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February 2018

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on the cover
Minnesota’s 1905 state capitol has been restored and updated.
Photo: Paul Crosby Photography.
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Coming in our April issue

An examination of the Historic Tax Credit under the new tax law. Find out what architects and others are saying and how they are moving forward.

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The year 2017 brought thousands of viewers to the Traditional Building website, looking for new products, projects, book reviews, features and opinions from our bloggers as well as from the Forum. While the site is fairly new—launched in March of 2016—it has found its niche among the traditional architecture community.

We recently reviewed our web statistics to better understand what people are searching for when they come to www.traditionalbuilding.com. Keep in mind that while the website is drawn primarily from the print magazine, it isn’t organized by issue dates. It is organized by topics such as Buying Guides, Features, Palladio Awards, etc. with older as well as newer articles available. Also, we often post timely web-only articles that never appear in print.
Speaking of print, the year 2017 marks an almost anniversary for *Traditional Building* magazine. The first issue was published October 1988, so next year will be our 30th year in print! We continue to have six issues a year, alternating with our sister publication, *Period Homes*.

Here are some of the highlights of the year. The February issue, as usual, was our Annual Buyers Guide with a list of more than 200 companies that supply traditional products, along with photos of many of their products organized by product category. April brought stories about the U.S. Capitol dome, and a feature about young (under 40) preservationists, while June highlighted the five 2017 Palladio winners.

In August, the magazine honored Duncan Stroik as its eighth Clem Labine Award laureate, and offered tips and guidelines from stone cutters as well as recent projects. It was followed by a look at the Jeffris Foundation and the restoration of the rotunda at the University of Virginia in the October issue. December, as usual, focused on religious buildings. Featured were projects such as the restoration of Frank Lloyd Wright’s Unity Temple, and new churches in Lincoln, NE, and Radgway, IL, along with a profile of David B. Meleca Architects of Columbus, OH.

**ABOVE:** Duncan Stroik was featured in the August issue as the eighth winner of the Clem Labine Award.

**TOP LEFT:** Chris Heim was instrumental in launching the hand drawing program at Robert A.M. Stern Architects (RAMSA) last year.

**LEFT:** Historic hardware continues to be a hot topic in our Buying Guides.

**ABOVE:** The Annual Buyers Guide published every year in February is always a popular issue.
Back to the Web

The analysis, however, involves readership on the website. The total number of page views for the year reached just under 300,000, almost double what it was in 2016, but many of the patterns were similar. There was a high level of interest in products such as windows, doors, hardware, metalwork, lighting and columns, as well as various features and blogs. The major tabs on the site, such as Buying Guides, Palladio Awards and Opinion were all highly rated, especially Buying Guides.

A number of oldies but goodies made the top of the list last year. A story posted in November of 2015, “Column Construction: Materials and Methods,” by Gordon Bock, and an all-time favorite, “Rebuilding Penn Station” by our founder Clem Labine from the April 2015 issue, continue to interest readers. A story published in 2016, “Historic Syracuse Hotel Saved,” was also popular.

A more recent story about hand drawing by the architects at Robert A.M. Stern Architects (RAMSA) hovered near the top of the list. It appeared in the August issue. Another recent article, “A Dome for All Time,” about the amazing restoration of the U.S. Capitol dome was very popular with web visitors.

The 2017 Palladio Award winner stories that
appeared in the June issue were big web hits this year. These included “Seaside Tradition: Beauport Hotel,” (OLSON LEWIS + Architects) the winner in the category of New Design and Construction, more than 30,000 sq.ft.; “Saving History in Soho,” (Scott Henson Architect) in the Adaptive Reuse category; “Gilded Age Geni” (PBDW Architects and Herzon & de Meuron) in the Restoration and Renovation category; and two winners in the category of New Design and Construction, less than 30,000 sq.ft., “Historic Watchbox Returns Home,” (EYP Architecture & Engineers) and “Sacred Jewel Box” (O’Brien & Keane).

Other recent project articles also garnered quite a bit of interest and clicks. One of these was “Adaptive Reuse Spurs Urban Renewal,” the cover story in the April issue, along with “Making Sense of Mid-Century Modern” in the same issue.

Readers were also drawn to a variety of religious buildings stories, such as “A New Traditional Roman Catholic Church in South Carolina,” (McCrery Architects), and “New Neoclassical Revival Mormon Temple,” (FFKR and Perkins+Will), both published in the December 2016 issue.

Three web-only stories, “The Trades Turn Out for PTN’s 2017 Meeting,” “Bryn Athyn College Offering BFA in Building Arts,” and “Window Preservation Summit III” also made the hit parade.

**Products**

The column story mentioned earlier was not the only popular product article. Windows are always a popular topic, as shown by the large number of hits for windows stories such as “The Challenges of Reproducing Historic Wood Windows,” which continues to get a lot of hits even though it first appeared a few years ago. Other popular features were “Historic Window Repair: Sash Joint Dutchman,” by window expert John Leeke, and “Metal Windows in Historic Buildings.”

Doors are also a perennial winner, as witnessed by the audience for “Wood Doors for Historic Buildings,” also originally published a couple of years ago. And the Doors, Windows, Hardware & Shutters Buying Guides continue to draw readers searching for historic products.

Lighting is another hot topic, as seen in two typical product reports, “Exterior Lighting for Historic Buildings” and “Lighting for Historic Buildings,” as well as numerous clicks on Buying Guides for lighting. The Buying Guides for Doors, Windows and Shutters, for Exterior Elements, Ornaments & Finishes and for Metalwork, also appeared near the top of the hit list.

**Techniques**

A surprise this year was the popularity of two articles about fresco painting, “Fresco Painting Techniques” and “A Glossary of Fresco Painting Terms and Materials” from the September issue.

Meanwhile, plaster continues to be a big topic, as shown by the number of hits for a feature by Gordon Bock, “Historic Plaster in Today’s Traditional Market,” and “Historic Plaster Myths” by Bill Denis of Decorators Supply Corp.

**Blogs**

Our bloggers are also frequently read. Plaster blogs such as “Roman Cement and Pozzolans, also Known as Pit Sand” and “Vintage Plaster Traditions” by Patrick Webb, for example, drew many readers. “The Problem of the House Museum,” by Vincent Michael was another hit this year, as was a blog by Carroll William Westfall, “Confederate Monuments and Lost Cause Urbanism” and “Traditional Urbanism and the Common Good.”

David Brussat’s “Ode to a Tuscan Column” and Clem Labine’s “The Bare Brick Mistake Will Not Die!” were also highly rated.

These articles and blogs and many others contribute the content of Traditional Building magazine, both in print and on the web. Many thanks to our writers, bloggers and readers for all of your contributions during the past year. We look forward to continued success in 2018!
Completed in 1905 at a cost of $4.5-million, Cass Gilbert's Renaissance-Revival Minnesota State Capitol in St. Paul, MN, had served the community in a grand fashion for many years. The 43,560-sq.ft. building is characterized by its prominent white marble dome. Inspired by St Peter's Basilica in Rome, the towering structure is one of the largest self-supporting domes in the world, rising 220 ft. above the ground and measuring 70 ft. wide at its base. Another highlight is the gleaming golden sculpture group at the base of the dome, “The Progress of the State,” known as the Quadriga, designed by Daniel Chester French with Edward Potter.

