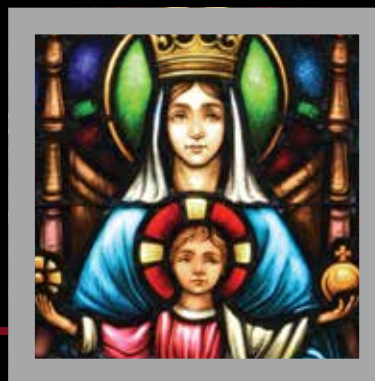
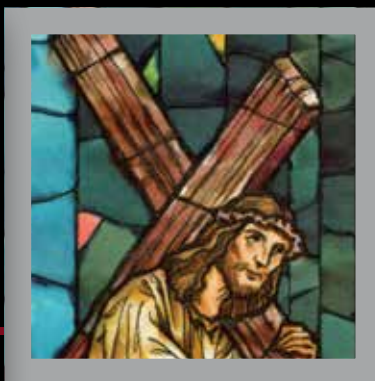
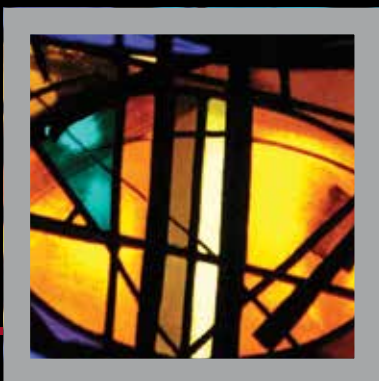
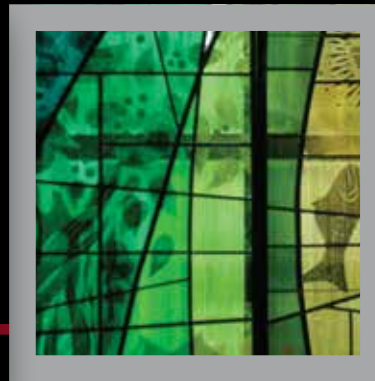
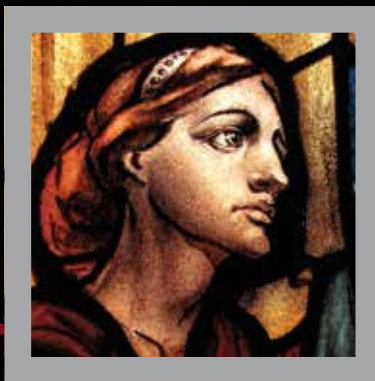
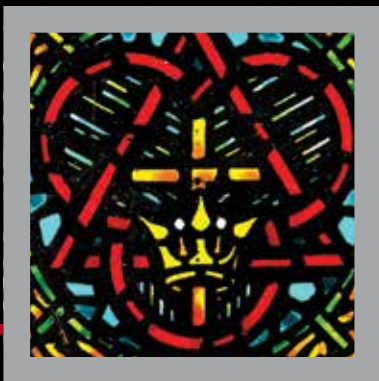




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Theme Issue:
Materials of the Sacred



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NEXT ISSUE

A potpourri of articles on the best in religious art and architecture.

CONTENTS

THEME ISSUE: MATERIALS OF THE SACRED

Angels in the Architecture

Suzanne Bott 6

The Materiality of the Middle

Annie Dixon 8

Sacred Connections Through Concrete

Victoria Young 11

'A Type of Transmuted Divinity'

James Hadley 16

Ceramics' Sacred Power

Chad Martin 18

Wood: A 'Ubiquitous' Sacred Material

Nick and Meredith Strange 22

Shared Universe, Sacred Story

Roberto Chiotti and Michael Nicholas-Schmidt 25

Materiality as an Expression of the Sacred

Rita A. Smith, AIA 28

Stained Glass With a Solar Future

Kathy Kranias 32



ON THE COVER:

Detail of Edoardo Tresoldi's 'Basilica of Siponto,' Manfredonia, Italy. Permanent Installation by Edoardo Tresoldi. Used with permission, Edoardo Tresoldi. (article begins on page 6). Photo: Roberto Conte

DEPARTMENTS

Editor's Page.....	4
Notes & Comments	34
Architects Directory.....	36
Artist/Artisan Directory	36
The Last Word.....	38

INDEX OF ADVERTISERS

ArchNewsNow.com	5	Faith & Form/ID Awards Program	5
Connect to Faith & Form	39	Faith & Form Theme Issue	4
Conrad Schmitt Studios, Inc.	40	J. Sussman, Inc.	38
Dekker/Perich/Sabatini	5	Subscribe to Faith & Form	39
EverGreene Architectural Arts.....	5	Willet Hauser Architectural Glass, Inc.....	2



DOSHI'S SACRED IN THE SECULAR

EDITOR'S PAGE ★ MICHAEL J. CROSBIE

As we go to press with this issue, it has been announced that the 2018 Pritzker Prize is bestowed on architect Balkrishna Doshi, 90, of Ahmadabad, the first architect from India to be so honored.

Many of Doshi's works exude a sense of the sacred. His design for the Amdavad Ni Gufa, completed in Ahmadabad in 1994, takes the form of a subterranean art gallery that possesses the spirit of a hallowed place, a primal space that appears ancient and timeless at the same time. His Kamala House, dating from more than half a century ago (Doshi has practiced for nearly seven decades), is pierced by sunlight that imparts a divine presence.


The architect credits his primary architectural influence to Le Corbusier. Doshi studied Corb's work and then travelled to Paris to work in his atelier for several years, before moving back to India to help complete several Corb projects, such as the Mill Owners' Association Building. Doshi's early buildings show the obvious influence of Corb, particularly in their muscular concrete, which is evidence of another architectural mentor, Louis Kahn, who in the early 1960s designed the campus of the Indian Institute of Management in Ahmadabad, which Doshi worked on.

But the quiet presence of Alvar Aalto seeps through many of Doshi's later buildings. His 1980 Ahmadabad studio, Sangath, shares siting and material similarities to Aalto's 1952 Säynätsalo Town Hall in Finland (both building's wrap around courtyards, use indigenous materials, and are scrupulous in their environmental responses to very different climates). Particularly relevant for the theme of this issue, Doshi's architecture carefully calibrates material presence. As his work has matured, Doshi's architecture reflects greater physical richness: intricate mosaic

work, clay tile, indigenous brick, recycled materials. The stuff of architecture is a natural expression of Doshi's belief that it is an extension of the human body; we most intimately connect with buildings through our experience with their physical reality, not intellectual abstractions.

Doshi cultivated his talent for distilling the presence of the demotic architectural context within which his creations exist—not only their architectonic characteristics, but their social, urban, environmental, and economic factors as well. In this way, Doshi's architecture exhibits an architectural multidimensionality, mindful of all the claims that people exert on their built world.

One sentence leapt out of the Pritzker Prize press release that I believe merits special comment. Doshi's architecture, it is noted, "is both poetic and functional." Is it possible that the degradation of our built environment, marred by placelessness and alienation, is a product of pitting these two qualities in contradiction to each other, implying that the functional is rarely poetic, and the poetic is seldom functional? Doesn't the creation of memorable, life-affirming architecture, and certainly of sacred space from the beginning of time to today, possess these two elements in a reinforcing fusion? Isn't architecture's poetic content an essential functional element, if we wish our buildings to touch the soul? Is our sense of the spiritual seriously impaired if we cannot see the poetic as architecture's primary function?

Ultimately, Doshi's architecture demonstrates an important lesson for the creators of sacred and secular space alike: every environmental intervention holds the potential to invite the human spirit and that of the divine to mingle, to cohabitate, to impart upon the prosaic the dimension of the sacral. How can architecture bless quotidian life, often seemingly just a daily drudge, with the gifts of celebration, reflection, and remembrance? Doshi's architecture shows us how. 

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The Architecture and Art of Community

How do the sacred places that we create serve community needs and become neighborhood assets? More and more faith communities have a new appreciation of their role as resources for those outside their immediate congregation. Works in this issue will explore how creative design can forge strong connections between sacred environments and the communities they serve.

Send us your ideas, projects, designs, art about the connections between sacred space and community!
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Angels in the Architecture

The significance of materials in sacred architecture—what matters most?

By Suzanne Bott



WHEN WE CONSIDER WHAT MATERIALS OR ARCHITECTURAL features are most important in fostering the sublime experience of connecting humans with divinity, it is essential to acknowledge the diversity of faiths and beliefs held by members of the spiritual community. While the goals of connecting, understanding, and uniting with the sacred energy of a higher power are universal and date back to the earliest periods of human existence, the differences in cultures and settings have set parameters on the development of sacred structures. These differences result in buildings that reflect the unique time and place of their development—from simple earthen mounds to monumental temples carved into cliffs; from soaring stone cathedrals to simple glass and timber chapels set gently into the woods. Consequently, the design features that create meaning are exceptionally diverse.

However, there are certain fundamental elements that have been present since the earliest days of human existence that foster a tangible connection from the earthly to the divine and that are universal among cultures. They typically relate to the basic sensory experiences of sight, sound, smell, touch, and even taste, and are the most basic factors that create a shift from the everyday phenomena of ordinary life to the sublime transcendence of an otherworldly awe and reverence.

When prehistoric clans crouched together around flickering fires for warmth, comfort, cooking, and safety, and gazed in awe at the heavens above, they searched for meaning and experiences to provide answers to the earliest existential questions. Small groups banded together to share rites and rituals, ceremonies and decision-making, and to build upon the sacred natural sites to create structures. During periods when




Basilica of Siponto, Manfredonia, Italy. Permanent Installation by Edoardo Tresoldi. Used with permission, Edoardo Tresoldi.

Photo: Roberto Conte

Mystical questions could be answered through ornament and decoration—heavy stone statues, beatific portraits, descriptive tableaux, elegant calligraphy, and richly decorated objects could tell stories that answered the eternal questions. Heavy carillon bells and horns, great pipe organs, deep rhythmic chants, and commanding choirs could send powerful sounds over worshippers to connect their simple existence with the sublime. Familiar features of nature could be found in forests of columns connecting earth to sky, and the heavens could be seen in an array of sun, moon, and stars in a cobalt sky on ceilings above.

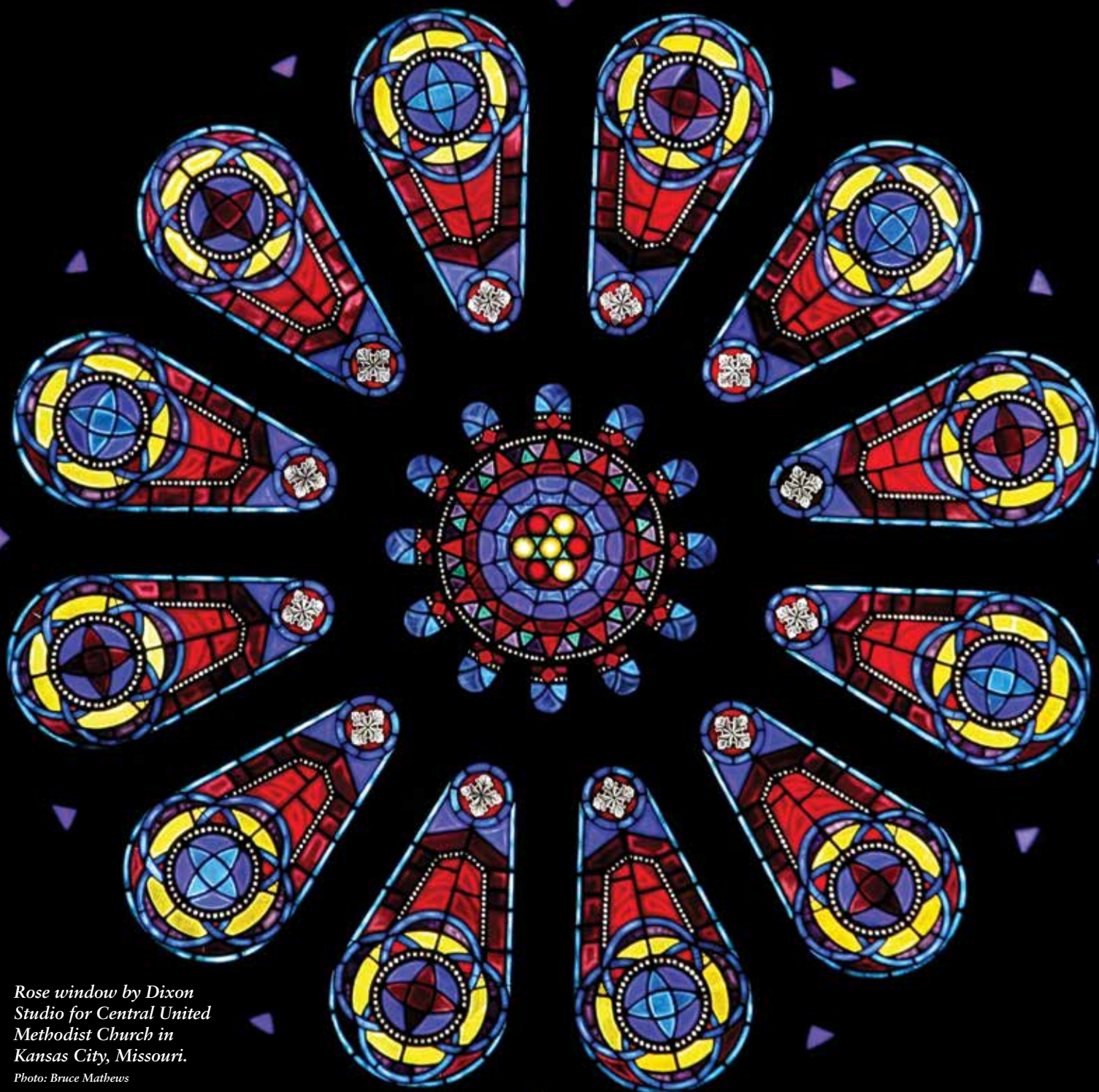
A specific focal point for worship, contemplation, and the imparting of wisdom by spiritual leaders was typically the most significant place in the structure, elevated above the earthly plane, again, symbolizing a connection to the higher power. This space would reflect its significance with its design, materials, decoration, and sacred objects, imparting the power of the sacred to provide worshippers with the ultimate experience of awe to fuel the fire of their beliefs. Regardless of the type of structure, its size or materials, the combination of shelter, beauty, power, connection, and mystery are universal in fostering an experience of the sacred and sublime.

