escarpment overlooking a shallow ravine north of downtown Toronto. Designed for mathematician James Stewart, the house is situated so that at street level only two levels are visible. On the ravine side, however, the house cascades down five levels, enclosed by an undulating curvilinear wall of glass and wood "fins" that provide it with its most distinctive feature: a musical performance space large enough for 150 people.

This project exemplifies the architects' attentiveness to the demands of the topography, and to their choice of materials and construction details.

The Chapel and Residence for the Sisters of St. Joseph of Toronto (2013), now in its final stages of construction, is in many respects influenced by the intrinsic curvilinear character of the Integral House. Set between the ravine and the city along the Don River, the focus here is on mediating between two distinct features: the urban fabric and the natural surroundings. Conceived as a retirement home with 58 residential units for nuns aged 75 to 93 years old, the building both accommodates an active residential religious community and meets the needs for palliative health care for the infirm. All the residence's various programs are brought together around a circular chapel with a reflecting pool—the building's "soul."

Shim-Sutcliffe's approach to architecture as a craft or largely manual skill, both within the studio and on site, is reflected in the exceptional quality of their built work. This makes their work an exemplar of what the architectural critic and historian Kenneth Frampton has described as a practice that achieves a "poetic of materials" through attention to the expressive tropes of "landscape, material, structure, craft, space, and light." By including them in his anthology, *Five North American Architects*, Frampton places Shim-Sutcliffe within what he describes as a "school" of practice that shares not only a



Bet Ha'Am, interior, with illuminated bible positioned on the bimah.



Sisters of St. Joseph, rendering of chapel interior with altar, view to exterior.



'The Jack Pine,' Tom Thomson, 1916.

consistent manifestation of these tropes, but also a "propensity for typological invention," whereby program and form come together to "transcend their separate geneses."³ These five architects have a common awareness of the sensuous as well as the acoustical experience produced as the body transitions through entry and ascent, moving through hard and soft, dark and light. Moreover, the treatment of light by the architects in this "school" of practice is perhaps its most important -and most elusive-attribute.. As Frampton writes, "the varying quality of light ... is possibly the most ineffable phenomenon engendered by architecture; one that is often correctly perceived as being inseparable from the aura of a building. One may think of it as a fluctuating essence within a given work arising out of the interplay between topography, structure, space, craft, and material." Indeed, the ability of Shim-Sutcliffe to achieve such an essence in their own architecture is what gives it such expressivity, their sacred works in particular.

Shim and Sutcliffe describe their architecture as being determined by two principal sources of inspiration. The first is the Canadian landscape, in particular the territory at the bottom edge of the rugged Canadian Shield, the stone "necklace" of ancient metamorphic rock left by retreating glaciers that wraps Hudson's Bay. Integral to the collective cultural imagination of Canada, this landscape has both geomorphic and mythological dimensions: in the 1920s and '30s, artists known as the "Group of Seven" depicted this raw and rugged wilderness. For example, Tom Thomson's painting, The Jack Pine, has been read as shaping in part a national perception of the Canadian landscape. Shim has written of how the paintings of the Group of Seven "re-presented Canadians with a new and authentic vision of the land not filtered through European eyes."4

The second source of inspiration for Shim-Sutcliffe's architecture is derived from the various ways architects such as Alvar Aalto,

Louis Kahn, and Arthur Erickson integrated bold modernist forms with the distinctiveness of local sites. In her essay, "Nature, Culture of the Local," Shim quotes Erickson's conviction that architecture is a means of "unifying the duality of site and building—which implies that the building cannot be removed from its setting and studied as a separate entity. It is the dialogue between buildings and setting that is the essence of architecture."

LIGHT

The significance of typological invention for Shim-Sutcliffe is immediately apparent in the material basis of their sacred works, and one may in some sense read each of these projects as a study of a particular material element, whether it be light, wood, water, or steel. The cadence of light through time, for instance, is the emphasis of Shim-Sutcliffe's Congregation Bet Ha'am Synagogue (2009), which won a Faith & Form/IFRAA award in 2012. Here one sees how the architects are particularly attuned to the unique qualities of light in northern latitudes: the seasonal variations in duration and intensity of light are more dramatic, and the harsh climate makes the sun's appearance all the more welcome. The architects' vision for the synagogue was to create a place of peace in a suburban environment. To achieve that vision, natural light itself becomes an essential building element, informing the spatial exploration of the building as one passes from the exterior into the social hall, and on into the sanctuary. In this regard, the architects note that the Bet Ha'am project drew on the practice's previous explorations in the Craven Road Studio in Toronto (2006) of the daily and seasonal shifting of light within a single room-a project that explored the "amplification and articulation" of natural light, tracking its transformations.

A reform Jewish community, the Congregation Bet Ha'am desired a building that, according to its statement to the architects, would express the common values of warmth, openness, accessibility, unpretentiousness, egalitarianism, and spirituality. The congregation already owned a schoolhouse that was being used at full capacity, and resolved to construct a new sanctuary/social hall, library, and offices on the same site. In the new addition, the visitor arrives in an entry courtyard, where the sweeping roofline of the sanctuary and social hall evokes the tents of Israel in the wilderness, or as some have said, the form of the arc of the covenant that $\frac{2}{8}$ journeyed with them. One gains access to the sanctuary through the social hall, which has a canted skylit wood-clad wall, upon which



Atherley Narrows Bridge, perspective rendering of the bridge with pathway over marsh and clouded sky.



Don Mills Garden pavilion and reflecting pool.



Landscape Memorial, North York, image from Shim-Sutcliffe website

light plays according to the time of day and season. As the architects describe the effect: "Depending on the time of the day, the time of the year, and the angle of the sun, one registers the light in front of the wooden baffle or behind it. Natural light bathes the wooden clapboard walls, creating thin horizontal shadows that transform rapidly from day to night, continually registering exterior as well as interior shifts."⁵ The section through the building is asymmetrical, with the deeper west side capturing and embracing the setting sun while the east side holds the morning light. Upon the visitor's arrival in the sanctuary, "Every individual is aware of the time of day demarcated by natural light from both a linear skylight and a linear clerestory window washing its wood-clad walls. The journey from the street to the sanctuary allows every visitor to shed their daily concerns and prepare to enter a sacred precinct. [The] sculpting of light and shaping of view of the sanctuary garden aid in this transition from the everyday to the spiritual. ... In this project, light and landscape are intertwined with the experience of the sacred."