The years had taken a toll on the historic building. The roof was nearing the end of its serviceable life and water penetration was causing damage to historic interior finishes and valuable decorative art murals. Exterior sculptural features carved from Georgia White marble were sufficiently deteriorated to raise legitimate life safety concerns. Functionally, the demand for office and meeting space exceeded available square footage. Diminished building performance and archaic engineering systems fell short of meeting today's standards for both sustainability and contemporary office space.

Now, more than 100 years after it opened, the building is once again ready to serve the community in a grand fashion, thanks to a five-year, $310-million renovation and restoration completed in 2017. The restoration was led by HGA Architects and Engineers of Minneapolis, MN. Schooley Caldwell Associates (SCA) of Columbus, OH, was the historic consultant and Wiss Janney Elstner provided technical consulting services.

Construction got underway in 2013, but the project has a long and complex history. Although the growing need for extensive rehabilitation was anticipated in the early 1990s, work completed in recent decades concentrated on focused repair and restoration projects (1990-2005). Comprehensive preservation planning efforts began in 2005. Commissions were established and over the next several years, a diverse group of stakeholders including administrators, historians, designers and preservation professionals were involved in the ongoing discussion of the building's future.

MOCA was brought on board as the client’s...
representative for the interior. “Our goal was to establish the comprehensive master plan and the design guidelines and imperatives which included the identification of the four preservation zones within the building,” notes David H. Hart, FAIA, Executive Vice President, MOCA.

Overall goals developed for the restoration included (1) improve the functionality of the building, (2) upgrade life-safety initiatives and improve accessibility, (3) upgrade mechanical systems and infrastructure, and (4) preserve and restore the architectural integrity of the historic building. “It took an incredible amount of patience to build a consensus to move forward,” says Michael Bjornberg, FAIA, Historic Architect at HGA until 2016. “It was a fiscally conservative era, and with elections every two years, it took a very long time to build the story that it needed a comprehensive restoration.”

While discussions, negotiations and construction pertaining to overall rehabilitation continued, several preservation projects were undertaken to protect the building from further damage.

**Exterior**

“One of the first preservation projects was water mitigation at the main dome,” says Ginny Lackovic, project architect for the exterior. “Large volumes of water had been penetrating the marble dome for years and excessive water infiltration was starting to affect the interior finishes. The water infiltration project, completed in 2009, was our first opportunity to get a close up look at the exterior stone.”

“While discussions, negotiations and construction pertaining to overall rehabilitation continued, several preservation projects were undertaken to protect the building from further damage.”

**PROJECT**

Minnesota State Capitol, St. Paul, MN

**ARCHITECTURE AND ENGINEERING:**
HGA Architects and Engineers, Minneapolis, MN; Debra Young, AIA, Senior Project Manager; Michael Bjornberg, FAIA, Historic Architect; Kimberly Sandblute, AIA, Project Architect (interior); Ginny Lackovic, AIA, Project Architect (stone); Angela Bateson, Dustin Harford and Ben Walters, Architectural Interns (plaza and site); and Stephen Peper, (roof)

**DESIGN TEAM HISTORIC CONSULTANT:**
Schooley Caldwell Associates (SCA), Columbus, OH; Robert D. Loversidge, Jr. FAIA, President/CEO; Melinda Shah, AIA, Project Architect; Timothy Velazco, RA, Project Architect

**DESIGN TEAM TECHNICAL CONSULTANT:**
Wiss Janney Elstner Associates (WJE), Minneapolis, MN; Paul Whitenack, AIA; Chelsea Karrels, AIA; Remo Capolino, PE (copper roof)

**OWNERS REPRESENTATIVE FOR THE INTERIOR:**
MOCA, Salt Lake City, UT; David Hart, FAIA, Executive Vice President; Paul Brown, RA, Director of Project Definition; Joe Stahlmann, Project Manager

**CONSTRUCTION MANAGER:**
J.E. Dunn Construction, Kansas City, MO
The Numbers

**EXTERIOR**
Number of marble pieces marked and cataloged: more than 30,000

Tons of White Georgia marble hand selected: **800**

Estimated number of Dutchman marble exterior repairs completed: **8,000**

Number of other types of marble repairs, exterior: **20,000**

Original number of Cass Gilbert windows: **242**

Weight of each granite tread on the south plaza stairs: **15,000-20,000 lbs.**

Reclaimed skylights: **8**

**INTERIOR**

Weight of scaffolding in Rotunda: **265,000 lbs.**

Height of Rotunda scaffolding: **120 ft.**

Pieces of custom hardware for Capitol doors: **620**

Approximate number of works of art removed and stored during restoration: **40**

Murals conserved: **57**

---

THIS PAGE: One of the outstanding features of the building is the golden sculpture group at the base of the dome, “The Progress of the State,” known as the Quadriga. It was designed by Daniel Chester French with Edward Potter.

OPPOSITE: After repair, the exterior stone on the building once again gleams. Approximately 8,000 Dutchman repairs were made and 800 tons of new marble were added. Architects Ginny Lackovic and Paul Whitenack visited the historic Southern Marble Quarry several times. Working side by side with Polycor’s Project Manager Sylvie Beaudoin, they hand selected previously quarried stone blocks that had physical qualities that were the best match for this particular project.
one of our biggest challenges.” Scope options were explored across a wide spectrum—from low impact repair at $9 million, to high impact, comprehensive rehabilitation in excess of $80 million. Finding the right balance required consideration from a number of perspectives: cost, constructability, long-term stewardship and preservation goals, overall appearance and historic character.

Schedule and unit pricing were established during full-scale field trials. The schedule, based on the number of pieces that could reasonably be installed each month, was driven by scaffolding costs. The scaffolding, which was moved around the building as the work progressed, averaged slightly less than $1 million a year so pressure was on to work efficiently. The project, which began with one production carving studio, ultimately required the efforts of eight masonry contractors, including four additional fabricators, to meet the aggressive schedule.

The Capitol is constructed of more than 30,000 stone units, Lackovic explains. During the course of the restoration, nearly every piece of stone on the building was touched and approximately 60% received some level of general repair. An additional 5,000 pieces of new stone repair pieces were installed. The new Georgia White marble for the building was quarried from the same county as it was in 1905, Pickens County, GA.

Fabricators took advantage of CNC technology to expedite production but sculptural pieces were typically finished using traditional carving techniques and then carefully fitted and detailed on site to blend seamlessly with adjacent work. Excessively deteriorated or “sugared” surfaces were ground smooth to facilitate water shedding.