Perhaps the most important feature, however, is the point of entrance into the structure, whatever its design, cave or cathedral, where a person steps across the physical and spiritual threshold and enters into a sacred space. This act of departing the outside world to enter the sacred space is profound in its significance. Features such as gentle stairs, dramatic doorways, hushed foyers, vessels of holy water and gently flowing fountains, dramatic lighting—both vividly bright and mysteriously dark—and the use of symbolic decoration, all contribute to the experience of transition and transformation so deeply tied to transcendence. Even in places where original structures may no longer exist, lost to disuse, benign neglect, or willful destruction, the sacredness of the site remains. The intangible spirit of place, the *genius loci*, the devotional energy stored within the materials, remains, and can be intrinsically and innately sensed by those who cross into a sacred space. There is no question one is standing on holy ground. 

the world was filled with extreme danger and endless uncertainty, the ability to come together and find “common union”—communion with others—provided a secure foundation for facing the unknown and a physical space to explore the questions of the universe.

They watched and wondered as meteors and constellations passed overhead, and followed seasonal passages of fertility and growth, harvest and death. They created stories and ways of connecting their experiences of mystery, awe, and wonder into structures of power, beauty, and meaning connected to the earth and the natural systems of water, energy, and landscape. They turned sources of water into holy wells, sacred springs, and divine rivers; energetic pathways into connective ley lines and labyrinths; and gardens and forests into colonnaded cloisters of herbs and rising columns reaching into vaulted heavens.

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Rose window by Dixon Studio for Central United Methodist Church in Kansas City, Missouri.

Photo: Bruce Mathews

The Materiality of the Middle By Annie Dixon

Places of worship are complex compositions containing a variety of physical elements, each with specific properties, functions, and symbolism. The tremendous range of material choices in design and deco-

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ration for a sacred space can be overwhelming. How on earth are priorities determined, budgets allocated, and materials selected for a space that reaches to the heavens?

The French Jesuit, Pierre Teilhard de Chardin said, "We are not physical beings having a spiritual experience; we are spiritual beings having a physical experience." Likewise, a place of worship is a physical construct that

houses a spiritual environment. Keeping this duality in mind, building or renovation plans can be separated into layers that help define and refine the material options.

LAYERS OF SACRED SPACE

The base layer of any building is its foundation and framework. These are hard materials with utilitarian qualities that provide structure

and strength. They need not be beautiful so much as practical, as they are often hidden from view. If seen, their beauty tends to be in texture and tone rather than pattern or color; if hidden, they are the substructure that underpins the beauty of geometry and proportion.

The middle layer in a religious building is hard surface and tends to be shiny, bright, and often colorful, providing contrast to the flat, neutral surfaces of the structural layer. Here are stained-glass windows, statues, pedestals, mosaics, and metalware. Although not structural, these items are substantial and thus make a visual statement about permanence and value. Some objects may have a practical purpose, but their primary effect is to impart a sense of awe and to bestow a special, even excessive, beauty.

The top layer is softer, lighter in weight, lower in cost, repairable, and replaceable. It consists of the furnishings and finishes in the building: altars, pews, paint. It includes the fabrics of the religious life: linens, vestments, and upholstery. It is seasonal, moveable, or consumable: banners, plants, flowers, candles.

These three layers are intertwined within one physical space to create the form and support the function of worship and to imbue it with a spiritual atmosphere. By unbraiding the layers and breaking down their elements and roles, it becomes easier to envision a balanced whole, prioritize the budget, and to select appropriate materials for each category.



Gold-plated tabernacle for All Saints Catholic Church in Manassas, Virginia, installed by Dixon Studio.

	Base Layer	Middle Layer	Top Layer
Category	structure	art, appointments	furnishings, linens
Life Span	centuries	generations	days, weeks, months, years
Quality	strong, durable	worthy, noble	seasonal, moveable, consumable
Focus	background	focal point	accent
Responsibility	architect, engineer	liturgical consultant, designer	sacristan, altar guild, volunteers
Source	contractor, construction workers	artists, artisans	catalogs, local shops
Lead Time	years	months, years	immediate, weeks, months
Cost	\$\$\$\$	\$\$\$	\$ - \$\$
Funding	capital campaign, mortgage	fund drive, donations	operating expenses
Materials	timber, block, brick, stone, steel, concrete	glass, tile, metal, stone, wood, plaster	wood, paint, fabric, carpet, plants, cut flowers

While each layer is integral to a beautiful worship space, only the middle layer is unique to religious buildings, as it is neither required nor expected in other building types. Indeed, commercial, institutional, and residential buildings are structural shells filled with furniture, fabrics, carpets, and plants, all of which serve only practical or decorative purposes; only religious buildings have a long tradition of stained glass, mosaics, statuary, and metalware, all of which serve a higher purpose.

The base layer is permanent and the top layer temporal. The middle layer is transcendent, with a vibrancy and impact that exceeds its size or square footage. Creating a shiny or colorful contrast to a backdrop of stone, block, or concrete requires only small dashes of tile, metal, or glass, which stand out from their surroundings. Mosaics and candlestands in the sanctuary dance with the flicker of nearby flames, as small stained glass windows glow like exquisite jewels in wide white expanses of walls and spill their colors onto the yard goods below. Wooden and plaster statuary, cathected with the emotions of the faithful, is transfigured to serve as ever-present inspiration and consolation.



Statue of St. Thérèse of Lisieux by Dixon Studio, installed at Catholic Church of St. Thérèse in Gloucester, Virginia, is part of the 'middle layer.'

This is the memorable layer in the sacred space, as it is a rare arch or parament that lingers in the minds and hearts of visitors with the staying power of the color or the sparkle of middle layer materials. The ability to make a lasting impressing on the spirit is a reflection of the semi-permanent status this middle layer maintains in the physical worship space. While not structural, these materials may be adhered to the structure (such as mosaic), or site specific (such as stained glass), or simply heavy or expensive enough (such as metalware and statuary) that they will not be moved or removed without careful consideration or significant effort. Thus, these elements must possess the physical qualities to stay the test of time, and be executed with quality design and craftsmanship that will integrate with seasonal changes and evolving style trends.

ENDURANCE OF MATERIAL PRESENCE

Traditional, tried and true materials speak of a rich history of faith practiced in Roman catacombs, beneath Byzantine domes, and surrounded by soaring heights of medieval


cathedrals. Beauty and truth have become infused in the proven ability of tile, glass, and metal to endure for centuries along with the ministry they manifest. The gold-plated tabernacle harkens back to the Ark of the Covenant and wraps the promise of eternity in precious metal. The stained-glass window lets there be light and lets it bring every color of creation into the worship space. Marble statues embody the rock upon which the Church was built and *smalti* tiles symbolize the tiny but not insignificant part each soul plays in the great mosaic of faith that endures through the generations.

Allowing for the notable exception that proves every rule, the color palette in this layer is generally either broad or minimal, all inclusive or neutral, in order to accommodate the regular seasonal changes as well as the developing trends in styles and tastes in the other layers. The intermediate layer maintains a constant standard while the liturgical seasons cycle and the design fads come and go; these materials must work with lenten purple banners and with green vestments in ordinary time, as well

as with carpet and paint and cushions in the latest shades of the Pantone color guide. As the seasons and trends change around them, so will the predominant hues in the colorful glass and tile compositions, while the metals and marbles maintain their dignified monochrome polish.

Form and pattern may vary through the ages and across cultures but the materials are dependably familiar in this layer of beauty. From Romanesque to Gothic, preindustrial to postmodern, noble materials are employed to create sanctuaries from the fleeting and the meaningless. Baroque and minimalist styles may go to different extremes but their practitioners go to the same esteemed materials to enhance a place of prayer.

Worthy, noble, and even precious materials are expensive and yet this layer is usually the easiest to fund, not only because a little goes a long way, but primarily because of its visibility, beauty, and longevity. Donors feel this is a stable, long-term investment, a legacy that will be seen and appreciated well beyond their lifetimes.

The materiality of the middle is impressive, enduring, and beautiful. Some of it serves a specific purpose in ritual or catechesis; some of it exists specifically for its beauty, to offer a glimpse of heaven. The materiality of the middle is emotive, inspiring, and transcendent; it is the layer in which the Holy Spirit resides. 

Sacred Connections through Concrete

Considering Marcel Breuer's Saint John's Abbey Church and Bartholomew Voorsanger's Chapel at the National World War II Museum.

By Victoria Young

IN 1961, UPON COMPLETION OF THE Abbey Church of Saint John the Baptist in Collegeville, Minnesota, by Marcel Breuer and Associates, the Walker Art Center in Minneapolis produced an exhibition and catalogue about the buildings in process at the abbey. The catalogue included an essay by Breuer's associate Hamilton Smith, who reflected on the church's design from three perspectives: liturgical, architectural, and philosophical. Smith's approach provides a useful framework for analyzing sacred design, particularly when comparing spaces with dissimilar functions and from different eras. But from a perspective of more than 50 years, the abbey church has much to teach us about concrete as a structural and expressive material for sacred buildings, lessons that extend to this very day, such as seen in the design for the National World War II Museum Chapel in New Orleans, Louisiana, by Voorsanger Mathes Architects LLC, led by principal and lead designer Bartholomew Voorsanger.

LITURGICAL CONSIDERATIONS

Although both by definition are sacred space, these two buildings function in different

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ways. Saint John's Abbey Church (1953-1961) sustains the Catholic faith and Benedictine monasticism with all the necessary, fixed liturgical elements—baptismal font, confessionals, lectern, altar, communion tables, monastic choir stalls, and abbot's throne—organized on a spiritual axis from entry to throne. A chapel in a national war museum has a broader purpose, however, as it serves all approaches to spirituality. It is a space for memorials, military graduations, weddings, funerals, and private contemplation. In response to its multiple functions, the 2012 conceptual design for the WWII Museum chapel demands flexibility of its ritual elements, and the altar and seating will be movable to provide the necessary layouts for spiritual engagement or more secular moments, as the chapel is also part of the museum's exhibition strategy.

ARCHITECTURAL ELEMENTS

In his 1961 essay, Hamilton Smith examined architecture as a response to contemporary building technologies and the symbolic forms they create. Breuer's method was to use materials of the present day in order to produce forms appropriate to a building's function. As he noted, "The most interesting developments in structural design are those using reinforced concrete. Here is a completely plastic medium — concrete for compression, steel for tension

in one new material. ...For here the material not only acts as the support of the building, but also as the enclosure, the form." In order to allow the engineered element of the abbey church to shine through, Breuer's team consulted with the Italian engineer Pier Luigi Nervi, and their plans were brought to life by McGough Construction of Minnesota in the use of folded-plate concrete construction on the side walls (poured in place) and roof (gunite). The longest fold of the 12 that create the shell of the building spans 135 feet at the northern entrance and is 15 feet tall. The wall folds vary in thickness from 6 to 8 inches. The layout of the formwork needed to create this "architectural concrete," as Smith called it, was carefully controlled by the firm. They provided the size and direction of the boards, their layout, and the indication of recessed joints to the construction team (and their monk assistants). The builders fabricated 2"x 6" and 2"x 8" pieces of unsanded lumber into formworks typically used only once. This approach generated the "unavoidable irregularities and imperfections" that made the surface "weather gracefully like that of native stone." Breuer intended to have a colorful interior with a gilt ceiling, white-painted sidewalls, and a blue southern concrete block wall. But when the formwork came off the concrete pours, he reveled in the variations of the material's gray color and the

Saint John's Abbey Church, north elevation with concrete bell banner.



The National World War II Museum, aerial view with chapel location at the star.



Saint John's Abbey Church, interior.

marks the wood left behind on it. Exposing the concrete left visible the “bones, muscles and skin” of the building, showcasing “what made the building work” in order to see its “inner logic.” The beauty of the exposed reinforced concrete also provides the church’s primary aesthetic expression.

Voorsanger also values the truthfulness of concrete. “Its visual nature is inherently raw. It can be brutal or sublime. Concrete is inherently ‘candid,’ unlike the use of a veneer or additive surface. It’s not wearing a costume or special clothing. You are going right

under the skin.” He chose reinforced concrete fashioned into precast panels for the chapel’s interior, making a direct connection with its exterior use as one member of a kit of design parts—concrete panels, corrugated metal, and glass—that unify all structures on the site in New Orleans. The 8-foot-tall exterior panels can be up to 35 feet long. Each creates dynamic movement and interest in elevation. For example, corners are turned within the design of the panel itself, rather than having two panels meet at the edge of a building or by splicing the connection together with smaller elements.

Inside the chapel, the 8-foot height is reduced to 4 feet and length varies from 8 to 16 feet. This diminution in scale helps in the process of construction and also provides the design team with the ability to more carefully develop surface detail. Like Breuer and Associates, Voorsanger’s team will design each panel, including its placement and finishes. A variety of smooth, tooled, and bush-hammered surfaces will reveal, according to Voorsanger, “a secondary layer of visual interest that lets the viewer participate in its materiality, not just its visual pattern.” Color will be minimal in the chapel’s interior. The ceiling is intended to have a thin plaster overlay with rivulets painted a variegated silver/gold combination. As at Saint John’s, reinforced concrete is the aesthetic expression of the space.

New iconographies of the sacred must be created at both sites due to the use of modernism as the architectural touchstone. At Saint John’s the bell banner became the focal element in a new symbolic language of Catholicism. Breuer likened this engineered portal of reinforced concrete to “the archaic column, gothic arch, and renaissance dome” [sic]. Because they need to allow for spiritual and private contemplation in the broadest sense, the symbolic elements of the WWII chapel are found in its “intense verticality, subdued light, visual power of the precast concrete, and similar detailing/material use as the rest of the museum,” as Voorsanger notes.

PHILOSOPHY OF AN ARCHITECT

An architect’s philosophical approach to design guides a project of any type from start to finish, and Smith notes that the considerations of optimism, simplicity, and “spatial amplitude” were significant to the team in the completion of the abbey church. An optimistic approach celebrates the joy in the collaboration between a client and architect. At Saint John’s, Abbot Baldwin Dworschak and the Benedictines were interested in “building a church which will be truly an architectural monument in the service of God” with a “modern architect” who had an “orientation toward functionalism and honest use of materials.” They did not go as far as to suggest the use of concrete, but 65 years later it is easy to see how they might have. The same type of steadfast hopefulness can be found in the process of creating the WWII Museum. Its founders, historians Stephen Ambrose and Gordon “Nick” Mueller, dreamt of a museum that “reflected their deep regard for the nation’s citizen soldiers, the workers on the Home Front, and the sacrifices and hardships they all endured to achieve victory.” They were less direct about



WWII Chapel concept design, daytime.