WOOD

If light is the dominant motif of the Bet Ha'am synagogue, wood asserts itself in a particularly prominent way in the renovation of St. Catherine's Chapel at Massey College (2006). The college is a graduate residential facility associated with the University of Toronto. (Shim herself is a Senior Fellow of the college, and the firm has done a number of renovation projects there.) The college buildings were designed according to the Oxbridge model in 1963 by Ron Thom, who later created the master plan for Trent University in Peterborough, Ontario. Thom's design is an interweaving of elements reminiscent of Frank Lloyd Wright, within a modernist red brick structure with prominent wood detailing. Among the public spaces, the college includes a small ecumenical chapel whose interior was originally created by the stage designer Tanya Moiseiwitsch.

The chapel is focused on a "traveling" wooden 17th-century Russian iconostasis, which hangs on a blank, deep-blue wall behind the small altar. In an architectural setting that already values refined woodwork, Shim-Sutcliffe chose to retain the original Canadian white-oak arches that sculpt and give texture to the intimacy of the space, which is otherwise enclosed by brick walls. Extending on the material richness that is thereby created, the architects added a meticulously crafted white oak ceiling, evoking the spirit of a traditional wooden Russian chapel—a reference made all the more apparent by the presence of an icon of St. Catherine. The lighting of the wooden vaults and ceiling from above and below creates glowing panes of light that shape the main gathering space of the chapel.

WATER

For Shim-Sutcliffe, water is often treated as a building material: not just as an extrinsic element, but as an integral part of the whole composition. This interweaving of the aqueous with the structural is perhaps nowhere more evident than in the Atherley Narrows Bridge project, part of a commemorative landscape park and trail system intended to preserve the Mnjikaning fish weirs, dating from the Late Archaic period of some 5,000 years ago. Now under the stewardship of the Chippewas of Rama First Nation, these complex underwater wooden fences were first constructed as a means of cornering and harvesting fish. The



site became a place of meeting for aboriginal people to exchange goods, seek healing, and conduct sacred ceremonies. It had not only practical but sacred value, representing a bond between the Creator and all living things as they come together in one place. In the telling of the creation of the world by one native people, the Anishnaabeg, each species of living things was given a purpose to fill. In the case of fish, they were told to come together at certain times of the year and hold council, a time when the people could thereby more readily harvest them for food.

The approximately 12-acre narrows connecting Lakes Simcoe and Couchiching in southern Ontario were designated a national historic site in 1982, and in 1993 the Mnjikaning Fish Fence Circle was formed by community members and local residents for the purposes of preserving the weirs. The site consists of all the water and wetland areas within the channels between the lakes. The flowing water, the bed and its resources (including both fish and weirs), are understood to be integral to the totality of the site. Shim-Sutcliffe was asked to develop a five-part strategy for rehabilitation of the site, including preservation of the weirs themselves; restoration of the landscape; building a platform for sacred ceremonies proximate to the remaining fish weirs; constructing a new bridge to cross the narrows and connect the Orillia and Ramara First Nations trails (part of the TransCanada Trail); and beneath the bridge, providing a glass-walled interpretive center.

The bridge itself will be built on existing foundations of an old railway bridge over the narrows, and will therefore require no new intrusion into the fragile waterway and weirs. The proposed bridge—whose design process included a studio project taught by Shim at the Yale School of Architecture in the fall of 2010—is a reverse Fink truss structure. It will serve not only pedestrians and cyclists, but also winter snowmobilers. The bridge is approached by a curving path from which one has a view of the striking silhouette of the bridge's web of vertical stainless steel elements. The design of the bridge incorporates both the concept and the historical significance of the fishing weirs. As Shim says, "In a way, the structure itself simulates the vertical elements and the repetition of the elements. The widening and narrowing of the bridge abstractly represents the weirs."⁶ The bridge thereby both provides safe passage over the symbolically charged waters, and directs one's attention to where the remnants of a sacred and life-sustaining practice lie submerged.

STEEL

Although not sacred spaces in a ritual sense, two of Shim-Sutcliffe's early landscape projects clearly touch on the themes of life, death, and quiet meditation: a Contemplative Garden with Pavilion (1989), and Landscape Memorial (1995). The architectonic garden is situated at the edge of a lush forested ravine in Toronto. A series of concrete retaining walls channels water through the various levels of the reflecting pools, as steps lead from one level to another and eventually over a wooden bridge to a small open pavilion. Ten slender colonettes hold up the pavilion's canopy, which is made of sandblasted weathering steel and in whose fabrication Sutcliffe himself took an active role. Within the pavilion a single, fixed wooden bench provides a welcome opportunity for repose. The garden's seamless integration of concrete, water, wood, steel, and vegetation creates a space of great serenity, one that the architects describe as "an expressive orchestration of form and material."⁷

By contrast, the Landscape Memorial is a "garden room" in a cemetery, intended to contain the graves of ten members of a single family. The placement of the site is established by the excavation of a level, rectangular gravel-covered surface from the gently sloping hillside; its boundaries are marked on one side by a low concrete wall, and on two others by half-inch-thick angled blades of weathering steel. The fourth side serves as the threshold, and is marked by a gate also made of steel framed by a hedge, including the name of the family. For a tombstone, a single piece of rough-hewn green granite with both English and Hebrew inscriptions was split in two, then reconnected with bronze rods. Cut into the corner of the stone is a small shelf to receive the traditional memorial stones left by those who visit. The site is of utter simplicity, yet dominated by the steel gate that has metaphoric overtones of crossing over as one has to make the physical effort to open it. The architects explain their attraction to weathering steel: they are intrigued by its organic properties; it weathers, "it creates a rich, rustic color that shades progressively from orange to russet to brown. The weathering of the surface makes reference to the material's existence over time ..."8

In describing the practice of Shim-Sutcliffe Architects, Brigitte Shim has situated their distinctive work between the "two extreme conditions of the unpredictable forces of nature and the controlled processes of contemporary fabrication."⁹ In the variety of sacred spaces included in the corpus of their work, the evocation of the spiritual is made precisely through a sensibility for this interplay of the natural and the human. Material is acknowledged as both a gift of nature and an object for refined manipulation, and the elements of light, wood, water, and steel become evocative of a meeting point between the ineffable and the material.