Other exterior work included removal and reconstruction of all exterior grand stairways; complete roof replacement, including all copper chamber domes; copper roof replacement and gilding of the lantern and finial globe with 18k gold; replacement of all non-historic aluminum window assemblies with energy-efficient historically accurate wood sashes, and replacement of 12 monumental drum windows. The Quadriga statue, the focal point of the primary façade, was also repaired and re-gilded.

**Interior**

The team identified four historic preservation zones, which served as a guide for the interior work. The most historically significant spaces were classified as Zone 1 and the least historic spaces, such as the basement, which had originally been a crawlspace, were classified as Zone 4.

Zone 1 included the public spaces that everyone sees, the governor’s reception room (the most highly decorated room), the Senate and House Chambers and the Supreme Court Chambers, says Bjornberg. Zone 2 included transition spaces, such as secondary corridors and the spaces directly off Zone 1. “They were to be sympathetic with Zone 1,” he says. “Zone 3 spaces, such as the office spaces, had experienced change throughout the years, so we wanted them to be compatible. Everyone seemed to understand this approach. It also helped us maintain a budget.”

“We had a beautiful palette to work with,” says Kimberly Sandbulte, project architect for the interior. “We had a lot of artwork and materials, including stone from all over the world, that we had to restore and protect.”

“In the secondary spaces, we found most of the original material intact,” Bjornberg adds, “such as tile that had been covered with carpet and was in good shape. It was a surprise, and a treasure.”

Over the years, water leakage through masonry joints, skylights and the stone dome had dam-
aged plaster, art glass laylights and decorative paint throughout the building. In order to make repairs to the rotunda, an extensive scaffolding system weighing 250,000 pounds was built to completely fill the soaring space. In the rotunda and throughout the rest of the building, plaster, murals and decorative paint were meticulously evaluated by conservators. “It was all much more fragile than any of us anticipated,” says Sandbulte.

Wiss, Janney Elstner was brought on as the team’s paint and plaster and historic materials expert. Every effort was made to preserve original material. Significant paint research allowed corrections to numerous over-painting campaigns. The decorative painting and plaster was then painstakingly preserved by Conrad Schmitt and general painting by the painting contractor Swanson & Youngdale.

In addition, the Minnesota Historical Society secured additional funding and brought in a conservator to conserve and restore the murals and 57 paintings and to restore the original 1905 stencil patterns and colors. The Guastavino tile in the east porte cochere, damaged by insensitive mechanical system upgrades, was restored. Stencil patterns and decorative pant and were restored by Conrad Schmitt, while fine art murals were the conservator’s work.

To keep the entire team on target, MOCA and HGA held regular workshops, “open forum meetings where we discussed a variety of topics to define the project and goals,” Sandbulte says. “By having open workshops, we could bring in all stakeholders and they were able to discuss what was important. This got everybody on the same page. That was important for the project. Everyone felt their needs would be addressed. That was key to the funding.”

“All of these capitol buildings projects are different,” says Hart. “And all are complicated. There’s nothing simple about a capitol restoration. There are many unknowns, and today’s codes are much different. You are working with a building that’s 100 years old that has been lovingly abused and used by changes and adjustments. We had to take it apart and put it back together in a way that it can continue to be used going forward. These buildings are not museums; they are used by the public, school children, legislators and the common person to communicate to elected officials.”

“All of these capitol buildings projects are different,” says Hart. “And all are complicated. There’s nothing simple about a capitol restoration. There are many unknowns, and today’s codes are much different. You are working with a building that’s 100 years old that has been lovingly abused and used by
All areas of the building, including the office areas and corridors were restored and improved.

The historic stencil work was restored throughout the building.

Even though the House had moved its offices to another building, the members now enjoy this restored House Chambers.
within the preservation zones. We wanted to create a sense of convenient spaces and add all of the things that a modern office building needs to have.”

The designers were also able to open up 40,000 square feet of space for public use when the State decided to move the Senators out to a separate new building. (The house offices had moved out of the building many years ago.) “We added new public spaces, a new dining area, a public gathering space in the basement and a new space on the third floor for rotating art exhibits,” says Sandbulte.

One big issue was the lighting. Crenshaw restored the historic fixtures and manufactured hundreds of new, compatible fixtures, designed by HGA, SCA and lighting consultant Schuler Shook. LED modules were added to 99% of the lighting. In addition, the new lighting control system allows users to switch to one of four lighting levels.

“The original lighting level was not up to today’s standards,” says Debra Young, HGA Senior Project Manager. “Historically, lighting was dimmer. While the Historical Society wanted people to be able to see the Capitol at a dimmer level, the legislators had different light level needs. The lighting controls system provides four pre-programmed settings, allowing people to change the lighting at the push of a button.”

New mechanical systems were also a big part of the project. All of the systems had to be replaced. In many areas, this was difficult because of the historic nature of the building. Sandbulte explains that the design team built a complete BIM model of the building that included the original systems as well as all of the work from previous renovations over the past 50 years. This helped them understand where to route mechanicals where it would have the least impact on historic materials. The team also found that Cass Gilbert had “left behind” concealed routing that could be used to hide some of the new systems.

One big move was to put all of the mechanical systems in the basement, in Zone 4. “The basement had originally been a crawlspace,” says Young. “Over time, there had been campaigns to update the building by lowering the crawlspace floor. It was piece-meal, with some mechanicals on the roof and some scattered all over the basement. We were able to locate all mechanical services in the north side of basement, freeing up space on south side. We were also able to remove louvers on the south wall, allowing us to place windows in the existing louver openings at new office suites in the basement.”

“The big coup was recovering a lot of space in the basement,” says Loversidge. “We had a statute that said we couldn’t expand the footprint of building so this was the solution to getting more space. We raised the ceilings, exposed structure to see stone, brickwork and vaulted arches. And we opened the space under the rotunda to reveal huge stone piers. This created an aesthetic for the basement, made it feel like a ground floor.”

“This is one of a few state capitols that has held on to its roots,” says Hart. “The House had moved out years ago to state office building across the street. One of the goals was to return as much public space to the public as possible, so the idea of moving the Senate across the street opened up lot of space, and returned much of it back to the public, so they could enjoy the building.”

Another important part of the project was uncovering 10 of the 30 skylights and laylights that had been covered in previous renovation projects. “We tore out all of that ductwork and repaired the skylights and laylights,” says Young. “They were repaired or replicated, so now they bring natural light into the building.”

One of the challenges was working while the
building was partially occupied. “The basement was mostly vacant while we worked,” says Sandbulte, “but other areas such as the house chamber had to be kept running during the legislative session. In addition to these activities, we installed a 117-ft. tall scaffolding tower in the main rotunda during the Easter break. They were able to build this in five days.”

Site Work
While the original statute limited the project scope to the footprint only, subsequent findings and water leak investigations determined that the plaza and site also required extensive work. This resulted in comprehensive waterproofing at the plaza, terraces and stairs on the south, east and west sides of the building.