Saint John's Abbey Church, interior looking under the balcony to the altar.



Saint John's Abbey Church, balcony supports at the rear of the nave.


the role architecture would play in achieving their vision, but instead allowed their architectural team to lead the way with an approach that did not glorify war, but rather celebrated peace and freedom.

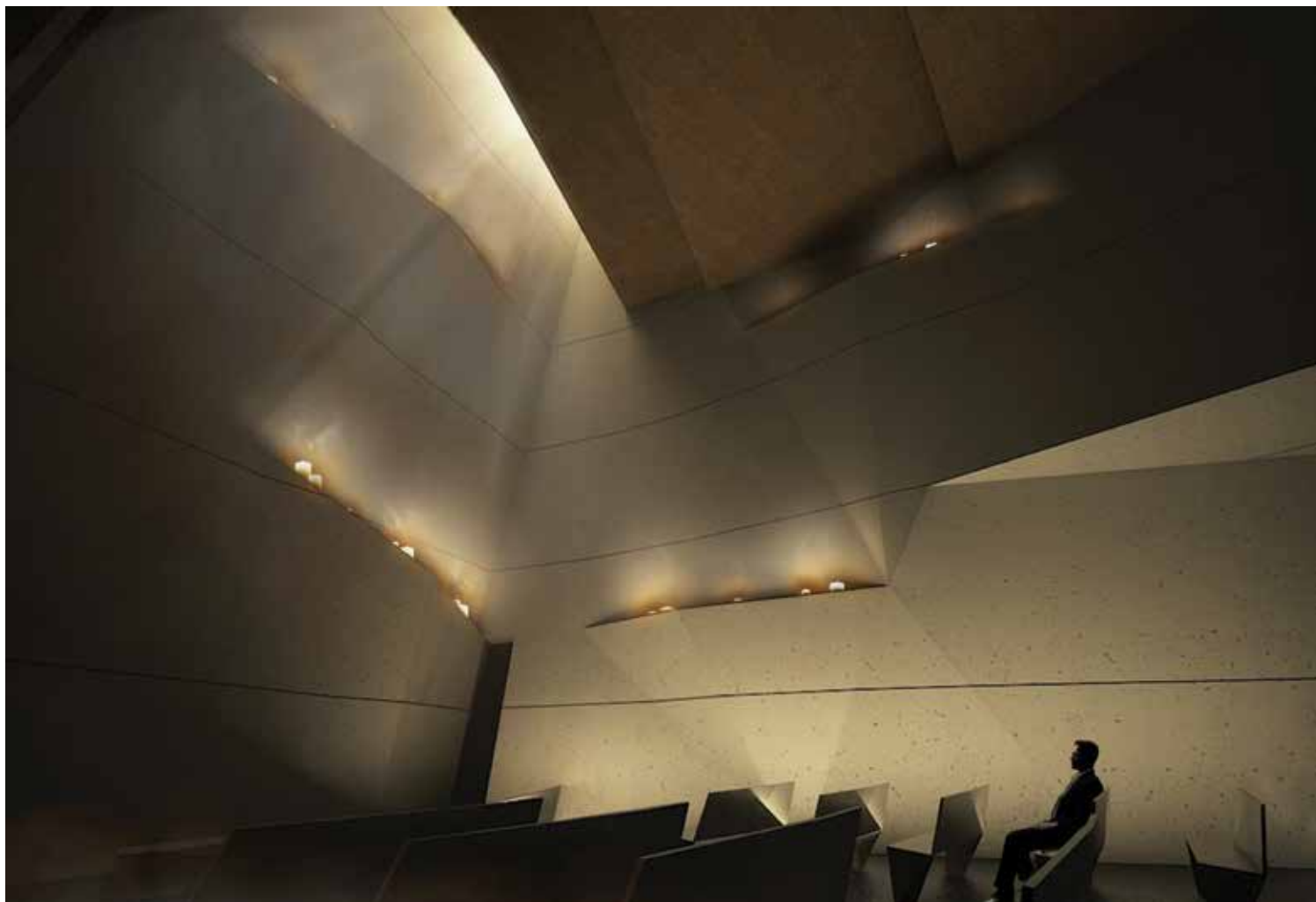
Both clients tasked Breuer and Voorsanger with the completion of an entire campus. In all these buildings, simplicity in design comes from use of modern materials in structures that reveal their process of construction. And in their approach toward “spatial amplitude,” one can understand the value of concrete. Breuer felt that a religious space was one of great size. “I have the feeling, and this is not a very clear-cut program or idea, that any space which is larger than necessary and higher than necessary, and in which the structure and the whole building of the space is visible as it is in all churches...that this space created is simply automatically religious.” He went on to insist that a sacred space grew out of contemporary building technology, specifically reinforced concrete. Voorsanger approaches the design of

a sacred project with reverence and a different level of intensity than if completing a secular one. Concrete is a viable material for either type of building. He wants visitors to be “emotionally displaced and in the privacy of their thoughts, in order to bring currency to their most sacred feelings. If you really succeed the visitor feels inherently special when they walk in. You have almost architectonically levitated them—they feel to a certain extent quietly liberated.” There is the sense in Voorsanger’s words, like Breuer’s, that tectonic elements create a formidable architectural space.

CONCLUSION

When Voorsanger visited Saint John’s Abbey Church for the first time in February 2015, he remarked that he felt Breuer’s spirit there. “I very much enjoyed feeling the individuality of the architect and his design.” In his innovative, engineered forms of reinforced concrete, Breuer gave prominence to the Catholic faith at midcentury. He was not aware, however,

that his work would take on additional meaning as a result of its August 1961 dedication and consecration. He attended the service and was very moved by the ritual, telling Abbot Dworschak, “All I can say Father Abbot, is that this is the first building I have designed and the first object I have designed which has been made so sacred, or, as you would say, consecrated to God.” Voorsanger’s chapel design for the National World War II Museum holds the promise of elevation to a higher place for its users as well. Whether a monk at prayer or an individual contemplating the impact of war, space and the materials used to create it have the ability to uphold the power of one’s thoughts and prayers. The concrete designs of Marcel Breuer and Bartholomew Voorsanger for Saint John’s Abbey Church and the National World War II Museum Chapel reveal the insightful ways in which architects can provide a means for a user to connect with the sacred. 



WWII Chapel concept design, nighttime.

NOTES

1. Hamilton Smith, "Abbey and University Church of Saint John the Baptist," *Design Quarterly* 53 (Minneapolis: Walker Art Center, 1961): 9-25.
2. Voorsanger Architects PC partnered with the firm of Mathes Brierre in New Orleans after winning the 2003 competition for the then D-Day Museum. They operate as Voorsanger Mathes LLC with Voorsanger's team lead in design and Mathes Brierre in charge of construction management.
3. Marcel Breuer, *Marcel Breuer: Sun and Shadow* (New York: Dodd, Mead & Co., 1955), 70-71.
4. Smith, "Abbey and University Church of Saint John the Baptist," 15. Smith defined folded plate as "a system of building in which structural stiffness and the capacity to span long distances is derived from a repetitive pleating or corrugating of the concrete surfaces."
5. Smith, "Abbey and University Church of Saint John the Baptist," 23. All additional quotations in this paragraph are taken from this same source unless noted.
6. Breuer, *Sun and Shadow*, 70.
7. Bartholomew Voorsanger in discussion with author, January 30, 2018.
8. Ibid.
9. Breuer, *Sun and Shadow*, 71.
10. Voorsanger, January 30, 2018.
11. Smith, "Abbey and University Church of Saint John the Baptist," 19, 21.
12. Excerpt from the invitation letter Abbot Baldwin Dworschak sent to competition architects. Building Committee Comprehensive Plans and Reports, Saint John's Abbey Archive, Box 5 Folder 4.
13. "About the Founder: Stephen E. Ambrose, Ph.D.," accessed 1 February 2018, <http://www.nationalww2museum.org/about-the-museum/about-the-founder.html>.
14. John Pope, "National World War II Museum Receives a Record-Setting \$20 Million Gift," *Times-Picayune*, accessed 1 February 2018, http://www.nola.com/military/index.ssf/2015/03/wwii_museum_20_million.html.
15. Shirley Reiff Howarth, "Marcel Breuer: On Religious Architecture," *Art Journal* 38, 4 (Summer 1979): 260.
16. Voorsanger, January 30, 2018.
17. Bartholomew Voorsanger visit to Saint John's Abbey with author, February 2015.
18. Abbot Baldwin Dworschak, "Marcel Breuer: In Grateful Memory," *Saint John's* 21, 1 (Fall 1981): 1.

'A Type of Transmuted Divinity'

By James Hadley

As a material that suggests the presence of the divine, glass has no parallel.

IF ONE WERE TO SEARCH FOR AN UR-SPIRITUALITY OF GLASS IN THE ancient world, its antecedents would likely be found in the “material” of fire and fire’s observable properties. Anthropologists indicate that *Homo erectus* adopted the use of fire as a source of warmth, protection, and a method for cooking food. So strong were the effects of fire control that they ushered in one of the first paradigm shifts for evolving humanity; fire allowed for human geographic dispersal, cultural innovations, changes to diet and behavior. Indeed, there is likely a relationship to emerging human consciousness and the advent of religious experience associated with fire. A primitive sense of cause and effect saw in the sun some divine fiery first principle that ruled the world with the binaries of cold/heat and dark/light. Inasmuch as humanoids used fire, they too could approach the divine, they too participated in some way with the divine other located in the flame. This emerging religious consciousness was even more subtle however, as evolutionary biologists have noted the capacity of the chimpanzee to interact with fire with a level of informed manipulation and not simply the animal

instinct of fear. Perhaps this psycho-emotional perception of fire was the foundation of religious awe whereby humanoids were provoked to respect and fear, approach and flee, the fire-like divine mystery that was capable of both saving and destroying.

Beyond fire’s mechanical history, the flame developed strong psycho-spiritual associations in the history of human culture, becoming one of the primary and enduring themes of religion. An example of the symbol’s ubiquity is seen throughout the ancient world in the form of the phoenix. From Egypt, to Mesopotamia, to the Orient’s *Fenghuang*, a bird is born from the fire of the sun, and is said to die and rise from the mystical fire within. In the West, at least by the time of early antiquity, the rudimentary religious symbol of fire is refined along the lines of philosophical and artistic developments. A key clue is found in Greek mythology. Prometheus steals fire from Helios (the sun) and gives it to humanity and in so doing bestows the gift of memory and intelligence—realities found in light itself. Thus fire’s many characteristics are focused upon its capacity to *illuminate*, a metaphor for sharing in the divine quality of intelligence and wisdom. In this new framework fire specifically is subverted in favor of *light* with its origin in the sun, moon, and stars. In as much as the material of fire becomes secondary, it should not be surprising that this shift was given new material embodiment. Fire was no longer the focus, as much as a material that could be illuminated with light. In fact, from an etymological perspective it is telling that the primary ceremony to celebrate Prometheus and his gift of light and knowledge was the torch race called the *lampadedromia*. One sees clearly the derivative connection with lamps, or receptacles of light. It is at this point really that a spirituality of glass emerges *per se* in the ancient world.

The antecedent of glass, technologically speaking, was the material of beads and mosaics. Vitreous substances such as beads and *smalti* (mosaics) were adept at reflecting light. Subsequently, techniques allowed for glass to be composed into objects. Inspired by natural agates and crystalline rocks that were translucent and could be carved into containers, glass work eventually obtained the same application in Ancient Egypt, Syro-Judea, and finally the Roman Empire, where it was mass produced in Alexandria. It was from the furnaces of North Africa in the first century CE that glass was not only manufactured for domestic and sacred utensils but took on an architectural form being used to fill windows for the first time.

These early lamps and cultic cups of onyx, alabaster, and glass were symbolically poignant in a way other vitreous precursors were not. Unlike beads and *smalti*, translucent containers didn’t simply reflect light; as a matter of science their interior molecular structures actually “contained” light through a process of reflection and refraction. Light simply didn’t glance off the surface, but seemed to rest in the glass and glow outward. As a matter of religious experience, the interior glow of glass was associated with divine light that illuminated the world, the human soul, and the mind. This was most forcefully articulated by the second-century philosopher Plotinus, who argued that the divine principle was not a sun deity, rather it was “the One.” The One spilled



Lycurgus Cultic Cup, Roman, circa 300 C.E.

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out into creation, of which its highest physical manifestation was light. Light was not simply metaphor, but packets of materialized divinity. Glass, therefore, took up its role, especially in Christianity, as the mediating force of this divine substance that, albeit on different levels of reality, both illuminated the human soul with wisdom and made glass glow.

In trying to identify a spirituality of glass today, there is something essential in this historical approach. The capacity of glass to speak of the spiritual is directly related to its ability to visibly mediate light, especially by its capacity to hold light internally. This of course does not happen in industrialized translucent sheet glass, but through seeded, etched, laminated, fused, slumped, and colored craft glass. Perhaps we are shy about accepting Plotinus' assertion that glass reveals a type of transmuted divinity. But I don't think we necessarily should be. Switching our metaphorical framework is helpful; Light is both wave and particle simultaneously—the divine both-and. The speed of light in a vacuum is a universal constant—divine subsistence. Light is present even when it cannot be seen—divine omnipresence. Contemporary spirituality tends to see God as the ultimate ground of the universe and inasmuch God is “within” light just as any other material. At the same time, as a material attuned to our primary sense of vision, it has a unique role in our religious experience. Again, a metaphor is necessary. We are vessels that are to be illuminated, just as cultic glass objects glow from their interiors. Drawing from modern science, we might be surprised to know that the quantum physics that govern light play out in our biological realities, even if today we can't recognize as *homo ritualis* that the sun governs our lives.

To my way of thinking, glass arts that do not embody light are rather without spirit in our places of worship. Modern transparent float-glass windows simply fail because of their complete passability. They fail to draw attention to the effects of light and simply let the observer visually move beyond. Art glass tends to be more successful, but here too the vocabulary of color or image can override the centrality of light, as in Gerhard Richter's pixelated window in the Cologne Cathedral. Similarly, mirrored glass in religious architecture seems rather out of place. Besides Philip Johnson's mammoth Crystal Cathedral, which sought to reflect the California sky and its natural surrounds, such glass is self-referential, simply repeating back what has already been visually queued up to the viewer. No revelations here.