- 1. Brigitte Shim, "Nature, Culture of the Local," A+U Architecture and Urbanism, 11/458 (August, 2008), 14-19.
- 2. Brigitte Shim and Howard Sutcliffe, "The Craft of Place," in Kenneth Frampton, *Five North American Architects: An Anthology* (Zurich : Lars Müller Publishers, 2012), 41.
- 3. In addition to Shim-Sutcliffe, the architects that Frampton includes in the anthology are Stanley Saitowitz and Steven Holl on the West and East Coasts; Rick Joy, who currently practices in the American Southwest in Tucson; and Patkau Architects in Vancouver.
- 4. Shim, "Nature, Culture of the Local," 18.
- 5. Shim-Sutcliffe Architects, "Project Information, Congregation Bet Ha'am," unpublished text.
- 6. Gisele Winton Sarvis, "Beautiful' Pedestrian Bridge Plans Unveiled," www.orilliapacket.com. Accessed 15 April 2013.
- 7. Brigitte Shim and Howard Sutcliffe, "Shim-Sutcliffe Architects," www.shim-sutcliffe.com/info.pdf Accessed 15 April 2013.
- 8. Brigitte Shim and Howard Sutcliffe, Shim-Sutcliffe, Michigan Architecture Papers 9 (University of Michigan, 2002), 77.
- 9. Shim and Sutcliffe, "The Craft of Place," 41.







zmir (ancient Smyrna), on the west coast of Asia Minor, was the site of one of the Seven Churches mentioned in the Revelation of St. John. Replacing its domain repeatedly around a natural inner port, since the first establishment in Bayraklı by Tantalos around the third millennium BCE, İzmir has historically been a stage for various cultures. Established a second time by Lysimachus on the outskirts of Mount Pagus, according to a dream of Alexander the Great, İzmir alone of the Seven Churches has endured until today. As the oracle of Apollon at Klaros predicted, interpreting the dream of Alexander the Great: "thrice, and four times happy will those men be, who are going to inhabit Pagos beyond the Sacred Meles." Thus, İzmir has always been an important city, rich in both cultural and religious diversity.

İzmir has churches still functioning today that are remnants of the multicultural history of the city. The existence and the increase of the

Özen Eyüce, associate professor and chair of the Department of Architecture at Bahcesehir University in Istanbul, Turkey, is a prolific writer on the architecture of İzmir. Christian population of İzmir developed in three different phases: the Byzantine Period in the 13th century, the Ottoman Period in the 17th century, and again under Ottoman rule in the 19th century. However, building restrictions in Izmir have made it necessary for new religious buildings to occupy the old, adding layer upon layer of sacred space.

The earliest Christian presence in Izmir is dated to 54-55 CE, when Christianity first began to spread in Asia Minor (Atay, p.14). The area called the "Frank District" started to develop by the harbor towards the north. In 1425, completely captured by Ottomans, the city started to develop a dual character: a lower city where Christians of European origin lived (the Frank District) towards the north of the inner harbor, and Muslim neighborhoods extending towards the south to the foothills of Mount Pagus. In between these two districts towards the east, respectively Greek, Armenian, and Jewish neighborhoods developed, with distinctive physical and social characters. All these communities lived side by side, independent of each other, building their temples and creating a culturally diversified environment.

12



According to the traveler Tournefort, who visited İzmir at the beginning of 18th century, "the city boasted nineteen mosques, two Greek churches, eight synagogues, one Armenian and three 'Latin' Churches." (Tournefort, p. 333). He describes life in İzmir:

The Turks are seldom seen in the Franks Street, which is the Length of the City. When we are in this Street, we seem to be in Christendom; they speak nothing but Italian, French, English or Dutch there. Everybody takes off his Hat, when he pays his Respects to another. There one sees Capuchins, Jesuits, and Recolets. The Speech of Provence shines there above all others, because there are more from Provence than any other parts. They sing publicly in the Churches; they sing Psalms, preach, and perform Divine Service there without any trouble. (Tournefort, p. 336)

The built environment reveals not only the aesthetic and formal preferences of architectural discourse over a certain period of time, but also the aspirations, power struggles, material culture, and the intercultural relations of a society. Religious structures in İzmir are the living witnesses of a rich multicultural history.

At the beginning of the17th century, the city possessed numerous Byzantine churches, which were destroyed in disasters in subsequent centuries. Owing to myriad earthquakes (174 CE, 1688, etc.) and fires (1742, 1773, 1797, 1922, etc.) during which the city underwent drastic destruction, the built environment was defaced and rebuilt countless times, and thus was never able to sustain continuity. Therefore, it is not possible to trace the history of the existing churches before the 17th century, although it is known that a missionary organization supported by the Franciscan sect in Izmir built a church known as *L'Immaculée Conception* in the year 1400 (Slaars, p. 229).

Because of the restrictions brought to the construction of new churches and synagogues by the Ottoman administration, religious architectural activity was limited to the restoration or reconstruction of churches known to have been extant after the disasters. Reconstructions could not be undertaken without a license from Ottoman architects. One had to restore or build on the footprint of a former church. In 1612, for example, the Venetian Catholic community is known to have obtained certification of the existence of a church destroyed in an earthquake, and thus rebuilt as St. George (Greek Orthodox Church). Among churches that similarly met destruction in the 1688 earthquake was Saint Polycarp. An elaborate license was authorized for the reconstruction of this church indicating that "its length projected at thirty-three gez [an old Turkish dimensional unit app. 60 cm]



Santa Photini, before 1922.



All Saints Anglican Church in Buca.



All Saints centralized nave.

width at nineteen gez, and height at thirteen gez" (Goffman, p. 122). Rebuilt again in 1775, the church was constructed in 1628 on behalf of Saint Polycarp in the Frank District (today in Alsancak).