“One of the most challenging aspects of the exterior waterproofing was managing unknown conditions and expanding the scope within the constraints of the schedule,” says Dustin Harford of HGA. “Proximity to the project and close collaboration with the contractor and subcontractors enabled the waterproofing scope of work to stay on schedule. The waterproofing and stonework completed at the plaza stairs and foundation are nearly invisible to most who visit except for relatively discreet tie-ins protected below copper flashing. The most noticeable transformation beyond the building perimeter is the closure of Aurora Avenue on the south side of the building. The avenue was closed and transformed into a pedestrian promenade to provide improved accessibility, which Harford says “gives a clear view of the building.”

The citizens of Minnesota do indeed now have a clear view of their Capitol. Whether they are inside or outside the building, they can once again observe and enjoy Cass Gilbert’s original design in an improved updated environment, thanks to the dedication of the architects, hundreds of workers and craftspeople and the enduring building itself. “It’s an amazing building,” says Loversidge. “In the end, it is so strong that it survived everything.”

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Key Suppliers

Historic Lighting:
Crenshaw Lighting, Floyd, VA

Lighting Consultant:
Schuler Shook, Chicago, IL

Mural Restoration, Decorative Painting:
Conrad Schmitt, New Berlin, WI

Decorative Painting: EverGreene Architectural Arts, New York, NY

Ceramic Tile: American Restoration Tile, Mabelvale, AR

Stained-glass repair:
Gaytee-Palmer Stained Glass Studio, Minneapolis, MN

Ironwork: Robinson Iron Corp., Alexander City, AL

Window repair: Re-view, Kansas City, MO

Custom Hardware:
Kendall Doors and Hardware, Mendota Heights, MN

Stone Suppliers:
White Georgia Marble: Polycor, Inc., Quebec City, Quebec; Tennessee Pink Light Rose Marble: Tennessee Marble Co., Friendsville, TN; Diamond Pink Granite: Coldspring, Cold Spring, MN

Masonry Subcontractors:
Twin City Tile and Marble Company (TCTM), Eagan, MN – Procurement (field measuring, shop tickets), fabrication coordination and field carving;
Mark-I Restoration Company, Dolton, IL – Selective demolition and installation; Advanced Masonry Restoration, St. Paul, MN – General stone repair and re-pointing; Grazzini Brothers & Co., Eagan, MN

Stone Fabricators:
Traditional Cut Stone, Mississauga, Ontario, Canada; Paulo Costa & Sons, Massa, Italy; Cutting Edge Stone, Inc., Alpharetta, GA; Tennessee Marble Company, Friendsville, TN; Art Cubus International, Sherbrooke, Québec, Canada

European Stone Broker: Italmarble Pocai SRL, Massa, Italy
WHAT STARTED OUT AS A simple radiator repair job turned into a complete restoration of the House and Senate Chambers at the Colorado State Capitol in Denver, CO. This three-year, $5,389,500 project returned both chambers and the connected offices in this historic building back to their original beauty. Completed in 2016, it involved quite a bit of research, many tradespeople, and some serendipitous good luck.

The historic, 1894, six-story structure incorporates a tower that reaches a height of 272 ft. and contains almost a quarter of a million square feet of space. With its gold dome (added in 1908, it was originally copper), the building is a beacon in the Rocky Mountain state. It was designed by Elijah E. Myers in the Neoclassical style to be reminiscent of the U.S. capitol and is constructed primarily of Colorado white granite.

“Actually, we started work in the capitol in...
2011,” says Dave Anderson, AIA, LEED AP, principal, Anderson Hallas Architects. “Our initial involvement was to assess the condition of the plumbing throughout the building. In the process of doing this, a 3D Revit model of the entire capitol was generated. This was done with only a laptop and laser tape measure. In doing that, everyone became familiar with the whole building.”

Then in 2013, the capitol management team decided to repair one of the radiators in the House Chamber. The removal of acoustical tiles near the radiator led to the discovery of beautiful, hand-stenciled original plaster walls. The client’s decision to restore the original historic character of both chambers with a full rehabilitation evolved as discoveries were made during initial investigations. House Chamber Administrator, Marilyn Eddy, was an early proponent of the expanded rehabilitation project.

“We started the radiator repair by taking a look at the painted cork panels (acoustic tile) on the walls that had been added in the 1950s,” says Anderson. “They covered everything and were painted beige. When we checked behind the tiles, we discovered that the original stencils and original painting was still intact behind these panels.” Research of historic documents and photos confirmed that the walls of both houses had been beautifully finished with stencils around 1905.

This original filigree stencil work had been done by Denver artist Manuel Hill. The design team also found that each 1x1-ft. 1950s acoustical tile was attached with dobs of horse glue, which could only be removed by hand rubbing. They also discovered ghost images of murals that would have been painted even before the stencil designs. These were thought to be mock-ups or mural options before the final decision was made.

The craftspeople began by carefully removing
these acoustic panels and restoring the walls to their original colors—green for the House and red for the Senate—and recreating Hill’s stencil designs. During the exploration, they found that there were 12 different custom-mixed paint colors in the House and 10 in the Senate. All were reproduced from paint analysis.

When the tiles came down, the original skylights in the House and Senate chambers were uncovered. These two skylights, each 30x30-ft., were restored as was the metal trim work around them.

It should be noted that although the 1950s tiles were also removed from the upper portion of the walls and the ceiling, they were replaced by a new acoustic plaster treatment, and then the original stencil designs were applied. “One of biggest issues was trying to balance the loss of acoustic material without the loss of the acoustic properties of the space,” says Anderson. “This was made possible by adding a layer of acoustic plaster over the original stenciling in the upper areas and then reproducing all of the stenciling that had been behind that. The speakers and electronics were also upgraded and adjusted so that the sound was better managed.”

Another challenge involved lighting. “We brought back the incredible colors from the 1900s, but they are very light absorbing. We wanted the legislators to be able to see the volume of space and be able to read papers down on the floor,” he explains. “It was a challenge getting more light and reducing energy use, while also maintaining the building’s LEED certification.”

The lighting plans also called for the restoration of the two 50-ft. chandeliers, one in each chamber. While work was going on, by chance Anderson happened to meet a man at a Christmas party who said he owned one of the original etched globes from one of the chandeliers, which had been removed in the 1950s.

“You could tell from the historic photos that this was original,” says Anderson, noting that the globes were about 10 in. tall x 5 in. dia. The globes were reproduced (without the etching because of budget reasons) and put back on the chandeliers, which were restored and updated with LED lighting. Each chandelier has eight arms with six globes on each arm, for a total of 48 globes on each fixture.

All of the windows in the chambers were cleaned and restored, including the 17 stained-glass panels each measuring 4.5 x 7.5 ft., located in both chambers. This work was done by Watkins Glass of Denver, a third-generation firm that has been working on the capitol over the years. The stained-glass windows honoring different legislators had been originally built by Watkins.