Hence, a spirituality of glass is expressed most clearly, it seems to me, in some object or window that in its material relationship between light and glass has the capacity to draw the viewer into itself and call forth a type of contemplation, searching, seeking out of

that divine fire which seems captured within the material. Recognizing the spirituality of glass on a practical level ultimately demands that religious architecture stop treating windows as holes punched in walls but, rather, something far more profound. 



Bøler Church, Oslo, Norway by Hansen-Bjørndal Arkitekter AS, 2011.



Ceramics' Sacred Power

By Chad Martin

Decorative tiles by Henry Chapman Mercer in St. James Episcopal Church, Lancaster, Pennsylvania, circa 1916.

LIKE MANY HISTORIC SACRED PLACES around the world, the sanctuary of St. James Episcopal Church in Lancaster, Pennsylvania, inspires awe in visitors upon stepping inside and being surrounded by its soft lighting, warm earthy brick walls, luminous stained glass, and well-trod tile floors. When our staff team toured St. James recently, we took in the rich surroundings and were drawn by our guide for a closer look behind the altar.

We were delighted to find adorning the chancel walls an exceptional collection of decorative and illustrative ceramic tile by Henry Chapman Mercer, a leader in the arts and crafts movement of the early-20th century.

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These tile installations, dating from 1916, illustrate a series of biblical scenes, animals, and whimsical characters. While too small a scale to see clearly from the pews, they add a layer of color, whimsy, and religious iconography to the tapestry of images throughout the church. The Mercer tiles captured our attention, delight, and interest more than the Tiffany windows or any other feature of the space at St. James. They were the serendipitous treasure found on a daylong venture to several historical architectural gems.

This response, an apparently intuitive affinity for and familiarity with the material, is common for people who have the opportunity to interact with clay and ceramic objects. Novices and professional makers alike reflexively respond to clay with warmth and intimacy. How does the very substance of clay convey a sense of the holy? How do ceramic objects and architectural elements help create a sacred place?

CLAY'S SACRED, MYSTERIOUS DIMENSIONS

Sociologists of religion have long attempted to explain what makes an object or place sacred. In her deep study of religious spaces along one bustling urban corridor in Philadelphia, Katie Day outlines contrasting views succinctly:

Discussion of the sacred begins, and sometimes ends, with Mircea Eliade and Emile Durkheim, who differed on whether sacred meaning is inherent in an object or space (Eliade) or socially constructed (Durkheim). For both, the sacred is defined as distinct from that which is secular (or "profane"). Those who adopt Durkheim's approach (social constructionists) argue that space is not inherently sacred but becomes so through the work of sacralization.¹

The later viewpoint is reinforced by an understanding of ritual as transformative action, necessary for growth and social change



Mercer tiles in St. James Episcopal Church are part of the building's narrative fabric.

among human communities. Tom Driver explains, saying "that ritual embodies the principle of growth or dynamic process through which a society transcends itself, praising, evaluating, rebuking, and re-molding life as it is presently lived."² Sacred space is constructed through communal experiences that are themselves about transformation. The heart of this article will suggest that.

Clay as a craft material has both inherent qualities that convey sacredness, as well as qualities constructed through interaction with the material that deepen how ceramic objects and architectural features foster a sense of the holy. Let us begin with what is inherent. Clay must not only be shaped, it must be transformed in order to become ceramic. This distinctive quality, if not completely unique,

is at least quite unusual compared to other art media and craft materials. Whereas paint simply must dry to become permanent or wood is only cut or carved in a reductive process to reveal its beauty, clay must instead be chemically transformed into a new substance through the firing process in order to become lasting and functional. Prior to this change, no matter how long it has been out of the ground, and no matter how often it has been reworked or left to dry, the clay can be slaked back down to a muddy and formless state.

The transformation inherent in the ceramic process makes clay a material ripe for sacred meaning and purposes. Despite centuries of developing more refined, mechanized, and predictable methods for this process, for many artists it remains reverent and mysterious. This

sense of mystery and magic is so much a part of the process that for both ancient and modern ceramic artists the firing itself may be highly ritualized, complete with appeals to kiln gods: "mythological guardians that supposedly bring good luck to kiln firings."³

The plasticity and malleability of clay before it has been fired adds to this transformational quality. Its malleability lends itself to a very intimate relationship between the maker and the material. Clay is one of the few craft media able to be completely shaped by the maker's bare hands without the aid of tools. While this intimacy is not inherently or universally special (and it is often mediated by many tools, from the most rudimentary to increasingly technologically sophisticated), clay artists across cultures experience the material in terms suggesting a sacred encounter. These subjective and constructive experiences add to the potency of the material for liturgical objects and sacred architecture.

The Hebrew prophets and other writers of the Judeo-Christian scriptures saw clay and the work of potters as vivid imagery for ideas about God. Among several scriptural references, the anecdote in Jeremiah 18 is a fitting example of this metaphor: "Then the word of the Lord came to me: 'Can I not do with you... just as this potter has done?' says the Lord. Just like the clay in the potter's hand, so are you in my hand." (Jeremiah 18: 6) While the prophet never claims the material itself, or even the object the potter is creating, is sacred, yet the material and the process vividly suggest sacred qualities to the prophet.

The most vivid way to see how ceramic art and architectural elements contribute to a sense of the holy is by noticing examples of contemporary ceramic artists creating objects designed for ritualized and liturgical purposes.⁴

JUSTIN ROTHSHANK

For the last decade Justin Rothshank has been among the most active ceramic artists in the North American context.⁵ His prolific body of work includes several examples of vessels created for ritualized and liturgical settings. His innovative work in decal application on a variety of surfaces adds layers of meaning and imagery to these vessels, often including political and religious images.

Recently the High Museum of Art in Atlanta, Georgia, commissioned Rothshank to create a work in clay featuring images derived from photographs of the Civil Rights movement from the museum's permanent collection. Rothshank opted to design a large-scale communion set with layered surfaces of photographic images.

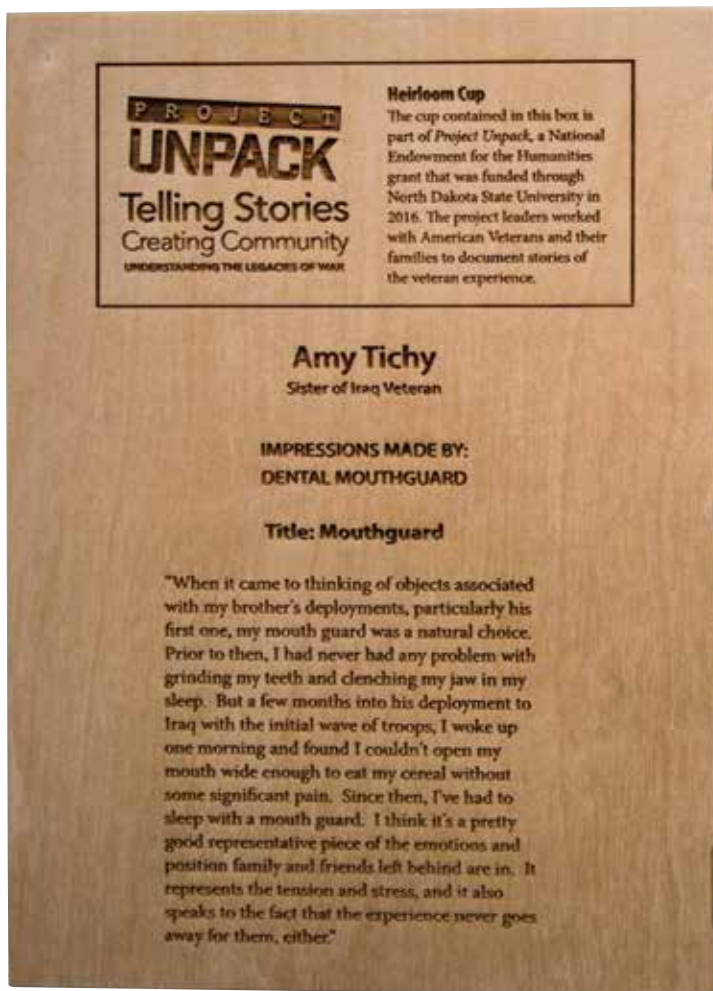


Photo courtesy of the artists

One of the cups Michael J. Strand and Josh Zeis created with veteran families for 'Project Unpack.'

Another set of ritualized objects are the funeral urns commissioned of Rothshank for the family of Michael Sharp, a United Nations peacebuilding specialist killed last year in the Democratic Republic of Congo.⁶ Both the urns and the communion vessels combine fluid forms reflecting the plasticity of the material with vivid, photographic imagery layered onto the surfaces. The combination conveys subtle meaning inherent in the material itself as well as overt meaning presented in the images. The set of urns goes further with its wood-fired surface forged by the interplay of ash in the atmosphere of the kiln hinting at the familiar language of burial rites: "Ashes to ashes, and dust to dust."

MICHAEL J. STRAND

Michael J. Strand is another widely celebrated contemporary ceramic artist who intentionally designs projects where ceramic objects invite ritualized opportunities for human connection and community.⁷ A recent project underscores the transformational experience intrinsic in the ceramic process. The Heirloom Cup Project, part of the larger, interdisciplinary Project Unpack: Telling Stories, Creating Community, Understanding the Legacies of War, features pieces collaboratively made by Strand and fellow artist Josh Zeis with military veterans. In this project the artists formed plain, wheel-thrown ceramic cups. Then they sat down with military veterans and their families to hear stories of their service. The veterans were also asked to bring personal items



Photo courtesy of the artist

Ceramic communion set by Justin Rothshank uses images from the civil rights movement.



Nicholas Kripal's large ceramic piece, 'Cathedral Labyrinth' fits seamlessly in the chancel of Trinity Cathedral in Pittsburgh, Pennsylvania.

that were symbols of their military experiences. "These objects ranged from Bronze Star and Purple Heart medals to a bullet-ridden canteen that saved the life of a veteran during World War II."⁸

While the cups were still "leather hard" -- soft enough to add imprints, carvings, and other surface treatments -- Strand and Zeis worked with each veteran to complete a one-of-a-kind cup to reflect their experience of military service by making physical impressions in the clay with the personal object. The cups were then finished with a uniform glaze. In a project exhibition each cup was displayed with a storage box laser cut with the veteran's name and personal narrative.

As Strand explains, "The importance of the cup lay in its ability to tell the story to future family generations. This was our vision for the project. It is an heirloom, meant to capture

important and relevant family history."⁹ In this case, while not an overtly religious ritual, the project nonetheless shows the inherent meaning-making quality specific to clay as a plastic medium that can be shaped by novice hands and a venue for ritualized ways to reflect on life-changing personal experiences within the context of a shared community.

In the related Cupumenical project, Strand packaged a handmade cup, a camera, and a diary intended to create social bonds between four religious leaders. Over a period of a couple years, the box of items traveled between a Zen Buddhist priest, a Lutheran pastor, a Jewish rabbi, and a Muslim imam. Strand invited each leader to use the cup in a ritual setting of their faith. The leaders were asked to document their experiences in photographs and writing. As the cup traveled from ritual to ritual its shared use added new layers of meaning across faith traditions in the ritual events, for the participants, and in the object itself.


NICHOLAS KRIPAL

The use of clay as a material for sacred places and purposes is by no means limited to functional pottery. To note but one contemporary example, Nicholas Kripal, a long-time Philadelphia-based artist, often created site-specific, large-scale ceramic sculptures installed in sacred settings. Kripal's quiet, weighty pieces fit almost seamlessly into their adoptive spaces and at the same time invite viewers to observe

the space in new ways. They are timeless yet innovate beyond their often historic settings.

HUMAN TOUCH, HOLY SPACE

I returned recently to St. James in Lancaster to spend more time up close with the Mercer tile in the chancel there. It felt like a privileged moment, to stand in a sacred place typically reserved for the bishop, rector, or other leaders of the liturgy, and to observe these architectural features close enough to touch by hand. Being made of terracotta and matte glazes, the tiles are the fitting complement to the church's exposed brick Romanesque interior. Being of such modest scale, they invite the viewer to come close, to touch, and to pay attention. And unpretentiously illustrating narrative scenes with a light-hearted, almost cartoon-like style, they are the balancing complement to the many more formal and ornate architectural features and liturgical objects throughout the church. This collection of Mercer tile installations pair human touch with holy space.

My experience of this sanctuary was transformed, deepened, and more joyful because of these intimate, handmade ceramic pieces. This intimacy and transformative quality is at the heart of what makes clay a ripe and fitting material for sacred places. And the disarming delight our team experienced upon discovering these pieces highlights why so many people across cultures have encountered a glimpse of the holy through clay and ceramic objects. 

NOTES

1. Katie Day, *Faith on the Avenue: Religion on a city street*, photographs by Edd Conboy (New York: Oxford University Press, 2014), 30-31.
2. Tom F. Driver, *Liberating Rites: Understanding the Transformative Power of Ritual* (Boulder, CO: Westview Press, 1998), 189.
3. Martie Geiger-Ho, "Origins of Kiln Gods," in *Ceramics Monthly* 61: 8 (October 2013), 26.
4. For the purposes of this brief article, the examples here have been limited to a few poignant North American artists and ceramic pieces. A full treatment of this

topic would necessarily include examples from a much broader array of religious settings, cultural traditions, and artistic techniques. Hopefully the examples presented below suffice to illustrate the thesis presented here.

5. Rothshank was recognized as an "emerging artist" by *Ceramics Monthly* in 2007, marking the starting point of a prolific exhibition and publication record: "Emerging Artists 2007," in *Ceramics Monthly* 55: 5 (May 2007), 43. See also <https://rothshank.com/justins-work/publications/>, accessed Feb. 6, 2018.
6. Lauren Jefferson, "Alumnus Michael

J. Sharp among confirmed dead in Democratic Republic of Congo," at EMU. EDU (March 28, 2017). Online at: <https://emu.edu/now/news/2017/03/alumnus-michael-j-sharp-among-confirmed-dead-democratic-republic-congo/>. Accessed Feb. 6, 2018.

7. Joyce Lovelace, "The Village Potter," in *American Craft Magazine* (April/May 2014). Available online at: <https://craftcouncil.org/magazine/article/village-potter>. Accessed Feb. 8, 2018.
8. Michael J. Strand, unpublished note emailed to the author on Feb. 8, 2018.
9. Strand.

Wood: A ‘Ubiquitous’ Sacred Material

By Nick and Meredith Strange



Photo: KC Ramsey

Meticulous care was taken in the recent restoration of the woodwork of the Duke University Chapel.