Yet, despite restrictions on new church building, Ottoman cadres were not against the existence of different religious communities within the empire, such that Ottoman Emperor Sultan Abdulaziz donated 11,000 Turkish Gold for the reconstruction of the Church of Saint John the Evangelist built on behalf of John the Baptist in Alsancak, construction of which started in 1862. Most churches survived with such donations, as in Santa Photini (demolished in the 1922 fire), which was rebuilt in 1793 after the earthquake and supported a symbolic bell tower of 33 meters representing Christ's years on earth; the bells were the present of the Russian Tsar. Similarly, Britons were solicited through a London newspaper to donate funds for the construction in 1865 of All Saints Anglican Church Protestant chapel of Buca.

Liturgical differences as well as the nationalities of the Christian population affect architectural form and space. Although almost all the churches were built on a basilica plan in İzmir, the roofing system of the *naos* differs in Catholic and Anglican churches. In Latin Roman Catholic churches the *naos* is covered with a semicircular arch and vault system as a continuation of Roman architecture. On the other hand, the similarities of Anglican Churches to those in England, with their open timber trussed pitched roof systems, protruding entrances, pointed arches, and stained glass windows reveals the will of Britons to carry



All Saints Anglican Church plan.

what they were used to have in their homeland to İzmir. Naturally, due to the bidirectional trade, material culture also started to change as one can understand from the roofing system of Sainte Maria Church.

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The Forest in the City

By Susan Jones, FAIA







Original exterior of St. Paul's Episcopal Church.

THE LATE 1950S WERE YEARS OF TREMENDOUS OPTIMISM AND EXCITEMENT FOR SEATTLE. Planning for the 1962 World's Fair was under way; a design for a huge structure to rival Paris's Eiffel Tower was emerging off of a napkin; Bill Boeing's airplane company was beginning to be noticed by national and international efforts to conquer space. Architects in Seattle, many trained in the East, had brought their Modernist training back home, but were slowly beginning to evolve their design sensibilities to reflect Pacific Northwest differences, from climate to materiality. It was in this rich foment that a Seattle-based Anglican-Episcopal congregation decided to tear down its 60-year-old neoclassicist stone and brick church and to ask Robert Theirault of Steinhart and Theirault to design a new St. Paul's Episcopal Church.

Located at the base of Queen Anne Hill, in a dense Seattle "streetcar neighborhood" just blocks from Seattle Center (the site of the 1962 World's Fair), the church was built quickly and for a modest budget. The thoughtful and adventurous architects convinced their clients to create a structure reflective of their faith - and their faith in the future. Huge, soaring glulam beams set on end as columns rose 60 feet in the air, dissolving wall and roof, creating an undulating, rippling tentlike roof. Delicate diamond-shaped skylights hovered between the dark, massive trunklike columns/beams. Light filtered down, capturing every nuance of the subtly shaped, supple wood trunks of the structure. The experience is intensely interior, held between 60 feet of wood and softly nuanced northwest light. The building exterior is, even today, a visual shock. Set within Seattle's dense but modest Queen Anne neighborhood, the surrounding early-20th-century, two-to-fourstory brick and stone buildings are dominated by the church's massive roof perched upon a cheaply constructed wall of carnival-colored glass and plastic. An ungainly, oversized entry door was dominated by a heavy portico canopy. Despite the neighborhood's urban density the mute exterior, locked front door, and dark canopy seemed to insure that the primary spiritual sustenance to be had was for the many homeless folks who gathered for shelter from the rain. Inside, five decades of patched-together renovations resulted in a disparate set of finishes and colors that threatened the visual power and simplicity of the soaring structure.

The visionary pastor, Melissa Skelton, former pastor Ralph Karskadden, patrons John and Ellen Hill, and a group of passionate and thoughtful parishioners held several years of discernment sessions to determine the future of the church. They concluded that the church should open to the street and become a welcoming, transparent presence revealing the power of ancient rituals of baptism and faith. A new font for full immersion baptisms was to anchor the new narthex entry. The plastic and glass single-pane windows were to be replaced with a new art glass wall, creating visual harmony, acoustical calm, natural ventilation, and energy efficiency. The altar, altar

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The original interior was dark, with points of glare along its colorful lower window wall.



Improved lighting within the nave helps to articulate the roof structure.

platform, lighting, and finishes were to be replaced. The committee selected an owners' representative, Larry Brouse, who had spearheaded the immensely successful renovation of Seattle's St. James Catholic Cathedral. Our firm, atelierjones, was selected as architect. Sculptor Julie Speidel of Speidel Studios was hired to design and install the altar, font, paschal candle, and tabernacle. We tapped Bill Joy of Skylight Systems to fabricate and install the PULP-produced custom art glass; Carol DePelycen of DePelycen Lighting Design; and Jim Harriott of Harriott, Valentine Structural Engineers. Foushee Contractors joined the team. A modest project budget of \$1.5 million was established and strictly adhered to.

The church's interior reminded me of the Pacific Northwest forests I had walked under as a young girl, along a path lined by tall dark trunks of soaring Douglas fir trees, on a soft, loamy carpet of layers of deep brown fir needles. Even in the rainiest of Northwest winters, the trees would form a shelter, dry and quiet, with a canopy soaring to the soft filtered light from above. At the end of the path, a sharp, whitegreen-yellow golden light would appear-a glowing lacy fringe at the bottom of the dark, comforting structure of the trees. This vision of the Northwest forest, opening out onto bright golden transparent light, became the conceptual framework for the new church interior. The work of visionary Northwest, early-20thcentury artist Emily Carr was evoked; her moving paintings of the deep Northwest forests and contrasting light - from above, from the edges of the forest space—were recalled often in discussions with the committee, and presented to the congregation.

Along with images of the indigenous Pacific Northwest forest came references to the Nordic Forest that Christian Norberg-Schulz and many others have written on, especially in regard to Gunnar Asplund's prototypical Modernist icon, the Woodland Chapel. The building committee members were passionate advocates for the building. Many of them had worshipped and volunteered at the church for decades. Deeply empathetic to the original patrons and clients, they saw themselves as picking up the work of the earlier generation —as if stripping away the candy-colored glass and plastic windows and replacing them

glass and plastic windows and replacing them with golden/green cast-resin glass was simply completing the work three generations later. But this reverence for the space was not overshadowed by the committee's intense vision of the church as a forest in the city — and the need to reach out as a beacon to the city and its neighbors. Boldly led by pastor Skelton, appointed in 2005, the small congregation had



View toward altar showing improved lighting and new glass window walls along side aisles.