““There were a number of windows in the Senate that needed to be restored,” says Anderson. “These were originally installed when they were still smoking in the chambers. Also, the original gas lights created a lot of soot.”

One of the most challenging aspects of this project was having to work with the House and Senate schedules. “They had to be able to use the chambers January through May, so the work had to be done June through December,” he says. “The scaffolding had to be taken down at the end of each construction season. The construction crew had to be able to mobilize and de-mobilize, working around the legislative session. They had to cover desks and build scaffolding around and over them, and then take it down again.”

The work was done in phases over three years. The first phase was the work in the lower levels, including the demolition of the acoustic panels, and restoring the wall paint and stencils.

In the second year, the scaffolding went up again and the ceilings and skylights were restored.

No scaffolding was required for the third year when the gallery seating was replaced and fire-proofing was addressed.

The restoration of the House and Senate chambers is just one step in a long list of work that

### Key Suppliers

- **Paint Analysis:** Built Environment Evolution, Boulder, CO
- **Window Restoration:** Watkins Glass, Denver, CO
- **Historic Paint, Stencil Reproduction:** EverGreene Architectural Arts, New York, NY
- **Refurbishing of Historic Chandeliers:** St. Louis Antique Lighting, St. Louis, MO
- **Stencil, Metal and Other Finish Restoration:** Historic Surfaces, LLC, Milwaukee, WI
- **Art Conservation:** WCCFA, Inc. (Western Center for the Conservation of Fine Arts), Denver, CO
- **Electrical Engineering, Lighting Consultant:** AE Design, Denver, CO
- **Mechanical Engineering:** 360 Engineering, Golden, CO
- **Infrared camera documentation:** Denver Art Museum, Denver, CO
The two 48-light chandeliers in the House and Senate chambers were refurbished. By chance, Anderson was able to acquire one of the original globes that had been removed in an earlier restoration, so they were able to recreate these (but without the etching) for both chandeliers.
This dramatic view of the refurbished chandelier in the House chambers looks directly up at the historic fixture.

continues on Denver’s historic capitol building. “A life-safety project was completed 11-12 years ago,” notes Lance Shepherd, Manager, Design and Construction Programs, State of Colorado Department of Personnel and Administration. “The dome project was completed five years ago, and we are currently working on restoring and replacing the roof. We also put in a ground-source heating/cooling system (geothermal).”

Shepherd adds: “The Denver capitol is the first—and only state capitol building—to be certified LEED EB, and we have since gone to LEED Dynamic Plaque to maintain that.” Currently work is in progress in committee rooms and on the windows.

“Everyone is very happy with the restoration of the House and Senate chambers,” Shepherd says. “It’s the first time since the 50s that the skylights have been open. It was a design/build project and it worked out very well.”

“This was a design/build project, which is relatively unusual in historic preservation, and we were really fortunate to put together a great team with Spectrum General Contractors,” says Anderson. “And we all had great support from the State throughout the entire project. Lance gets real credit for having the vision and holding on to the historic preservation through all of his work at the Capitol building.”

LEFT: All 17 of the stained-glass windows in the chambers were restored.
Bill's Custom Metal Fabrications
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Country Traditions Lighting
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Manufacturer of lighting fixtures: contemporary & country styles; made in the US; listed; many color & custom options.
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**Vendor List:**

- **Art Glass Restoration**
  - Architectural Accents
  - Bovard Studio, Inc.
  - Burnham & LaRoche Associates
  - Conrad Schmitt Studios, Inc.
  - Hyland Studio, The
  - John Canning Conservation & Painting Studios
  - John Tiedemann, Inc.
  - Rohlf's Stained & Leaded Glass Studio
  - Stanton Glass Studio
  - Stanton Woodworks
  - Swiattek Studios

- **Art Glass**
  - Architectural Accents
  - Aurora Mills Architectural Salvage
  - Bendheim
  - Bovard Studio, Inc.
  - Burnham & LaRoche Associates
  - Conrad Schmitt Studios, Inc.
  - Hyland Studio, The
  - Rambusch Decorating Co.
  - Rohlf's Stained & Leaded Glass Studio
  - Stanton Glass Studio
  - Stanton Woodworks
  - Swiattek Studios

- **Ecclesiastical Specialties**
  - Baker Liturgical Art, LLC
  - Bovard Studio, Inc.
  - Brosamer's Bells
  - Burnham & LaRoche Associates
  - Conrad Schmitt Studios, Inc.
  - Crenshaw Lighting
  - EverGreene Architectural Arts, Inc.
  - Hyland Studio, The
  - John Canning Conservation & Painting Studios
  - John Tiedemann, Inc.
  - Mural & Capital Studios
  - Mosaics
  - Bovard Studio, Inc.
  - Conrad Schmitt Studios, Inc.
  - Fishman Mosaics
  - Heritage Tile
  - John Canning Conservation & Painting Studios
  - North Prairie Tileworks
  - Rambusch Decorating Co.
  - Stone Legends
  - Subway Ceramics

- **Murals**
  - Belden Brick Co.
  - Bovard Studio, Inc.
  - Conrad Schmitt Studios, Inc.
  - EverGreene Architectural Arts, Inc.
  - John Canning Conservation & Painting Studios
  - John Tiedemann, Inc.
  - Rambusch Decorating Co.
  - Russ Elliot Gallery
  - Swiattek Studios
  - Thomas Moore Studios

- **Sculpture**
  - Abarion, Inc.
  - Architectural Accents
  - B&H Art in Architecture, Ltd.
  - Conrad Schmitt Studios, Inc.
  - Goodwin International
  - Haddonstone (USA), Ltd.
  - LeQuare Studio / Gallery
  - Old World Stone Ltd.
  - Rambusch Decorating Co.
  - Robinson Iron Corp.
  - Schiff Architectural Detail, LLC
  - Stone Legends
  - Stonesculpt
  - Swiattek Studios
  - Wagner Foundry, Inc.
# SECTION 12: METALWORK

## Cast Metalwork
- Allen Architectural Metals, Inc.
- Architectural Products by Outwater, LLC
- Ball & Ball Hardware
- Ball & Ball Lighting
- Campbellsville Industries, Inc.
- CoCo Architectural Grilles & Metalcraft
- Flaherty Iron Works, Inc.
- Gotham Metalworks
- Heritage Metalworks
- Historical Arts & Casting, Inc.
- King Architectural Metals
- Notting Hill Decorative Hardware
- Robinson Iron Corp.
- Schiff Architectural Detail, LLC
- Step toe & Wife Antiques, Ltd.
- Vintage Hardware & Lighting
- W.F. Norman Corp.
- Wagner Foundry, Inc.
- Wiemann Metalcraft