The recent restoration of Duke Chapel teaches some lessons about preserving the ‘soul’ of this common material.

WOOD IS SO COMMONPLACE IN SACRED SPACES that we seldom pause to think about its presence. Its use seems unremarkable, even in buildings as unusual as Tadao Ando’s reinforced concrete Church of the Light and Hariri Pontarini Architects’ cast-glass and marble Bahá’i Temple of South America. In both of these striking, contemporary structures, wood floors and furniture seem as unsurprising as they do in more traditional stone, brick, or clapboard buildings. Part of this inevitability results from wood’s very nature.

It is easily found and relatively easy to work— attractive characteristics for those with limited resources. And yet, it can also be shaped into elaborate forms which demonstrate a congregation’s wealth and commitment to its faith. Furthermore, wood is warm to both sight and touch. Its color and texture can provide a comforting contrast to the sometimes immense, soaring interiors of religious spaces.

Ironically, wood’s very ubiquity works against it. We can all agree that wood can be practical and beautiful; nevertheless, we often fail to realize how it can be damaged by our tendency to take it for granted. Its familiarity encourages carelessness. Those caring for sacred spaces with particularly noteworthy woodwork are to be commended if they are sensitive to the importance of conserving it against the everyday hazards of normal use. If the building is famous enough, normal use can



Photo: Courtesy of The Century Guild

Duke University Chapel from main quad.

include more than activities usually associated with religious services.

BRINGING DUKE CHAPEL BACK

Such is the case with Duke University Chapel in Durham, North Carolina. When it was completed 83 years ago, it became not only a center of worship for the university but also a tourist attraction and concert venue. Thousands of people have admired its chancel and its organ casework, attended services and performances there, and generally left their mark on its pews and other furnishings. Time has also left traces: dust and dirt and the dulling of old finishes; scratches, cracks, and visible damage from decades of changing temperature, variable humidity, and even the occasional earthquake. In 2015, the University responded to the need to repair structural attrition, replace the roof, and modernize the chapel’s systems, which meant closing it for a year.

Included in this renovation, the first major one since the chapel’s dedication in 1935, was restoring and conserving most of the

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existing woodwork. Although our company, The Century Guild, has been building and restoring furniture for sacred spaces for over 35 years, this task differed in sheer volume from any we had faced before.

At over 18,000 square feet, the interior of the chapel is large and contains a correspondingly large number of wooden pieces necessary for it to function as it was meant to. Besides 120 pews ranging in size from 10- to 19-feet long, there are doors, modesty panels, chairs, choir stalls, choir screens, 60-foot-tall organ casework, built-in clergy seating, altars, and a 25-foot-tall reredos. Since the Chapel is neo-Gothic in style, much of this woodwork is elaborately carved and most of it was showing its age. This was perhaps most evident in pieces such as the choir screens and main altar where tiny carvings and bits of Gothic tracery were worn down or missing entirely. And then there was dust.

The task, therefore, was basically twofold: restore or replace any missing parts; clean and refresh the existing finishes. “Refresh” because, at the very beginning everyone involved

realized that it would be wrong to make the woodwork look shiny and new. The age of the chapel and its history on campus should be acknowledged. We knew that if we simply sanded the wood and applied lacquer, we would alter the original finish and patina of the wood. Yet, in many cases, the original finishes were severely scratched and worn, as well as mottled due to uneven application of a tinted varnish—either originally, or over the years. The challenge became to develop a method to remove scratches yet preserve the color and character original to the wood, merge in new

wood repairs, and finally build up a new finish that blended with the original. This was especially challenging as much of the woodwork had originally been fumed with ammonia as well as “sandblasted” with walnut shells to establish an “old world” character.

All this was further complicated by the small size of our company, the amount of work to be done, the limited time frame in which to do it, and by the number of other projects happening concurrently—a logistic knot ultimately simplified by having us begin work on the pews 18 months before the chapel was closed. This



Dusty Organ Tower: Hard-to-reach and very dusty organ-casework tower before cleaning.



Cleaned Organ Tower: Same tower after cleaning, seen through specially erected scaffolding.



Typical pew before restoration, showing dulling, scratches, and other wear.



Choir-stall pews much brighter after restoration.

Photos: Courtesy of The Century Guild



Altar restoration in progress—lighter areas are newly applied bits waiting to be carved and colored.



Main altar section after restoration.

reduced the amount of work to be done during the closing and it gave us an opportunity to test possible cleaning and refreshing methods in our studio before we had to apply them to the very large amount of woodwork in situ.

Because the chapel was still open for services, we could only work on the pews in groups of five, which were delivered to our studio and then exchanged two weeks later with a new group. Most of the pews bore witness to their years of loyal service. Their ends and support legs were discolored at the floor with residues from mopping and wax. Many center-leg supports were weakened. Decades of hand-wear had created a black, waxy residue on the backs and end caps. In some areas, the finish was totally gone. And there were chips, dings, and scratches everywhere. Furthermore, the longer pews had been built in two lengths and then seamed together. Often, the seaming joint had been compromised, pulling the two lengths apart.

‘WELL-CARED-FOR,’ NOT ‘REFINISHED’

In keeping with everyone’s desire to maintain a “well-cared-for rather than refinished look,” we hand-cleaned the existing finish with mineral spirits and abrasive pads. Where scratches were particularly deep, we softened the finish with solvents thus giving the tinted varnish a more even appearance. In the worst cases, we scrapped the damaged finish off, being careful to leave as much of the fumed-oak color as possible. We then re-amalgamated the remaining finish with solvents and sanded lightly. Where the fumed-oak effect was missing (such as on repaired or replaced carvings) we treated the wood with a chemical that

changed the color of the oak without using ammonia. We then applied two to three coats of tinted wiping varnish, with special attention paid to those areas where the color of repairs needed additional work.

Once the chapel was officially closed, we began work on the chancel furnishings that could be removed. Those we were not working on in our studio, along with the restored pews, were moved into climate-controlled storage to prevent any damage from changes in temperature or humidity. With the exception of the choir stalls and screens, the chancel pieces presented a slightly different challenge from that of the pews. The main altar, for example, while needing a refreshed finish, was also missing some 200 bits of carving, many of them very small.

Replacing those missing bits was where our experience in furniture making became most important. We estimate that throughout the whole project we had to fashion more than 2,000 patches, apply them to the affected areas, and then carve and color them to match the existing originals. Once that was done, we refurbished everything using the techniques we had perfected while working on the pews.

Having restored what could be moved, we turned our attention to the chancel’s in situ woodwork, much of which was simply dirty or scratched. Modifying the method used on the pews, we applied a diluted organic cleaner with a stiff nylon brush and then wiped it off with clean rags. When it was necessary to expose “new” wood, we artificially aged it with two or three coats of wiping varnish and then burnished it with natural-bristle brushes until it reached the desired sheen.

Because there are many square feet of in situ woodwork, much of it in organ casework as much as 65 feet high and accessible via specially installed scaffolding only, this effort took three months of concentrated attention. With the highest and hence dustiest casework, we began by vacuuming the carvings before using the same apply-organic-cleaner-wipe-and-if-necessary-wipe-again method used elsewhere.

The reredos, with its multiple figures, scenes, and symbols carved in English lime wood, presented a special challenge. Lime, a type of linden or basswood, is soft and the carvings are intricate and delicate. These were dusted by hand, using some unusual brushes, and then softly polished to bring out the details.


Throughout the process—pews, furniture, fixed woodwork—we used a minimal amount of chemicals—no strippers, no sprayed finishes. The end result, while very labor intensive, meets the goal of making the chapel’s woodwork and furniture look well cared for and of an appropriate age.



A toothbrush is used to clean the teeth and other details of a figure on the reredos.

PRESERVING THE ‘SOUL’

While not all the stewards of churches with noteworthy woodwork can muster the resources for such an intensive approach, it is best to remember that wood was once a living substance and responds to care. Regular dusting and applications of gentle cleaners such as lemon oil will go a long way toward preserving its spirit.

And there is spirit. As woodworkers, we would be the first to agree with the great George Nakashima’s belief that every tree has a “soul.” Perhaps wood is a felicitous choice for sacred spaces for reasons other than its practicality and beauty. 

Shared Universe, Sacred Story

How materials pave the way for sustainable sacred space.

By Roberto Chiotti and Michael Nicholas-Schmidt

Despite the many advances in design technology, from orthographic representation to BIM software, the creation of space is still the act of a maker selecting and organizing materials. And while intellectual analysis may augment our senses, people must still inhabit spaces with their bodies. The sensory experiences of materiality and the associations they evoke remain a fundamental language of architecture.

The explosion of contemporary materials available to the designer provides a wide palette in the design of the sacred environment. It has not been our practice to ascribe any one particular material with the inherent dignity or the power to evoke the sacred. Rather it is an approach that reflects the nature and history of the material in order to reveal its natural beauty. The raw building blocks of creation are the same tools with which we construct experiences of the sacred. Grounded in a love of creation, the designer's interaction with the material becomes a chance to evoke in the user experiences of the Creator. These conversations between maker and material, and between material and user, constellate a greater understanding of and connectedness to the "unseen order." The designer, in conversation with natural materials, has an opportunity to articulate a unique vision of humankind's relationship with creation and the Creator.

But to achieve this, the material voice must first be heard, understood, and then respectfully engaged by the designer. For example, when commissioned to re-design the chapel at Loretto Christian Life Centre, we first spent a lot of time wandering the site, coming to observe and learn from both its geological context immediately adjacent to the Horseshoe Falls, and its historical context, as one of the first missions for the Loretto Sisters after arriving in Toronto from Ireland in 1847. The structure is built of local limestone, embedded with the fossilized remains of the million-year-old primordial sea creatures that literally served as the molecular building blocks of this noble material chosen by the builders for its strength and durability. Elsewhere, in the

garden where their foundress Mother Theresa Dease is buried, we discovered the remains of a 150-year-old felled tree. The stump, stubbornly rooted to the earth, appeared fecund even in death, a gaping hole in its midriff—the vestigial evidence of a large branch that had rotted and extricated itself long ago. This decidedly feminine form established for us the theme of the renovation: to transform a patriarchal, inwardly focused chapel that had turned its back on the falls into a sacred space that reflected the sacred place, the sacred mission, and the sacred memory of the sisters who had taught generations of young students on this site.

Materiality is inevitability linked to place and time. The forces of creation and inhabitation leave their mark, lending unique colors, textures, and patterns. These distinctive features connect us with the processes that shape our lives and our planet. Materials become mnemonic of the revelatory experiences of creation. The material experience is therefore not just sensory. The colors, textures, and patterns we experience connect us with the memory of our natural condition. The beauty inherent in the landscape, whether a walk through the woods, or a mountaintop vista, is there too in the material, albeit shaped and manufactured through human agency. These memories shape our experiences of the material.

In our practice of architecture we have sought an ever-deepening awareness of the inherent gifts of the materials we use, and their power to connect us with the sacred. The fundamental elements of our landscape - stone, wood, and light - continue to reappear in our work and help us articulate the sacred. The enormous variety of sources for stone and wood, combined with the myriad of manufacturing processes which cut, shape, refine, and finish the raw material provide much inspiration. Often, however, it is the careful decision to pause, and leave a space empty, which connects us best to the divine. Light, or the careful arrangement of the absence of material, also has a myriad of modes and qualities.

STONE

Stone is perhaps the material most associated with the sacred. Practically, it has always been a material reserved for significant structures. The complexity of removing it from



Photo: Larkin Architect Limited

Tree stump found on the site of the Loretto Christian Life Centre became an important part of the design.

the earth, the challenge of transporting it to the building site, and the logistics of stacking it high in the air mean that the use of stone suggests a super human effort. Its durability exceeds human life spans, allowing it to remain for generations. These qualities of endeavor and permanence remain significant experiences of the sacred.

Some stones are formed in an instant by the immense heat and pressure that force the molten core of our planet up to the surface, allowing it to cool. Others are formed over generations as layer upon layer of material is stacked and compressed. Some rocks are formed by the incredible metamorphic properties of heat and pressure that transform them. Caught up in the midst of these incredible processes are the comparably feeble organic structures that become immortalized in the traces and impressions of fossils.

The stone selected for the finish of the narthex of St. Gabriel's Passionist Parish reveals these processes. Comprised of a dolomitic limestone quarried near Tyndall Manitoba, Canada, from whence its name is derived, it came into being some 450 million years ago during the late-Ordovician Period when a great inland sea occupied much of North America. Tyndall stone is cream-colored

CO-AUTHORS ROBERTO CHIOTTI, PRINCIPAL, AND MICHAEL NICHOLAS-SCHMIDT, SENIOR ASSOCIATE, PRACTICE WITH LARKIN ARCHITECT LIMITED, DEDICATED TO THE DESIGN OF SUSTAINABLE SACRED SPACE.



Photo: David Drake

Interior of the redesigned Loretto Centre chapel, which incorporates tree stumps.



Photo: Larkin Architect Limited

Tyndall stone incorporates fossil evidence in the surface.

with a pervasive mottling of darker dolomite formed by unknown burrowing organisms and is also characterized by larger embedded fossilized remains of sea snails, mollusks, cuttlefish, trilobites, corals, and other primordial sea creatures. Its presence as a building material for a church dedicated to the eco-theology of Passionist Father Thomas Berry grounds our Christian story within the larger geological narrative of the Earth's evolution, reminding us that revelation comes to us from both scripture and God's creation.

The further process of extracting the stone from the earth and transforming it into a practical building material requires an immense amount of time and energy to shape and finish the blocks appropriately. Stone not meant to be exposed was left in a rougher state to conserve time and energy as compared to the intricate processes necessary to further shape, carve,

and smooth finished pieces. In the basement of the Church of Our Lady, the stone foundation was left as a utilitarian material used to support the church above, hidden beneath layers of less expensive wood lathe and plaster added to give it a finished appearance. During the restoration and renovation of the church and basement hall, our prescribed mandate was to restore and repaint the moisture-damaged plaster in an effort to return a finished look to the social spaces. Material testing revealed that moisture inherent in the stone was going to continue to cause deterioration of the plaster finish. Consequently, a decision was made to remove the plaster and expose the rough stone finish. This solution facilitated the "drying" out of the stone while providing the most cost-effective and durable finish. Serendipitously, the utilitarian tooling and shaping of the stone lent a powerful experience of the sacred to the new spaces. It is perhaps that exposed interaction between the human hand, and the hard stone, which revealed something of creation. The tool marks, pitted surface, and imperfections connect us with the frailty of the human experience in sharp contrast to the enduring permanence of the geological.