New window wall from across the nave provides dappled, forest-like light.



Detail of the window wall, with its overlapping plates and variegated color.



Photo: Lara Swimmer Photography



Plan of the extent of new and renovation work.

almost doubled during her tenure. The decision to tear down the quirky, heavy canopy and replace it with a light, glassy narthex was a profound architectural move, led by deep liturgical changes of the past 50 years, as well as by a vision of how faith would perform in the broader secular city. Anchored by the new font and the swirling motions of people, the narthex would glow both at night and under cloudy days to draw the curious into the quiet, a peaceful solace of the enormous forest inside.

Renewing the clarity of the original vision of the building was a matter of stripping finishes, then capturing what had been there in the beginning. More than 15 species and finishes of wood were identified, not to mention Santa Fe-style tile and a salmon-colored carpet. Like the dark texture of the bark of evergreen tree trunks, the lower realm of the church interior would be a soft, muted, warm brown, reflecting the peace of the inner world of the forest. Wherever possible, finishes were stripped back to a single natural color; extraneous materials were removed. The pews, altar rail, and altar platform were similarly finished in diverse shades of rich, warm browns. The altar wood and the natural patina of bronze

helped solidify the concept of the realm of forest floor. Under the carpet and tile, simple wood and concrete surfaces were revealed or recreated in their place. The ground plane and furniture palette were kept as harmonious and simple as possible.

jN,

new construction

····· renovation

Above floor level, light surrounds the congregant. A rich, multilayered set of custom shingled glass was hand-set into custom aluminum extrusions for the window wall, with four base colors of resin-laminated glass. Light greens to bright golds to a deeper, rich blue suggest the passage of light down the edges of the forest and fringes of light-dappled evergreen needles. Under the existing choir/ organ loft and moving toward the altar, darker colors concentrate then progress towards a lighter palette of bright gold and clear, bottle green. Frames of clear transparent glass form openings for the carefully placed operable windows, framing views to the existing garden columbarium to the east and garden walk to the west. Design details of the window wall clips, studied through extensive scale and fullscale physical models, allowed the custom-cut glass pieces (ranging from 6 to 20 inches) to be set and to overlap in a shingled pattern. The

shingles provide an additional layer of translucency between two pieces of glass, and allow the four basic colors to be multiplied many times over. For security and environmental reasons, two systems of glass were built. The exterior glass wall-a simple aluminum storefront system with carefully placed operable windows-provides sound insulation, energy efficiency, and security for the inner art glass wall. The art glass wall-comprising hundreds of individually sized pieces-is attached to an aluminum frame connected to a storefront system and the wood headers and jambs of the existing window openings. Working within the skilled local subcontracting industry nurtured over generations by Boeing, the fabricator/ installer Bill Joy of Skylight Systems oversaw a process of extruding the aluminum sections through an 8-inch-round mold and then cutting the sections into individual clips, finishing and painting them. The glass walls extend under the eastern and western lower edges of the dramatically flaring roof, splintering the light into thousands of subtle glowing points.

On the soaring southern wall behind the rich natural brilliance of the new altar wall, in situ mockups of new paint palettes model the glinting light falling softly from above. The existing wall of plaster shingles, loosely overlapping in a lightly crafted manner, was finally painted with a soft mélange of bronze and silver metallic paints. Its understated intensity, full of the soft glowing textured surfaces, holds the interior together and forms the final closure to the sacred space. To the north the clear, transparent narthex opens to the busy street, harvesting volumes of light and beckoning passersby to stop, linger, and engage with the joyful rituals of baptism through the deep patinated-bronze font, sumptuously overflowing with water into double basins. The bustling city is engaged, and is invited to come into the soaring forest. 🔠





In 2009 the Israelite religious community of Württemberg statutory corporation (IRGW) in Germany decided to build a new synagogue for its community in Ulm, and so initiated a competition in partnership with the city of Ulm for the construction of a community center with a synagogue. The city of Ulm benevolently supported the building project and made a building site available in the center of the Ulm Weinhof, just a stone's throw from the former synagogue, which was destroyed

On January 21, 2010, the competition jury, under the direction of Professor Arno Lederer, unanimously chose from a field of ten competitors the design by kister scheithauer gross architects and urban planners (ksg). "The team from Cologne succeeded in enriching this highly sensitive location in the city of Ulm, without detracting from its unique character," said the city's head of construction, Alexander Wetzig.

during Kristallnacht in November 1938.

the design was altered according to some proposals from the jury and Rabbi Shneur

Trebnik. In February the Ulm city council gave its approval for the altered design of the synagogue, with the cubic volume lower and shorter than originally planned. It now measures 24 meters in width, 16 in depth, and at 17 meters high and is significantly lower than the nearby Schwörhaus.

When the project opened last December, the 300 invited guests included former Jewish citizens of Ulm, who fled during World War II. The Federal President of Germany Joachim Gauck, Prime Minister of Baden-Württemberg Winfried Kretschmann, the President of the Central Council of Jews in Germany, Dieter Graumann, and Israel's ambassador to Germany, Yacov Hadas-Handelsman, all spoke at the event.

The synagogue and the Jewish community center are contained in a single structure. The compact cube form stands free in the square. This position is historical; on Kristallnacht, the former synagogue, which was enclosed in a roadside development, was destroyed. After the war, a secular building was constructed in the space. The synagogue and the Jewish

community lost its ancestral place in the centre of Ulm. The construction of the current synagogue has opened on a new site, in the middle of the square called the Ulm Weinhof. It is as if the synagogue has taken a step forward from its former position, reclaiming its location. With no constructed border, it stands abrupt and solitary on the Weinhof, like a witness.

All the spaces of the community center and the synagogue are joined in the smooth structure, which protrudes from the limestone façade without projections or retractions: a foyer on the ground floor, an underground mikvah, a meeting hall on the first floor. School and administrative spaces are on the second floor. On the third floor, snug in a private inner courtyard, is the day-care center, with an outdoor playing area. The play area is also the roof of the sacral room.