## Fabricated Metalwork
- Allen Architectural Metals, Inc.
- Architectural Products by Outwater, LLC
- Ball & Ball Hardware
- Ball & Ball Lighting
- Brandwyine Forge
- Campbellsville Industries, Inc.
- CoCo Architectural Grilles & Metalcraft
- Compass Ironworks
- D.J.A. Imports, Ltd.
- Flaherty Iron Works, Inc.
- Gotham Metalworks
- Heritage Metalworks
- Historical Arts & Casting, Inc.
- Lodi Welding Company Inc.
- Munns Manufacturing, Inc.
- NIKO Contracting Co., Inc.
- Ornamentals Manufacturing, LLC
- Professional Avning Manufacturers Assoc.
- Schiff Architectural Detail, LLC
- Step toe & Wife Antiques, Ltd.
- Unique Services & Applications
- Wiemann Metalcraft

## Forged Metalwork
- Ball & Ball Hardware
- Ball & Ball Lighting
- Bill's Custom Metal Fabrications
- Compass Ironworks
- D.J.A. Imports, Ltd.
- Flaherty Iron Works, Inc.
- King Architectural Metals
- Lodi Welding Company Inc.
- MetalCeilingExpress
- Schiff Architectural Detail, LLC
- Step toe & Wife Antiques, Ltd.
- Unique Services & Applications
- Wiemann Metalcraft

## Grilles, Metal
- Acorn Forged Iron
- Allen Architectural Metals, Inc.
- Architectural Grille
- Architectural Products by Outwater, LLC
- Artistry in Architectural Grilles
- Campbellsville Industries, Inc.
- CoCo Architectural Grilles & Metalcraft
- D.J.A. Imports, Ltd.
- Flaherty Iron Works, Inc.
- Gotham Metalworks
- Heat Registers.com
- Historical Arts & Casting, Inc.
- House of Antique Hardware
- Kees Architectural Division
- King Architectural Metals
- Lodi Welding Company Inc.
- Renovation Brands/Reggio
- Register Co., The
- Schiff Architectural Detail, LLC
- Step toe & Wife Antiques, Ltd.
- Unique Services & Applications
- Wiemann Metalcraft

## Metal Coatings
- Allen Architectural Metals, Inc.
- Architectural Products by Outwater, LLC
- Ball & Ball Hardware
- Ball & Ball Lighting
- Campville Industries, Inc.
- Flaherty Iron Works, Inc.
- Gotham Metalworks
- Heritage Metalworks
- Historical Arts & Casting, Inc.
- King Architectural Metals
- Professional Avning Manufacturers Assoc.
- Schiff Architectural Detail, LLC

## Metal Repair & Restoration Services
- Allen Architectural Metals, Inc.
- Architectural Products by Outwater, LLC
- Ball & Ball Hardware
- Ball & Ball Lighting
- Campville Industries, Inc.
- Flaherty Iron Works, Inc.
- Gotham Metalworks
- Heritage Metalworks
- Historical Arts & Casting, Inc.
- King Architectural Metals
- Lodi Welding Company Inc.
- MetalCeilingExpress
- Schiff Architectural Detail, LLC
- Step toe & Wife Antiques, Ltd.

## Railings, Metal
- Allen Architectural Metals, Inc.
- Architectural Products by Outwater, LLC
- B&B Sheetmetal
- Bill's Custom Metal Fabrications
- Compass Ironworks
- D.J.A. Imports, Ltd.
- Flaherty Iron Works, Inc.
- Goddard Mfg. Co.
- Heat Registers.com
- Heritage Metalworks
- Historical Arts & Casting, Inc.
- Ith by St. Simons
- King Architectural Metals
- Lodi Welding Company Inc.
- MetalCeilingExpress
- NIKO Contracting Co., Inc.
- Ornamentals Manufacturing, LLC
- Schiff Architectural Detail, LLC

## Railings, Standard Elements
- Architectural Products by Outwater, LLC
- B&B Sheetmetal
- Bill's Custom Metal Fabrications
- Compass Ironworks
- D.J.A. Imports, Ltd.
- Flaherty Iron Works, Inc.
- Goddard Mfg. Co.
- Heat Registers.com

## Registers, Sheetmetal
- Acorn Forged Iron
- Architectural Grille
- Architectural Products by Outwater, LLC
- Ball & Ball Hardware
- Ball & Ball Lighting
- Bill's Custom Metal Fabrications
- Compass Ironworks
- D.J.A. Imports, Ltd.
- Flaherty Iron Works, Inc.
- Gotham Metalworks

## Sheetmetal, Architectural
- Artistry in Architectural Grilles
- B&B Sheetmetal
- Bridge Steel
- EJMcopper, Inc.
- Gotham Metalworks
- Heritage Metalworks
- Historical Arts & Casting, Inc.
- Lodi Welding Company Inc.
- MetalCeilingExpress
- Munns Manufacturing, Inc.
- NIKO Contracting Co., Inc.
- Ornamentals Manufacturing, LLC

## Sheetmetals, Ornamental
- Architectural Grille
- B&B Sheetmetal
- Bridge Steel
- EJMcopper, Inc.
- Gotham Metalworks
- Heritage Metalworks
- Historical Arts & Casting, Inc.
- Lodi Welding Company Inc.
- MetalCeilingExpress
- Munns Manufacturing, Inc.
- NIKO Contracting Co., Inc.
- Ornamentals Manufacturing, LLC

## Stair Balustrades, Custom
- Allen Architectural Metals, Inc.
- Flaherty Iron Works, Inc.
- Gotham Architectural Metals
- Schiff Architectural Detail, LLC
- Step toe & Wife Antiques, Ltd.

## Stair Balustrades, Cast & Forged Metal
- Allen Architectural Metals, Inc.
- Architectural Products by Outwater, LLC
- Bill's Custom Metal Fabrications
- Compass Ironworks
- D.J.A. Imports, Ltd.
- Flaherty Iron Works, Inc.
- Gotham Architectural Metals
- Heritage Metalworks
- Historical Arts & Casting, Inc.
- King Architectural Metals
- Lodi Welding Company Inc.
- Robinson Iron Corp.
- Schiff Architectural Detail, LLC

## Stair Balustrades, Standard Elements
- Architectural Products by Outwater, LLC
- D.J.A. Imports, Ltd.
- Flaherty Iron Works, Inc.
- Gotham Architectural Metals
- Lodi Welding Company Inc.
- Robinson Iron Corp.
- Step toe & Wife Antiques, Ltd.

## Stair Handrails
- Allen Architectural Metals, Inc.
- Architectural Products by Outwater, LLC
- Ball & Ball Hardware
- Ball & Ball Lighting
- Bill's Custom Metal Fabrications
- Compass Ironworks
- D.J.A. Imports, Ltd.
- Flaherty Iron Works, Inc.
- Gotham Architectural Metals
- Heritage Metalworks
- Historical Arts & Casting, Inc.
- Lodi Welding Company Inc.
- Step toe & Wife Antiques, Ltd.