WOOD

Wood can evoke the sacred, particularly in North America. Prior to the arrival of Europeans, it is alleged that a squirrel could travel from coast to coast amongst the tree tops without ever having to touch the ground. The soaring vaults of high Gothic cathedrals have

been compared to a forest canopy of ancient trees, and vice versa. For North Americans the warm tones of wood evoke a sense of warmth, home, and safety. Much of our built environment has been constructed of wood and today wood remains a ubiquitous building material, considered even more important from a sustainable perspective as a rapidly renewable resource and for its ability to sequester carbon.

When it came to the design of a new church for the Holy Spirit Parish in Barrie, Ontario, "Simple Gothic" was the term the building committee chose to best describe a contemporary worship facility with a traditional look and feel that drew its inspiration from a rich history of Gothic church design while also embracing a modern aesthetic and palette. In response to this imperative, we looked to wood as the natural material of choice. Using glue-laminated timbers sculpted to recall groin-vaulted Gothic cathedrals, the wooden ceiling at Holy Spirit embraces the congregation with a warm canopy, recalling the grandeur and dignity of the West Coast Boreal forests.

LIGHT

When asked by his own community to suggest an appropriate material response for the design of a new church for St. Gabriel's Passionist Parish, Fr. Thomas Berry replied with this simple question: "How will you address the sun?" In this instance, the intentional desire to work with light as a material became the focus of the design. In contrast to most churches that are inwardly focused and employ stained glass to create an otherworldly liturgical environment, the entire south façade of the worship space at St. Gabriel's is glazed with clear glass. This has been done in order to passively harness the winter sun's energy and to extend the sacred space of the worship area into the sacred space of the world beyond, emphasizing that when we gather to worship, we do so within the greater context of creation; a primary revelatory experience of the divine. The remaining three walls of exposed architectural concrete serve as a constantly changing canvas for the dynamic play of sunlight that is filtered by artist David Pearl's colored glass panels of the continuous perimeter skylight and further fractured by wall-mounted dichroic-coated reflectors. In effect, the cosmos is invited to give shape to the worship environment and participate in the ritual action of the liturgy. Similarly, time also takes on a cosmic dimension as the sun appears to traverse the sky above. Seasonal influences on the sun's intensity and inclination together with the daily diversity of weather conditions ensure that no two masses experience an identical liturgical environment.

Photo: Shai Gil

Photo: Shai Gil

Photo: Martin Kroules



Newly exposed foundation stone in Church of Our Lady expresses the interaction of human hand and hard stone, an element of creation.



The wood groin vaults of Holy Spirit Parish suggest the canopy of the forest.




Cosmic-colored light in St. Gabriel's Church helps to orient it to the sun.

Movement from the south to the north is reinforced by the colors of the skylight. Brilliant yellows are situated closest to the sun's intense light at the south end whereas the deeper, richly hued azure blues and crimson reds at the north end provide a beautifully mysterious and meditative light for the chapel of reservation and the adjacent reconciliation room. The ceiling of the worship space stops short of the walls on all sides, appearing to hover weightlessly over the congregation, the cosmic colored light of the perimeter skylights spilling into their midst from an unseen source high above.

Incorporating these and other sustainable design strategies contributes to an understanding of early scriptural teachings that emphasized the sacredness of all creation and not just the sacredness of humankind. As sacred space, St. Gabriel's presents a "Gestalt whole," and like the medieval cathedrals of Europe becomes itself a form of Catechesis, engaging the senses and inviting transformation.

This engagement with materiality leads to a desire to act sustainably in its use. We must consider the life-cycle impact of the buildings we create and the materials we use. The selection of recycled or rapidly renewable materials will naturally lower the ecological impact of the construction process. Greater awareness

is needed of the embodied energy in certain materials as a result of the manufacturing, transportation, and installation processes. Over their lifecycle, the off-gassing of materials, maintenance requirements, and durability can all contribute to the equation of responsible use. Finally, at the end of a material's life, we consider its ability to be recycled, reused, or broken down into its component parts to be more easily re-purposed and extend its useful life expectancy. The complexities of sustainability are immense, but all of the above concerns are grounded in a love of the materials themselves and a respectful reverence for their unique essence. If we recognize our relationship with materials then we will use them responsibly.

Every engagement provides an opportunity for the design to bring intentionality, ingenuity, and creativity in service to illuminating the intrinsic beauty and value of the material. Such an exploration gives tangible, meaningful expression to our love and respect for creation. It articulates our unique role as humans in the cosmos, co-creators that share the same molecules as the very materials we fashion. Through a loving process of design and fabrication, we interact with materials to articulate and celebrate our shared universe story, our shared sacred story. 



Materiality as an Expression of the Sacred

“The entire material universe speaks of God’s love, his boundless affection for us. Soil, water, mountains: everything is, as it were, a caress of God. The history of our friendship with God is always linked to particular places which take on an intensely personal meaning; we all remember places, and revisiting those memories does us much good.”

Pope Francis, *Laudato Si* (2015)

By Rita A. Smith, AIA
Photographs by Peter Jordan

View of Our Lady of the Angels Church in the foreground, with Camelback Mountain in the distance.

Photo: ©www.peterjordanphoto.com

As a place for spiritual growth, healing, and transformation since 1951, the Franciscan Renewal Center (the Casa) in Paradise Valley, Arizona, has been a destination for those seeking a place away from the roar of life in order to listen for God. It is a peaceful place of inclusiveness where all are welcome in an environment of intimacy. The grounds and ministries have been a source of comfort and healing for many over the years.

When it came time to build the new conventual church of Our Lady of the Angels, there were many goals but among the most important were intimacy, simplicity, beauty, and authenticity. With these goals, the new church was designed to expand the hospitality and welcome that has long marked the community of the Casa. The community design team, the liturgical design consultant, and the architect spent many hours in deliberation, prayer, and research to achieve those goals.

There are three core ways the substance of the new church was intended to convey the sacred: by acknowledging through the construction, as St. Francis sang in his *Canticle of Creation*, that all creation sings praise to God; to mediate an experience of God through light, space, and authentic materials; and by claiming our responsibility to steward God's creation.

CREATION SINGS PRAISE TO GOD

Guided by the beautiful imagery of the *Canticle of Creation*, the Casa community sought to express, according to the art program statement developed for the project, "our common home is like a sister with whom we share our life and a beautiful mother who opens her arms to embrace us." Thus, the intent was to choose familiar, natural materials as the source for achieving beauty.

Stone: On both the interior and exterior of the church, stone is meant to draw a distinction between heaven and earth. The grounded, rough-hewn Oklahoma stone is split-face to retain its natural character. The honed travertine identifies the purer transcendence of the more ethereal oval upper structure.

Concrete: The choice of a lightly polished concrete floor is in keeping with simplicity and authenticity.

Venetian plaster: Marble-based Venetian plaster is used as a highlight feature on the reredos to identify this space as a focus and to allow the marble in the material to reflect the colors from the adjacent art glass. Thus, earthly stone reflects the beauty of light.

Wood: Reflective of the Arizona environment, wood is used sparingly on the interior. As a material that can be honed to the touch, it helps to shape the space for the assembly on the lower walls and as the pews.

Terra cotta: The narthex walls leading into the nave are constructed of terra cotta tiles. These are of refined clay, much like we, as clay, strive to be refined by our participation in the assembly.

Straw: As an integral element in the representation of the Nativity Creche at Greccio and as a symbol of the personification of Lady Poverty (dear to St. Francis), actual straw is included in the plaster of two wall sections. This meditation on the humility, simplicity, and poverty of Christ is placed in the reredos, beneath the art glass depicting the nativity scene of Greccio and under the Sister Mother Earth window directly across the Nave. In addition, straw is a motif carved in the liturgical furniture and baptismal font.

MEDIATOR OF THE EXPERIENCE OF GOD

It is infrequent that a community has the opportunity to give its identity physical form, to mediate an experience of God through light and

space. A new understanding of our humanity; the nature of the universe; the divine; and our connections to each other, to creation, and to transcendent mystery, has marked each age of man. Buildings for worship have been one of the physical means of marking those new understandings. The leadership of the Casa wanted this church to speak for the age in which it was built. Without abandoning historical relevance or connection, the hope was that this openness to not having a predetermined form or materiality would provide room for inspiration and guidance of the spirit. As Christ is humanity's mediator to God and the actions of worship mediate meaning into the everyday, architecture acts as a mediator providing opportunities to explore physical and transcendent connections. Thus, the design effort was to connect the Franciscan Christian story to the architectural language of our time, grounded in the Arizona desert.

Light was an integral material and the primary means of providing transcendent connections. Sunlight in the desert is both life-giving and dangerous and must be carefully directed into spaces. The use of vertical steel cantilevers allowed the major commitment of the 360-degree skylight that suffuses the plaster walls with indirect sunlight. This concealed light source surrounds the assembly and changes with the time of day and the seasons. As the Art Program statement observed: "The possibility that all of creation—including ourselves—can give praise to the God who calls us into the marvelous light."

Canticle of Creation

Praised be you, my Lord, with all your creatures, especially Sir Brother Sun, who is the day and through whom you give us light. And he is beautiful and radiant with great splendour; and bears a likeness of you, Most High.

Praised be you, my Lord, through Sister Moon and the stars, in heaven you formed them clear and precious and beautiful.

Praised be you, my Lord, through Brother Wind, and through the air, cloudy and serene, and every kind of weather through whom you give sustenance to your creatures.

Praised be you, my Lord, through Sister Water; who is very useful and humble and precious and chaste.

Praised be you, my Lord, through Brother Fire, through whom you light the night, and he is beautiful and playful and robust and strong.

Praise be to you, my Lord, through our Sister, Mother Earth, who sustains and governs us, and who produces various fruit with colored flowers and herbs.

Praised be You, my Lord, through those who give pardon for Your love, and bear infirmity and tribulation. Blessed are those who endure in peace for by You, Most High, shall they be crowned.

Praised be You, my Lord, through our Sister Bodily Death, from whom no one living can escape. Woe to those who die in mortal sin. Blessed are those whom death will find in Your most holy will, for the second death shall do them no harm.

St. Francis of Assisi

THE AUTHOR IS AN ARCHITECT WHO IS A SPECIFICATIONS MANAGER AT CDM SMITH IN PHOENIX AND SERVED AS THE OWNER'S REPRESENTATIVE FOR OUR LADY OF THE ANGELS CHURCH.



Detail near the entrance of the church conveys the presence of St. Francis of Assisi.

As a facilitator of light, glass is used intentionally in specific locations with specific purpose. Vertical windows bridge the earthy, stone base with the honed, heavenly realm. This sacred exchange between “heaven and earth” prefigured in Jacob’s ladder in the book of Exodus informs the art elements in the new church.

The south-facing and most public window has the patron image of the earthly Mother of God, Our Lady of the Angels, accompanied by angels ascending the heavenly realm. During the day, the intense light animates the image in its richness of color. At night it proclaims welcome to the community. In a conversation with one gentleman about the use of the realistic image of the Milky Way as an expression of heaven, he found it challenging to connect space, the universe, and the heavens of his youthful understanding. The building is already engaged in the process of mediating meaning.

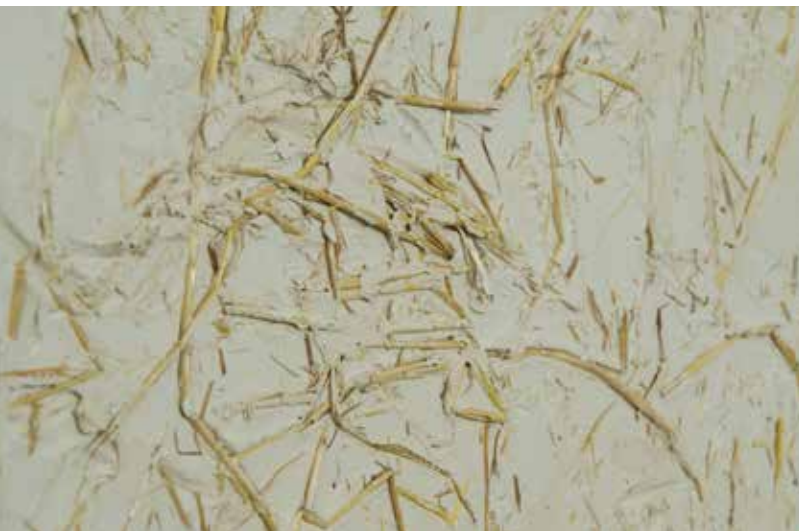
STEWARDSHIP OF CREATION

Most design professionals know about and participate in LEED (Leadership in Energy and Environmental Design) a certification program sponsored by the non-profit U.S. Green Building Council (USGBC), but most worship congregations are not as familiar with it or the reasons to participate. It is a somewhat uphill charge to convince a congregation about the usefulness of the costs and paperwork to participate in the process. The Casa community made the commitment to pursue the certification primarily for two reasons. As a Franciscan community, its spiritual guide calls us to recognize creation as, “a magnificent book in which God speaks to us and grants us a glimpse of his infinite beauty and goodness,” according to Pope Francis’s 2015 encyclical, *Laudato Si*. A practical reason was the knowledge that during the construction process the pressure to save money or make adjustments for ease or schedule can result in the elimination of items designed to protect the environment. The contractual obligation to meet LEED standards makes the environmental commitment clear to all parties. As the first LEED worship space in Arizona and the 15th in the country, there is a strong message befitting St Francis’s legacy.

The largest single contributor to the LEED certification is the design of the HVAC system, which uses 30 percent less energy than one that was simply code compliant. Under



Placement of high windows in the sanctuary renders materials under indirect natural lighting.



Detail of straw incorporated into the plaster wall finish.



Photos: ©www.peterjordanphoto.com

Throughout the design are opportunities to experience textured materials close up.



Reflective Venetian plaster walls frame stained glass design inspired by Milky Way.


the concrete floor, a low-volume fiberglass duct system delivers air to condition the space at the level of the assembly. In contrast, an overhead system would have required much colder air, higher air velocity, and thus more energy.

LEED is not just about energy efficiency but also about the selection and management of resources. Which materials are used, where they come from, how they are made, and how they are disposed of were guiding principles in the design of the church. The focus on natural materials contributed to reduce chemical impact: low-VOC paints; low-VOC joining compounds used throughout the building; HDPE toilet partitions eliminate formaldehyde and are ultimately recyclable.