Inside, all the rooms are organized orthogonally, with one exception: the prayer room in the synagogue. The long side of the sacral room stretches diagonally across the room, in

Subsequent to the competition success,



East elevation, with perforated wall screen that marks the location of the sanctuary.



Chandelier in the sanctuary, with perforated wall and ark to the right.

Position of the new synagogue overlaid on an historical plan of the square, showing the position of the original synagogue, which was destroyed during Kristallnacht in 1938.







one turn around the only, free-standing interior building support. The position of this diagonal space has an overlying religious meaning: its geographical direction is towards Jerusalem.

The diagonal room layout creates a corner window in the sacral room, which plays with a pattern of the Star of David as space framework. With 600 individual windows, the space in the synagogue is illuminated from many points, with the Torah case as focal point in this spiritual center. At dusk, the pattern is also projected outwards by inner lighting, clearly but simply indicating the building's purpose. The prayer room has space for 125 people, with 40 of these in the women's gallery. The benches are from Israel. The walls are up to three meters high, with timber panels covering a wooden structure. The walls are also covered in a light acoustic plaster. The Torah case is in the corner of the synagogue room and faces towards Jerusalem. In front of it is the bimah, a raised platform with a lectern, from which the Torah scrolls are unrolled and read. These two liturgically functional elements were made in Israel, under the rabbi's direct instruction. A further custom-made item is the dodecagonal chandelier, symbolising the 12 lines of the People of Israel. The 3.3-meter-wide chandelier floats over the bimah and seating.

Apart from the large-scale corner window, the building is otherwise quite subtle. In the necessary function areas, window openings break through the otherwise closed natural stone façade. The natural stone is only diluted in the sacral room, so that the perforations in the façade allow the light to penetrate into the synagogue, whilst also projecting it outwards.

The reinforced concrete construction is covered with a limestone facade. This "Dietfurt limestone" is mined in Bavarian Dietfurt near Treuchtlingen. The naturalstone cladding with a smooth surface and closed joints with the same color mortar is made from large limestone plates up to 1.2by-0.9 meters. The plates have staggered joints and are arranged horizontally.

The corner window of the synagogue is 2-by-4.2-by-8.5 meters. The steel supporting structure consists of a flat matrix with triangular fields. This triangular construction proved to be particularly resilient, which allowed the depth of the foundations to be made much shallower. A Star of David in the perforated façade consists of six triangles, with 19-centimeter-long sides and a regular hexagon, 50 centimeters high. The limestone was perforated using a high-pressure water jet.

PROJECT CREDITS

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Edited b y Crosbie Michael Ι. El Castillo. Drawing by Julio Bermudz

In April 2012, members of the Forum for Architecture, Culture and Spirituality (acsforum.org) gathered at the Mayan ruins of Chichén Itza in the Yucatan Peninsula to explore contemporary and timeless modes of the sacred. I asked our group members to keep journals of their experiences in Chichén and to document their reflections with sketches and photos. The following is a slice through their recorded words and images. The great *muchaco*, Machismo Muchacho, constructed the four-sided equivalent of universe's organization, four sides, four quadrants. One side (north white corn) faced the Cenote Sagrado, from which the form arose. Heart of Earth raised to Heart of Sky. As it grew to penetrate the sky, it gave meaning to the four-sided organization: four seasons, four directions, four ways to orient, as well as up and down, nine levels up to the temple top, and down piercing the Earth—a mirror image of the *axis mundi* penetrating up and down. *–Dennis Winters*

At the front of El Castillo, the most pronounced assault is aural—a "boing" sound off the front of the steps as visitors clap, and the sound ricochets off the stone. The pyramid seems to communicate back toward the ball court. The scale of the space between them seems to make our presence inconsequential. The center of El Castillo's stairs is noticeably more worn than the stairs to either side. The center is slightly lighter in color, and slightly more worn; compared to the rest of the pyramid, it forms a bright carpet to the sky. –*Michael J. Crosbie*

The din of the complex was not something that I had anticipated. The hawkers were yelling "One dollar." It is a common sound throughout the city complex. It is quite disruptive to the enjoyment of Chichén Itza. The central square where the pyramid is situated is awe-inspiring. I can picture a large gathering here, with the priest at the top invoking the various gods to propitiate. – *Gowri Parameswaran*

The buildings, the stones are just out of reach in time, of course: an impasse. Then, suddenly, fragments of columns tumble across the pathways. They become seats, sites





The Observatory.

of reflection, of flirtation. Children are selling animal calls. One lies arched across a column section, now a tabletop. I can't help but think of his sacrifice. Does he remember, or is he just tired, bored? *–Jim Bassett*

Ropes and barriers are everywhere. The barriers are very poorly constructed. It's unclear what is being protected here. Are we being "protected" from having a "real," "personal," or unique interaction with the site? We see only a "packaged" version. *–Randall Ott*

The Sacred Cenote is larger than anticipated, an integral part of the natural world around it. I love the overhanging greens, yellow flowers, orange butterflies. The wells are roughly cylindrical, rustic limestone, with caves and cavities. What did the Moderns imagine was hiding under the brown water? The acquisitive urge behind it...the need to disclose. -David Krizaj

Around the edge of the cenote hover Gila monsters and old water bottles. The procession down from the Platform of Venus is now a gauntlet of peddlers. At the apex of the processional is the ruin of a platform, from which the poor victims were hurled into the pool. The pool walls are strata of sandstone with voids hollowed out along the circumference. The surface appears powdery white, punctuated with black belts of lichen or moss. The water in the pool is greenish brown, and absolutely still—not even leaves turn on its surface. *–Michael J. Crosbie*

The first structure I saw as I entered the park was the Observatory. Its huge rounded dome is unlike the other angular buildings in the complex. It reminds me of mausoleums in India. I felt a deep connection, as if my own Tamil culture was reflected in the massive stone structures I saw. –*Gowri Parameswaran*

The Observatory appears to have been rotated, turning its head toward a star. It is just a fragment of itself, and the soft curved cast across its surface is a shadow not found anywhere else on the site. It is the positive of the sacrificial pool's negative; its surface at top is smooth, but it wears a crown of rubble, tempered with black lichen and the wildness of plants emerging from the top of its skull, a riot of ruin. *–Michael J. Crosbie*