## Stairs, Kits
- Connor Homes
- Step toe & Wife Antiques, Ltd.

## SECTION 13: PLUMBING, BATH & HEATING

### Bathroom Accessories
- Architectural Products by Outwater, LLC
- Heritage Tile
- House of Antique Hardware
- Subway Ceramics
- Vintage Hardware & Lighting

### Bathtubs
- Aurora Mills Architectural Salvage
- Brandt, Sylvan
- Schiff Architectural Detail, LLC
- Stone Legends

### Faucets & Fittings
- Aurora Mills Architectural Salvage
- Schneider, LLC
- Vintage Hardware & Lighting

### HVAC Systems, Mini Duct
- SpacePak
- Unico System, Inc.

### Kitchen Cabinets
- Architectural Products by Outwater, LLC
- Connor Homes
- Crown Point Cabinetery
- Zepsa Industries, Inc.

### Kitchen Sinks, Antique Original
- Aurora Mills Architectural Salvage
- Old Wood Workshop, LLC
- Sheldon Slate Products Co., Inc.

### Plumbing Parts, Antique Original
- Aurora Mills Architectural Salvage

### Radiator Covers
- Architectural Grille
- Kees Architectural Division

### Radiators, Antique & Salvaged
- Aurora Mills Architectural Salvage

### Wine Cellars, Accessories
- Architectural Products by Outwater, LLC
- Ball & Ball Hardware
- Ball & Ball Lighting
- Bill's Custom Metal Fabrications
- Compass Ironworks
- D.J.A. Imports, Ltd.
- Flaherty Iron Works, Inc.
- Gotham Architectural Metals

### Stairs, Kits
- Connor Homes
- Step toe & Wife Antiques, Ltd.

## SECTION 14: PROFESSIONAL SERVICES

### Books & Publications
- Historical Arts & Casting, Inc.
- Stained Glass Assn. of America

### Conservation Services
- B&H Art in Architecture, Ltd.
- Building Conservation Associates
- Conrad Schmitt Studios, Inc.
- Edison Coatings, Inc.
- EverGreene Architectural Arts, Inc.
- Fishman Mosaics
- Gotham Metalworks
- Historic Plaster Conservation Services Ltd.
- Historical Arts & Casting, Inc.
- John Carnning Conservation & Painting Studios
- John Tiedemann, Inc.
- San Marco USA
- Schiff Architectural Detail, LLC
- Swiatek Studios
- Thomas More Studios
- Wiemann Metalcraft

### Education, Training & Workshops
- Edgecombe Community College
- Fine Paints of Europe
- North Bennet Street School
- San Marco USA
- Stained Glass Assn. of America
- Stone Legends

### Historical Preservation Consulting
- Allen Architectural Metals, Inc.
- B&H Art in Architecture, Ltd.
- Building Conservation Associates
- Conrad Schmitt Studios, Inc.
- EverGreene Architectural Arts, Inc.
- Gotham Metalworks
- Historical Arts & Casting, Inc.
- John Tiedemann, Inc.
- Robinson Iron Corp.
- San Marco USA

### Industry & Trade Associations
- Professional Avning Manufacturers Assoc.
- Stained Glass Assn. of America

### SECTION 15: ROOFING & ROOF SPECIALTIES

### Bird- & Pest-Control Products
- Bell Environmental Services
- Bird-B-Gone
- Bird-X, Inc.
- Renaissance Roofing, Inc.
- SnoBlox-SnoJax
- Team Fritz Clay Roof Tiles, Inc.
- Unique Services & Applications

### Caulking & Joint Sealants
- Preservation Products, Inc.
- Renaissance Roofing, Inc.
- SnoBlox-SnoJax

### Cresting
- Allen Architectural Metals, Inc.
- Copper-Iron.com
- Heath & Little Limited
- Historical Arts & Casting, Inc.
- Ornamentals Manufacturing, LLC
- Renaissance Roofing, Inc.
- Schiff Architectural Detail, LLC
- Wagner Foundry, Inc.
- Wiemann Metalcraft
Artwork, Art Glass & Furnishings

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Bovard Studio restored “Angel Among the Lilies,” by Louis Tiffany and Co., for St. Luke’s United Methodist Church in Dubuque, IA. Click on No. 7690

For the restoration of historic St. Genevieve, Lafayette, LA, Conrad Schmitt Studios created new sanctuary and arch murals. Photo: Danny Izzo Click on No. 8040

EverGreene Architectural Arts recreated six monumental WPA-era murals, which had been destroyed by a fire in 1942, for Fair Park in Dallas, TX. Click on No. 2460

Andromeda, model #E640 from Haddonstone, is a replica of a 19th-century Italian white-marble statue. Click on No. 4020

Gaby’s Shoppe custom manufactured this wrought-iron, queen-sized bed, which measures 114x65 in. Click on No. 2520

This religious image was created for an outdoor area using materials from Belden Brick. Click on No. 1891

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Historical Arts & Casting created this sculpture for the city of San Francisco. Click on No. 1210

Canning Studios executed the trompe l’oeil at the Academy of Music in Philadelphia, PA. Click on no. 5100.

Swiatek Studios designed and painted this custom chapel for St. Casimir church in Buffalo, NY; the work includes decorative painting, murals and gilding. Click on No. 2054

Robinson Iron restored this pair of late-19th-century French cast-iron stags flanking the grand stair at the Nemours Mansion in Wilmington, DE. Click on No. 3240

This leaded-glass panel was restored by Rohlf’s for a New York City townhouse. Click on No. 6240

1.800.COLUMNS supplied the 19-ft.-tall, 30-in.-dia. plain Tuscan fiberglass columns for this house. Click on No. 1580

These Classically modeled sculptures, column and mantel are available from Haddonstone. Click on No. 4020

This ornate wood acanthus capital is the work of master carver Dimitrios Klitsas.

Heather & Little fabricated this copper capital.

Custom columns and capitals from Historical Arts & Casting, Inc. can be used in a variety of applications. Click on No. 1210

Canning Studios marbleized these enormous columns in the National Building Museum in Washington, DC. Click on no. 5100.

Worthington Millwork makes wood columns for interior and exterior applications.

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This traditional wood-frame garden house is the work of Glass House.

The Venetian Folly from Haddonstone includes Tuscan columns, a pedimented arch, quoin and balustrading. Click on No. 4020

This gazebo features W.F. Norman Corp.'s style A shingles with its continuous hip finish and a custom-made finial on top. Click on No. 520

This trellis was fabricated by Wiemann Metalcraft for the historic square of La Placita de Delores in Los Angeles, CA. Click on No. 1223

Robinson Iron fabricated the Woodruff Pavilion in Olympic Park, Atlanta, GA; it features cast columns topped with a transparent glass dome on a steel frame. Click on No. 3240

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Doors, Windows, Shutters & Hardware

Abatron's LiquidWood restoration system regenerates and waterproofs dried out or spongy wood. Click on No. 1300

Allied Window supplied the Magnetic One Lite (MOL) “invisible” storm window for an historic building in Dumbarton Oaks, Georgetown. Click on No. 690

Arch Angle Window & Door manufactured these traditionally styled storm windows and doors.