Outdated modes of construction use resources for building and then dump debris in landfills. Debris is no longer a waste; it is a resource if it is recycled, as was 95 percent of the waste for this project. Items incorporated to manage resources: water-reducing appliances, water-reduced landscape plantings, storm-water management for reabsorption, low-energy LED lighting, and high-performance glazing.

SPACE FOR SACRED CONVERSATIONS

One of the Casa community's core values is that sacred space is essential: Creating physical space and space within our lives for sacred

conversations is essential to wellbeing. The use of materials, detailing, proportions, massing, and integration of the art program have provided an inspiring worship space. Community members have been overcome when going inside for the first time, many reaching out to make physical contact with the building's materials. The Casa community in its dedication to spiritual growth, healing, and transformation has erected a building to welcome all who enter into sacred conversations. 

DESIGN TEAM

Architect/Engineer: DLR Group / Westlake Reed Leskosky, Paul Siemborski, AIA Principal, Dan Clevenger, AIA LEED AP Project Director

Liturgical Design Consultant: Fr. Mark Joseph Costello, OFM

Executive Director: Fr. Joseph Schwab, OFM

Rector: Fr. Peter Kirwin, OFM

Director of Liturgy: Norbert Zwickl

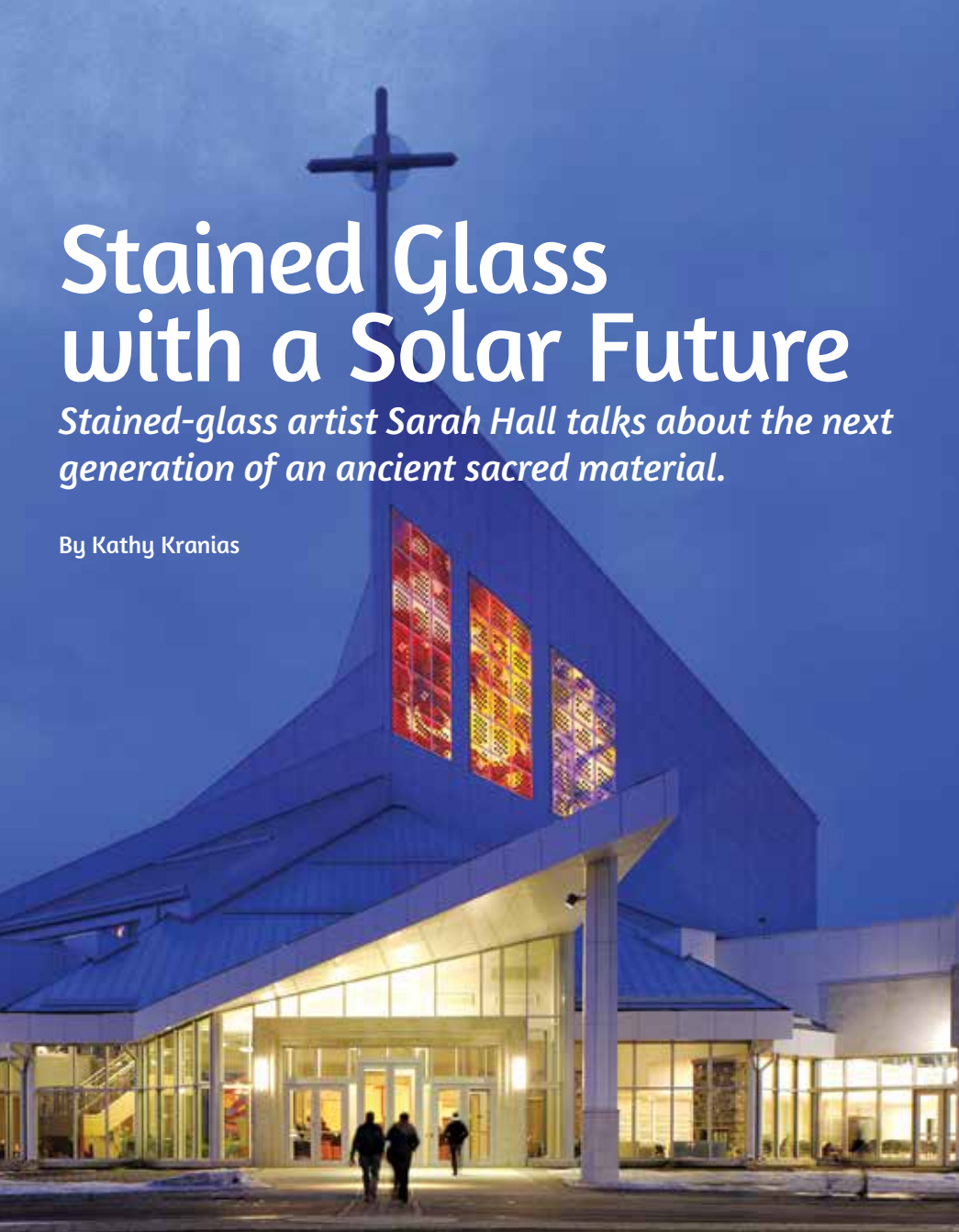
Owner's Representative: Rita A Smith, AIA

Contractor: Haydon Building Corp.

Stained Glass with a Solar Future

Stained-glass artist Sarah Hall talks about the next generation of an ancient sacred material.

By Kathy Kranias



'Lux Gloria' windows at the Cathedral of the Holy Family in Saskatoon, Saskatchewan, Canada, integrate photovoltaic technology for generated electric power.

Kathy Kranias: Can you share your thoughts on stained glass innovations of the past 40 years?

Sarah Hall: The entire past century has seen incredible innovations in stained glass – so much so we no longer use the words stained glass for our windows, and have yet to find generally accepted new terminology. There have been enormous advances in glass technology, which have had a great impact in our field. Many factors have driven these advances – artistic, economic, and the requirement for

our art glass to meet standardized building codes for glass. Now common in Europe are large-scale paintings made with enamels on float glass (with excellent color and permanent adhesion), huge kilns, mechanical sandblasting, digital printing on glass, computer cut stencils, air-brushing of glass paint, fluorescent and metallic paints, screen-printed imagery, 3-D laser etching, CAD for design work and full sizing of cartoons, photo imprints on glass with ultraviolet light and high-quality lamination. Scientific, dichroic glass is com-



Photo: Wilhelm Peters

Installation of 'Lux Gloria' solar windows at Cathedral of the Holy Family.

mercially available and is compatible with glass for fusing, casting, and slumping. Finally, integrating art glass with energy (solar) technologies, fire-rating, heat-mirror, and other industrial technologies is possible. All the above techniques can be combined in unique configurations.

KK: Where did the idea or prototype for your photovoltaic windows come from? When? What brought you to the creation of this type of work?

SH: The idea to bring solar into my work came from several sources which all converged within a couple of years. First, my mentor, Ursula Franklin, a physics professor at University of Toronto, encouraged me to explore connections to solar. Second, I saw many beautiful buildings in Europe created with a technique called Building Integrated Photovoltaic (BIPV) and was convinced it was a great direction for solar. This led me to make connections and take workshops in Canada, the US, and Europe with architects and engineers working in the field of solar and BIPV. The studio in Germany that fabricated my work had collaborated with Klaus Jansen and Christof Erban to make a prototype of art glass embedded with solar cells. They too encouraged me to create solar work. Lastly, and of great importance, I received a Chalmers Arts Fellowship from the Ontario Arts Council which gave me the time and resources to experiment with the integration of solar collection in to my art glass projects.

KK: Is solar the appeal of the avant-garde, or something else, in your opinion?

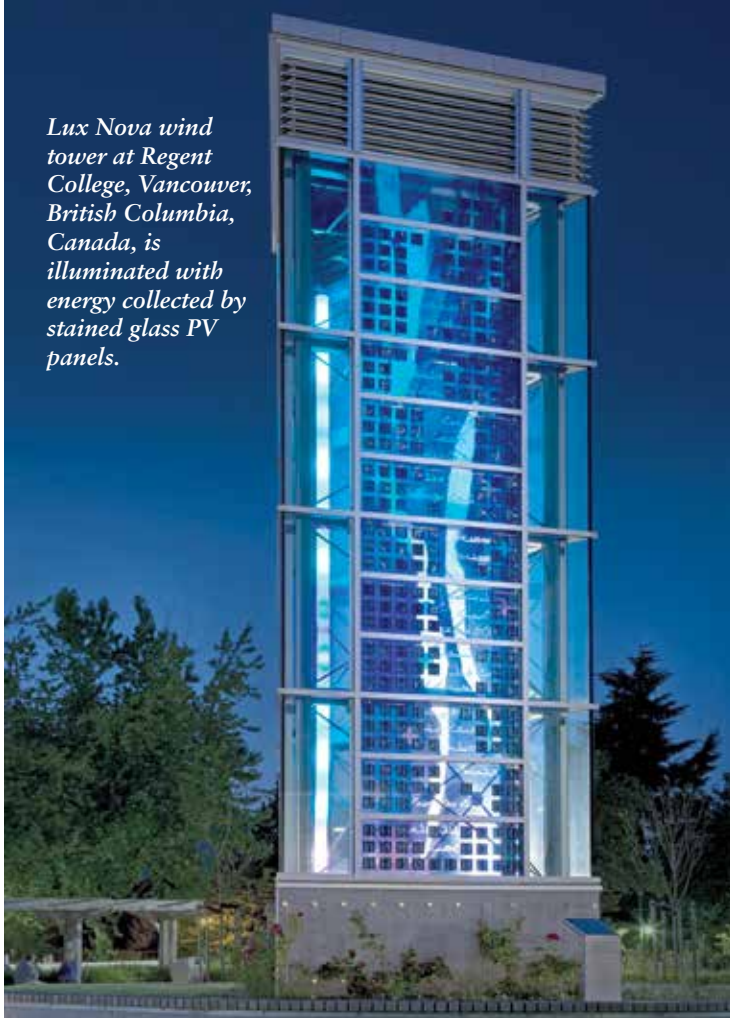
SH: I don't consider making an effort to care

Photo: Grant Kernan

SARAH HALL IS AN AWARD-WINNING GLASS ARTIST BASED IN TORONTO. KATHY KRANIAS IS A CERAMIC ARTIST, EDUCATOR, AND LEADING RESEARCHER ON CANADIAN POST-WORLD WAR II ARCHITECTURAL ART GLASS. SHE IS A CONTRIBUTOR TO *SSAC JOURNAL*, *STAINED GLASS QUARTERLY*, *STUDIO MAGAZINE*, AND *THE JOURNAL OF MODERN CRAFT*. THIS ARTICLE IS ADAPTED FROM THE BOOK, *A THOUSAND COLOURS—SARAH HALL GLASS* (FRIESENS, 2017).

Lux Nova wind tower at Regent College, Vancouver, British Columbia, Canada, is illuminated with energy collected by stained glass PV panels.

Photo: Michael Elkann



Detail of PV film in Lux Nova tower windows.

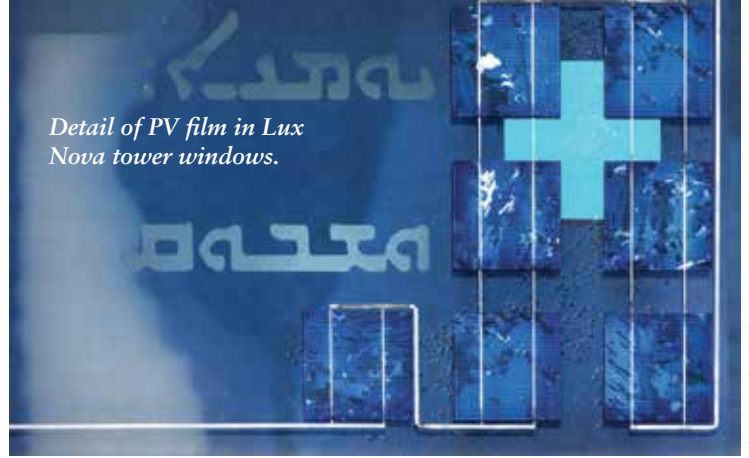


Photo: Michael Elkann

for our environment avant-garde. I think we need to find creative, beautiful, ecological ways of living in the world.

KK: How have you adapted photovoltaic processes to suit your aesthetic interests?

SH: I design for solar cells in the same way I compose for a graphic element or pattern. My initial design is sent to the solar engineer who integrates the electrical field and wiring diagram as an additional layer in the design. The wiring can appear strictly functional and almost invisible, such as my project for the Cathedral of the Holy Family, Saskatoon, or it can add an exciting graphic element to the overall composition, seen in my Regent College Wind Tower, Vancouver. Solar projects have brought a rigor to the design process because they require me to incorporate rigid graphic elements.

KK: What hand processes are important to the photovoltaic projects?

SH: The hand processes I use are the same as in any project. When used as a design element, photovoltaic cells make up only part of the window. There is always a need for hand processes to create the artistic context so that the solar cells can make visual sense within the window. The glass can be hand painted, laminated antique glass, air-brushed, fused, sandblasted, acid-etched, silver stained, or screen printed. In the short time I have worked with solar technology, the method of integrating the cells into the art glass has evolved, however there is always a need for the artistic context around the cells.

KK: How do you respond to the criticism that photovoltaic components are not green or eco-friendly due to the materials and energy-intensive processes required for their production?

SH: I am pleased to have a chance to correct this view, as there is no truth in it. The cost of producing solar cells and solar panels is paid back within four years. They last 40 years-plus and importantly do not pollute with greenhouse gas. The technical information to back this up is easily available on Wikipedia (wikipedia.org/wiki/net_energy_gain).

Let's compare this to fossil fuels, which are a onetime use, releasing pollutants into the atmosphere every minute - and the original material is not recoverable or recyclable.


KK: Then there is the question of their limited lifespan, whereas traditional stained glass compositions last hundreds of years.

SH: Regarding solar cells incorporated in art glass installations, these can be reconfigured after 40 years with newer technologies or the solar layer separated from the art glass and recycled. Solar technologies will have developed in ways we cannot imagine. We all love the idea that our stained glass will last for hundreds of years. Sadly, this is no longer the truth. I have seen my own and other artists' traditional leaded glass projects taken down and replaced within a few years of installation—with a change of owner, purpose, or style.