About 30 minutes past the gate I finally sit, surrounded by a thousand columns. Today is overcast so I don't seek shade. There's a healthy smell of earth, wood, and perspiration. Gardeners are raking piles of leaves—a smaller scale than the stone mounds in the woods by the entry. The mottled ground is returning to green. The color is why I chose this spot to stop. I count no fewer than 45 trees between me and the inner corner of the wall, although there may be more, hidden behind one another. They are slender and warped, contrasting with the linear enclosure. Their warm grays, mottled with whites and blacks, are identical to the stone, truly belonging to this place. –A. Katherine Bambrick Ambroziak

Sitting in the middle of the Thousand Columns, hearing the birds sing their songs of beauty in the jungle, I feel the stones standing there, witnessing the slow but inexorable passing of time. One column next to the other in frozen marching order—erect towards the sky but brought down to their wet mother earth by gravity. One serpent head, decapitated but somehow still alive after centuries of weathering, opens its mouth to me in clear warning. *–Julio Bermudez*

Three French children arrive on the scene. "Un, deux, trois," a photo is taken. It will be a keepsake—a pause, no one is looking, the camera does the work, and vacation continues. French, then Spanish, glides through the ruins.





Clouds ease the heat, or enable a breeze. Other sounds: men raking, working in this sacred place, piling leaves. For them, the tourists are just a passing condition, an ever present: crying child, screaming birds, and songs. The men are snapping twigs and branches, cleaning up. *–Jim Bassett*

So I am, it seems, as if waiting for something to happen, for some revelations to be unlocked and given to my patient waiting. It's a waiting in surrendering, because I know that the columns have their way of being and they are slow and heavy and they mistrust speed, possession, and photography. They like, I somehow know, to have me sitting or standing along with them, like them, sharing their stoic endurance through the seasons and ages; only then, maybe, they will speak. Not before, certainly, not before. –*Julio Bermudez*

Someone buys a jaguar's call. He can't use it. It will wind up in the back of a drawer. He'll show it to his wife. "Do you remember?" They won't, at least not all of it. Who can? Jungle birds, two of them now, bright yellow with black eyebrows, drink from a puddle cradled in the top of a column fragment. This ancient fountain, exquisitely carved, just for them. What do they know? The jungle reclaims its own. –*Jim Bassett*

Suddenly, a bird crosses in the sky above and quickly disappears, but that fleeting moment highlights all the more the remarkable, emotive, and standing nature of these thousand stone beings, giving company to each other, supporting each other in their impossible task of lasting forever... only to be reminded, in every winged fly-through, of their overwhelming, perhaps unfair mission of witnessing and talking of the nature of being made, man-made, of the nature of nature, of their impossible task of defying and revealing time, and with it our existence. This is the ultimate task of architecture. –*Julio Bermudez*

There is a secret ruin, isolated from the group, so secret that only a few vendors line the route, and they seem very unambitious. The songs of the birds challenge the marketplace drums. It is the Columnata del Noroeste. I can access the terrace here, but not the steps. There are only six where I am sitting, but to get to this level there was one preceding, giving us the magic number seven. (That seems to be irrelevant; I am imposing my own systems.) I enjoy being this close. The major forms that are attracting so much attention are too complete for me. I am more swayed by the fragmented ruins, the investment of my imagination. I appreciate the rough textures and the small stones inserted into the crevices. They are more appealing than the straight-up mortar. To me they represent a new care that is bestowed on this landscape. -A. Katherine Bambrick Ambroziak

The dense jungle is wonderful. Lindsay Jones takes us beyond the barricades-by being "criminals" we seek the authentic. Finally we escape from the "commodified" site. The ruins outside the ropes are wonderful. In the south site, the jungle seems more natural, more true; finally we see the jungle. We climb several pyramids. There are many paths, much wandering. One senses the "truth" of the site-the actual configuration and the character of the ruins outside of the commodified constraints of the main site. We go to the reconstructed but closed-off site. Beautiful. The interiors are cool in contrast to the outside. One senses why the Maya built this way, with stone. -Randall Ott

The immensity of the great Ball Court, the perfection of the design. Symmetry enhanced by asymmetry, as in the Temple of the Jaguars. The smallness of the hoops...this was a diffi-

cult game! I like the cleanness, simplicity of the lines. There is a bright red flowering tree at the end. *–David Krizaj*

At the Ball Court at 8 in the morning, and it is completely our own-no vendors, no other tourists. It has the chilly quality of a haunted house, as if it had been waiting for us to arrive to tell us something. The sheer walls across from each other seemed to be in conversation, an exchange that we had interrupted, and now they fell mute. Had we caught these two walls in a reverie for each other, all these hundreds of years staring at each other across the court, unable to touch? This space seems too immense, too civic, too frightening to be the site of a regular game. Perhaps this was for a contest of giants, a contest for culture. The old stories have the Maya and Toltec forever in conflict in the Ball Court, their ghosts still in the game. -Michael J. Crosbie

The deafening silence of these ruins shuts up all talk, all birds, all explanations, all photographs, everything, and brings attention to this magic, unrepeatable moment that finds me here, sweating, at peace, breathing their air... borrowing the Maya's air, in silence. -*Julio Bermudez*

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In 15 BCE, Vitruvius encouraged us to build well and to incorporate *utilitas*, *firmitas*, and *venustas*. Sixteen hundred and forty years later, Sir Henry Wotton reinforced this ancient mantra in *The Elements of Architecture* as "commodity, firmness, and delight." These salient elements are still vital to exemplary design—reflecting the foundation of the green building movement. Surprisingly, though, they are often forgotten, corrupted, or removed from service.

The green revolution isn't about refitting our buildings with something new; far from it. Our green *revolution* might better be referred to as a green *revelation*, offering us an opportunity to rediscover, relish, and refine inherent strengths and timeless features: those architectonic elements embodying performance, durability, and beauty.

As our lives are increasingly dominated by the magic and inventiveness of silicon-based technological advances, it is easy to lose sight of the magic and inventiveness of many architectural advances embedded in our buildings that are tied to nature, setting, and local environment. Exploring just a few of these hidden gems reveals how fundamental they can be to our comfort and enjoyment, not to mention how beneficial they are to a building's efficiency. These simple, passive systems are often overlooked, and the corruption of even one can have unintended widespread negative consequences. Once rediscovered, however, we find that virtually all of these features can readily be put back into service.