In my current work I use many techniques, including traditional leaded stained glass. However, this technique does not last hundreds of years unless it is cared for through its lifetime, and periodically rebuilt and renewed. Despite this, windows are vulnerable to countless hazards, including wars, civil unrest, religious "zeal," changing fashions, and most often physical neglect. I asked a few restoration studios in Europe what percentage of traditional leaded windows remain. They estimated that what remains is approximately 2 percent Romanesque, 8-10 percent Gothic, 2 percent Baroque, and 35 percent 19th-century windows. I think it would be great to bring this question to dozens of stained glass restorers throughout Europe for academic verification.

KK: Has the solar process "caught on"? Are there others in Canada or the US who are creating analogous work? Is the expense a drawback?

SH: My work in integrating solar is not a new "studio process." I am an artist who has created work in collaboration with a solar engineer. A solar engineer is required in the process of making solar panels because the panels must conform to national and local electrical codes and standards. Since it is new technology, the codes and standards have often lagged in North America. Integrated photovoltaics cannot really be considered a craft or studio practice, but rather a collaboration between artist and electrical engineer. Many artists and designers are interested in the ideas and technology. In the US, Peters Studio along with Lynn Goodpasture have made an interesting solar project at the San Jose Library, and Carol Bennett along with Peters have integrated photovoltaics at the Hawaii State Art Museum.

There has been a lot of interest from solar energy companies who want to customize their work and look more attractive. There is also interest from architects and designers. I think my solar projects have greater impact on the solar and architectural world than on the field of stained glass, and this is as it should be. My interest as an artist is to advocate for the values I hold. I have always been interested in creating work that leads us forward, both spiritually and environmentally. Solar art glass is expensive - but the client has a unique art glass window that collects energy. 

NOTES & COMMENTS

GOODBYE IFRAA, HELLO 'ID'

The American Institute of Architects announced in February that the Interfaith Forum on Religion, Art, and Architecture has changed its name to "Interfaith Design." The new moniker comes 40 years after the creation of IFRAA in 1978, when, according to Douglas Hoffman's recent history of the journal's 50th anniversary issue (Vol. 50., No. 3, 2017), the Guild for Religious

Architecture (GRA) "...merged with two other organizations with like interests: the American Society for Church Architecture (ASCA) and the Commission on Church Planning and Architecture (COCOA). By February 1978, a charter for the newly formed Interfaith Forum on Religion, Art, and Architecture (IFRAA) was drafted at Catholic University in D.C." According to AIA, bowing to requests that IFRAA have a

"shorter, easier name," the Interfaith Design group continues as an AIA Knowledge Community that "encourages and supports excellence in the design of worship spaces and their accouterments. Interfaith Design is an association of professionals whose primary interest is religious facilities in a broad array of traditions. We value an interfaith forum for the exchange of ideas relating to religion, art, and architecture."

SAFE AT HOME

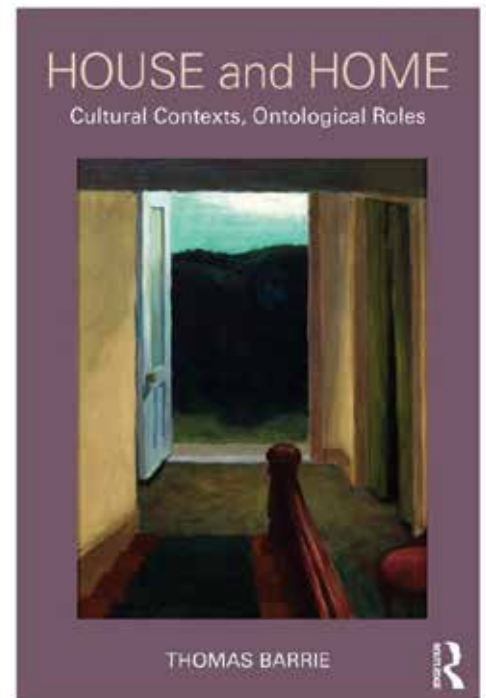
House and Home: Cultural Contexts, Ontological Roles, Thomas Barrie, (Routledge), 2017

In his new book Thomas Barrie addresses the human need to inhabit a defined place in the world. The search for home, Barrie argues, grounds our existence and orients our life. Home is not only the everyday place of domestic ritual and family life, but it is also a place of origin that orients our life going forward. From the country house in English novels, to Frank Lloyd Wright's natural house, to the Navajo Hogan, the hut of Martin Heidegger, the Italian Villa, and Thoreau's cabin, this excursive account of house and home explores not only shelters around the globe but home's symbolic meaning and how it has been understood and talked about through history.

A professor of architecture at North Carolina State University, Barrie is a relentless steward of subjects related to house and home, and his book offers an expansive index of dwellings, emotions, and myths associated with domesticity. Consequently, house and home are themes that are perennially tied not only to architecture, but also to the fields of anthropology, philosophy, literature, and psychoanalysis. He locates the idea of home in our origins, in our connection to places for housing the dead, and sanctifying the divine. He evokes American writers who point to the wisdom to be garnered from house and home, evoked in Maya Angelou's description of the "stubborn life of rooms." The role of the modern house in the history of 20th-century architecture is also included: Le Corbusier's *cabano*, Mies van der Rohe's Farnsworth House, and Philip Johnson's Glass House. In each of these cases the clear implication is that the house is not only a built reality that stands on its own, but also a suggestion for the larger narratives and meanings that house and home implies.

For readers of this journal, a key point of interest is Barrie's treatment of the "house of the divine, and the divinity of the home." With an appreciation to the traditions of the Abrahamic faiths, Buddhism, and Native American mythologies, Barrie points to the home as a place capable of transcending the material. The focus on the sacred in relation to home is discussed through building types that are expected as well as some that are more overlooked: not only the *domus ecclesia* exemplified by the 3rd-century Dura Europos church and the Navajo Hogan, but also the palace-temple and the house tomb. Likewise, Barrie addresses home as a cosmogonic narrative, drawing on examples both new and familiar, such as the house Sa'Dan Toraja in Indonesia and the Ise Shrine in Japan, showing how the house has the power to orient and frame the human being's relationship to the world.

What turns the book toward a more global concern is when it is read against the current situation of ever-increasing migration of peoples and the anxieties produced in the human psyche by endless change, accommodation, and acceleration. Although Barrie does not address it directly, for millions of migrants today "home" is no longer a place where it is possible to return. As the sociologist Saskia Sassen writes, for many home has been transformed into something else that is "now a war zone, a new private gated community, a corporate complex, a plantation, a mining development, a desert, a flooded plain, a space of oppression and abuse." Barrie acknowledges that much of the discussion of house and home is a means of enforcing cultural beliefs and hierarchies, including issues of gender and class. An unstated strain in the book suggests that preoccupations with architecture's rootedness in the domestic can seem anachronistic in contemporary discourse: the mythical hut is an



allegory from a past era. Belonging, longing, identity, shelter, and dwelling stand in contrast to the contemporary psychological experience of displacement, homelessness, exodus, and alienation. Barrie's book therefore counters this idea of home and its very impossibility. The book makes us question to what extent house and home are still foundational or even useful concepts.

On the other hand, for architects Barrie's book raises the potential role of the ethical: the need to study and understand migrations and new spatial conditions and to read them into our perceived primordial longing for a place in the world. For anyone who cares about such things, *House and Home* is important reading. And to the extent that the architect is still able to provide for such an experience, Barrie's claims are perhaps urgent. —Karla Britton

The author, who writes extensively on modern religious architecture, teaches at the Yale School of Architecture.

THE WAY OF THE CROSS

The Cross: History, Art, and Controversy,
Robin M. Jensen,
(Harvard University Press), 2017

Several years ago, a building committee convened to discuss commissioning a new altar cross. Some wanted a cross, others a crucifix—the cross with the figure of Christ. Opinions diverged most widely about what the object should *look* like—should it be traditional or contemporary, figurative or abstract, minimal or adorned? After months of heated argument, personal taste rather than historical or theological knowledge determined what was chosen.

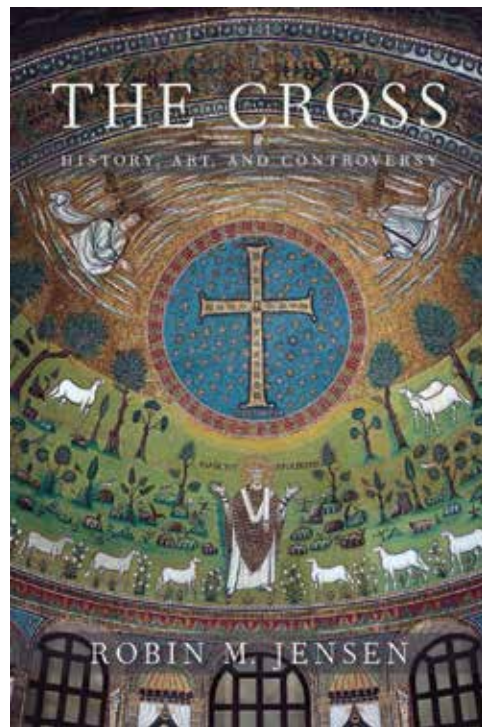
How much more fruitful these conversations would have been if Robin Jensen's magisterial new book, *The Cross* had been available. An impeccable work of scholarship that also welcomes the general reader, *The Cross* investigates the history of this potent symbol from the first century CE to the present day. Jensen examines how the cross's meaning has evolved as both an idea and an artifact, using examples culled from art, literature, and song and grounding them in sound theology.

The symbol emerged from contradiction: From earliest times, Christ's death was perceived as a "paradoxical juxtaposition of degradation and elevation." Crucifixion was brutal and ignominious, a form of Roman capital punishment reserved for criminals, insurrectionists, and army deserters. Yet believers eventually "transformed the figure of the cross from a badge of dishonor into a sign of victory." Jensen guides the reader through the centuries and shows how this was

accomplished, stopping along the way to clarify common misconceptions such as this one: The Gospel accounts "do not actually describe Jesus being nailed to the cross." Despite the inclusion of nails in traditional visual representations, the "first mention of nails is in the story of Doubting Thomas, who asks to see the 'mark of the nails in his hands.'" The scriptural reference, John 20:25, is helpfully noted in the body of narrative, supplemented at the end of the book with notes and sources of further information.

Jensen takes an ecumenical approach. From the 16th century, interpretations of the cross depended on whether it was displayed in a Catholic or Protestant context. Protestant reformers destroyed much medieval religious art, but even the most determined iconophobes spared the cross, the "single holy image" that was not considered idolatrous. It remained alive too in Protestant hymns and prayers. Roman Catholics countered, producing crosses and crucifixion scenes that were increasingly ornate and "intended to provoke strong emotional responses." The image was fraught for many, particularly Jews. From the outset, "assertion of a crucified messiah disturbed Jews," who anticipated a Messiah who was "a reigning king in the line of David," and not one humbled in death by "accursed" crucifixion. By the time of the crusades, which further amplified anti-Jewish actions, the cross had become an emblem of both oppression and human deliverance.

Jensen, the Patrick O'Brien Professor of Theology at Notre Dame, is a skilled interpreter of Christian art and architecture,



particularly in light of its liturgical function and religious significance. Religion scholars and art historians will appreciate Jensen's thorough study, however, it also will benefit designers and building committees, starting with its full-color illustrations. Jensen has dug deep into myriad archives, delivering an extraordinary mix of illustrative material in a range of media, much of it revelatory, even for those well versed in Christian art. It's a treasure trove. —Judith Dupré

The author's most recent book is One World Trade Center: Biography of the Building, and serves on Faith & Form's editorial advisory board.

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MATERIAL GATEWAYS

THE LAST WORD * JUDITH DUPRÉ


Recently, I've plugged into a new app, "Deep Time Walk," while on my morning perambulations. Developed by ecologist Stephan Harding and others, the app walk is 4.6-kilometers-long, just under three miles, representing 4.6 billion years of the Earth's history. Every footstep marks 500,000 years, igniting an appreciation of just how ancient the world is. At 400 steps, iron and nickel, the heavy metals, form Earth's core. A quarter-mile more and the oceans surge. Rock that will eventually be ground into sand (and eons later made into concrete) follows. Humans emerge at the very end, during the last 200,000 years. Even a short walk provides a glimpse of the eternal and the understanding that the Earth and her fruits are not external to ourselves but are, as Harding says, "our wider body—a great, living being, inside which we live symbiotically."

Church builders have always known that structures have an emotional resonance and identity beyond their physical dimensions, however impressive or technically advanced. While the outer shell has relevance as a visual landmark and a practical means of sheltering worship, the "what" of construction is arguably more significant to the churchgoer than the "how." A church's materiality marks the place where the individual touches the structure, making a physical connection that opens a gateway to the ineffable.

Materials matter. Natural materials—metal, stone, wood, among them—can bridge the physical and metaphysical, illuminating the realm that exists between the outward signs of religion and the soul. The charism of materiality includes the material itself, as well as the process of shaping it. Much like faith, mastering materials requires time, repetition, and the willingness to hear what the material wants, rather

than imposing one's will. Typically, makers aren't known by name, possessing a collective rather than an individualistic sensibility that echoes the bonds that knit together a community of believers.

One can pull an historical thread through the traditions of any given material. Concrete's storied lineage, for instance, can be traced from Rome's 2nd-century Pantheon, with its unprecedented unreinforced concrete dome, to Álvaro Siza's Church of Saint Jacques de la Lande in northwestern France, which opened this year. In Chicago, Frank Lloyd Wright exploited concrete at Unity Temple to express both the sanctuary's strength and the vulnerability of its interior where questioning, a hallmark of Unitarianism, takes place. The Church on the Water in Hokkaido, Japan, features Tadao Ando's signature concrete, with a finish as smooth and luxuriant as silk. Ando said that he wanted to arrive at the place where "it is impossible to ask any other questions." That intent is also apparent at Peter Zumthor's Bruder Klaus Field Chapel, built in a meadow outside of Cologne by local farmers. Its charred, cast-concrete interior walls recreate the primal cave and a time of more ancient gods.

Reverence was once expressed by building to great heights or by employing only the most costly materials. That's changed, especially as environmental resources are increasingly stressed. Sacred spaces that highlight the use of natural materials offer prescient commentary on how luxury will be defined in the not-too-distant future. Such materials, rendered to reveal their intrinsic beauty, cause us to reconsider what is truly precious and rare. They invite us newcomers to this old planet to step outside of time and enter the timelessness of the holy. 

THE AUTHOR WRITES ABOUT ARCHITECTURE'S PHYSICAL AND ETHICAL DIMENSIONS, AND SERVES ON THE *FAITH & FORM* EDITORIAL ADVISORY BOARD.



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