Let's consider some common issues affecting the interrelationship of light, air, and thermal comfort. In the 1970s the oil crisis sent shockwaves through religious properties, causing vast expanses of stained glass windows to be sealed with polycarbonate sheeting. This led to the widespread decimation of a profound collateral system: window operability, particularly clerestory windows perched high above the nave. Forty years later, religious property owners now revel in the simple pleasure of removing this sheeting-which discolored and deteriorated years ago-and re-opening the windows. Why? Open windows induce convective (updraft) currents, which are especially important in sanctuaries and in large assembly spaces. Convective cooling, which allows hot air to escape from the top while encouraging cool fresh air to enter from below, might be viewed as the "original" air conditioning system.

Commonly mischaracterized as "protective," polycarbonate-sheeting-sealed windows have resulted in damaging lead caming and window frames, raising levels of energy consumption and maintenance, and increasing capital expenditures for mechanical equipment to overcome excessive heat, moisture, and stale air. Sealing windows traps an air space between the sheeting and the original window that can become super-heated, causing the air to expand. The combination of pressure and heat causes lead-the softest material within the assembly-to deform. Windows bow and glass cracks or falls out. As the sheeting deteriorates, less daylight is admitted, increasing the need for artificial lighting and the costs associated with fixtures, upgrades, and electrical service. Also, degraded plastic sheets that become etched, fogged, and yellowed compromise the inspiration of stained glass windows. Art glass is dependent on abundant light to convey its message. Most of all, sealed windows interfere with the passage of fresh air and the introduction of natural ventilation, so critical to interior thermal comfort. Thus, we turn to mechanical equipment to make up the difference.

Just as a loss of natural ventilation increases dependency on mechanical equipment, loss of inherent insulating properties of the exterior envelope increases our reliance on heating systems. Thermal benefits of exterior masonry walls—in particular, the attribute referred to as "thermal lag"—are often overlooked because they cannot be seen and are not widely understood. Thermal lag is a natural system of buffering extremes in temperature between interior and exterior. Dry walls in good repair are stellar thermal insulators; wet walls, or those in poor condition, are not. Rather than repair walls, though, our tendency has been to add insulation or turn up the thermostat.

Contrary to current trends, adding insulation to masonry walls can impart disastrous consequences, affecting both thermal comfort and moisture management within walls. Regarding thermal comfort, insulation negates the ability of masonry walls to buffer the



interior from exterior via their innate ability to absorb the sun's radiant energy, store it, then slowly release it to the interior hours later, when it's most desirable. Insulation also has the potential to shift the dew point within masonry wall construction, causing condensation to collect and, in winter, to freeze. Such conditions lead to rampant mold growth, deteriorated wood framing, and spalled mortar and masonry. Saturated insulation loses its ability to insulate, and defeats the whole purpose of adding it. Simply put, exterior masonry walls work best when they are in good repair, with a maintenance program that ensures gutters and downspouts do not overflow, mortar is selectively re-pointed, and stone walls are injection grouted wherever internal voids exist.

The more we understand our buildings, the better we recognize key attributes that are both interrelated and inseparable. The sweet spot of holistic sustainability may be found when they are working in concert in a balance of performance, durability, and beauty. This is truly a revelation.

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TRANSFORMATIVE LITURGY

RECENTLY I PARTICIPATED IN THE MOST TRANSFORMATIVE WORSHIP SERVICE IN MY LIFE. It was held at the Episcopal Divinity School in Cambridge, Massachusetts. I say "transformative" because it demonstrated possibilities of imagination I had not experienced. I say "participated" because, although I had no formal role in the service, I felt fully engaged, moved, and impelled by the liturgy. This was the antithesis of the typical passive church experience. All my senses were engaged: sight, sound, intellect, and emotions.

We gathered around a font filled with water. The presider asked us to repeat portions of the Baptismal Covenant. As we moved past the font to our chairs, we baptized ourselves again with the water. Seating was antiphonal, with rows of chairs facing each other. The pulpit was at one end of the space and the altar was at the other. We faced one another as a community, with the liturgical action taking place first at one end, then at the other, and sometimes in the middle. At the Eucharist we all gathered around the altar. During Communion two large drums sounded with deep, sonorous tones that seemed ancient and deeply fundamental to us in relation to God. I had a similar experience at an annual service of Lessons and Carols, also at EDS. The seating was arranged in a V formation, angled towards the center aisle. The choir was arranged in a shallow arc on the steps to the apse. A few hymns were traditional, sung by the whole gathering; some were medieval, sung by the choir in Latin; some were duets or solos. Song issued from the full congregation in the middle of the space, to the apse, to the organ loft, to the rear of the chapel. The readings ranged from the traditional to poems. While the music and the readings ranged over 2,000 years, there was unity and aesthetic wholeness in their selection.

For me, these experiences raised a question: Why can't all services be like these, feeding us in so many ways?

The Episcopal Diocese of Massachusetts is experiencing modest growth, but much of the country is seeing a decline in adherence. With some exceptions, not many people between 16 and 56 even go to church. One reason, among many, is that the typical Sunday service is frequently boring and takes place in a building that smells musty, is dark, and whose layout stifles creativity, energy, and life.

The EDS Worship Team has a vision to change all that. They are experts in creative liturgy and the imaginative use of space to enable it. They have been brought together in an atmosphere of joy and creativity to make it happen. High standards and the appreciation for excellent music are key ingredients. These experiments are not 1970s, "feel-good," "hang banners and all will be better" efforts. Rather, they are being tried with thoughtfulness and integrity as well as with spiritual and aesthetic wholeness. They appeal to all the senses and to the intellect. The truly exciting thing is that such experiments have the potential to change the Church and to make it again an exciting and life-giving place.

Not all these experiments will be successful, but enough will be credible models to influence the Church. Seminarians will be sent forth with a thirst to make worship more engaging and with examples of how to do it. The next question: How can we shape space to support these experiments?

The author is a principal in Donham & Sweeney Architects based in Boston.





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