Sash chains are available from Architectural Resource Center in various materials and finishes including brass, bronze, copper-dipped steel and brass-plated steel. Click on No. 1670

These doors feature rustic hinges and hardware custom made by Ball & Ball Hardware.

These chancel windows were restored by Bovard Studio for an historic chapel at Baker University in Baldwin, KS. Click on No. 7690

This traditionally styled window is typical of the historic work done by Architectural Components. Call 413-367-9441 for more info.

www.traditionalbuilding.com
This exterior view at dusk of St. John Neumann Catholic Church in Louisville, KY, highlights the dramatic presence of the 48 new traditionally styled stained-glass windows created by Conrad Schmitt Studios. Click on No. 8040

Wood screen doors manufactured by Coppa Woodworking are available painted or stained. Click on No. 9600

This residence features a combination of Chadsworth’s Bahama and louvered shutters. Click on No. 1580

These steel windows were manufactured by Crittall Windows. Click on No. 2016
E.R. Butler offers a variety of hardware such as these butterfly pulls. Click on No. 2260

EverGreene Architectural Arts re-created the entrance to the Great Overland Train Station in Topeka, KS. Click on No. 2460

Haddonstone created the custom window surround for this building in Kent, U.K. Click on No. 4020

Historic Doors fashioned these entry doors using mortise-and-tenon joinery. Click on No. 3570

Gaby’s Shoppe offers a selection of drapery hardware designs in six powder-coated finishes. Click on No. 2520

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This 11-ft. custom bronze door was manufactured by Historical Arts & Casting with a patina formulated to age gracefully in any climate. Click on No. 1210.

Phelps Company provides sash pulleys, sash chain and other hardware to many of the high end custom window manufacturers in North America. All of the hardware they manufacture is kept in stock in five different finishes for quick shipment. Click on No. 6001.

This traditional door set and steeple-tip door hinge are available from House of Antique Hardware in nine finishes. Click on No. 1096.

Shuttercraft offers exterior shutters in cedar and interior models in basswood, poplar and red oak. Click on no. 1321.

These elliptical arched-top French doors with double pane insulated glass were fabricated by Illingworth Millwork. Click on No. 1890.

These Bermuda shutters from Timberlane, Inc., available in any louver size with the option of large or small tilt-rods, are designed for sun screening and moderate storm protection.

Interior window systems from Indow can be made to fit any window. Click on No. 2068.

Glass interior storm windows from Innerglass Window Systems solved the draft problems for these windows. Click on No. 909.

Vintage Doors fabricated this solid Spanish Cedar double door, model DB100, to match the original doors of this early Victorian home. Click on No. 2034.

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Victorian Style Brass Heraldic Door Plate, cast in solid brass and paired with two Roaring Lion doorknobs by Corbin from their Circa 1900 catalog, called the Pavia Pattern; this complete door set is hand finished in Antique Brass Finish all from Vintage Hardware. Click on No. 2078

Wiemann Metalcraft fabricated these bronze Art Deco door panels. Click on No. 1223

This small bamboo bell push is available from Von Morris. Click on No. 1864

Woodstone uses a century-old method of wood joinery to fashion its windows to build legacy projects with a selection of finishes. Click on No. 8430

Zepsa Industries designed and built these historically styled wood doors. Click on No. 1996
To order free product literature from a company listed in these Buying Guides, go to www.traditionalbuilding.com/rs and click on the reader service number that appears at the end of its caption.
COMING THIS YEAR

State capitol restoration updates.
The Minnesota and Colorado projects appear in this issue, and we found that there’s lots more going on in other states as well. More Capitol building projects will appear in future issues.

Flooring

Resawn flooring from **Sylvan Brandt** is cut from old beams to match the grain and character of antique floors. Click on No. 3950

**Conklin’s Authentic Antique Barnwood** supplied this skinned pine and hemlock flooring, which is made from reclaimed wood.

**Valencia terra-cotta tiles from Ludowici** were used to create this Moroccan-inspired quatrefoil design. Click on No. 2760

**Craftsman Lumber** supplied the white pine boards for the flooring and paneling in this room.

**Abatron’s** brush-on epoxy Mastermold mold-making paste produces an elastic mold with high-tear strength; it can be easily peeled from intricate and undercut shapes. Click on No. 1300

**Bridger Steel** provides full metal siding solutions such as the one shown here. Click on No. 2082

**Chadsworth** offers PolyStone® composite balustrades in a variety of applications, including radial, straight, stairway, balcony and rooftop. Click on No. 1580

**Haddonstone**, available in a number of different sizes, can be used to create different patterns. Click on No. 4020

**Extending Elements, Ornament & Finishes**
Haddonstone’s extensive line of architectural cast stonework includes cornices. Click on No. 4020

Robinson Iron cast and fabricated this new storefront façade in aluminum to match the surrounding historic neighborhood in Washington, DC. Click on No. 3240

NIKO Contracting restored these copper dormer surrounds. Click on No. 8300

This stamped sheet-metal cornice was fabricated by W.F. Norman. Click on No. 520

Paving from Belden Brick was used to create this decorative pattern. Click on No. 1891

Chadsworth’s Classic pergola creates a smooth transition between interior and exterior spaces. Click on No. 1580

Gaby’s Shoppe fabricated this wrought-iron gate. Click on No. 2520

Reclaimed Metropolitan street pavers from Gavin Historical Bricks were used to create this circular drive in Birmingham, AL. Click on No. 8079

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Coming in the June 2018 issue:
The 2018 Palladio winners will be featured in our June issue. This year’s winners in Restoration & Renovation; New Design & Construction, and Adaptive Reuse/Sympathetic Addition will be highlighted.
Interior Elements, Ornament & Finishes

Abatron offers a selection of coatings designed for garage floors, including the colors shown here – Beige, Charcoal, Glacier and Beach. Click on No. 1300

American Tin Ceiling’s pattern #22 in silver washed pewter, bordered by F1 filler and C2 crown molding, was used for this parlor ceiling.

This specialty interior column base is one of many offered by Chadsworth Columns. Click on No. 1580

Chelsea Decorative Metal Co. manufactures pressed-tin ceiling panels in a variety of finishes, including bright copper.

This historic plaster was repaired by the artisans at Conrad Schmitt Studios and Chicago Ornamental Plastering Co. Click on No. 8040

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Pictured above: Interior Restoration of the Minnesota State Capitol, St. Paul, Minnesota

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Image courtesy of David Oakes, Senate Media Services
EverGreene Architectural Arts developed the methodology to clean tobacco-stained Italian marble in the three-story-tall double grand staircase of the Allen County Courthouse in Fort Wayne, IN. Click on No. 2460

Haddonstone’s parapet screening can be used for indoor use as well as for exteriors to provide a less formal and more decorative alternative to balustrading. Click on No. 4020

John Canning and David Riccio of Canning Studios are shown here preparing the decorative finishes, conservation and restoration sample at The Cosmos Club, Warne Ballroom in Washington, DC (built 1901). Click on No. 5100

NIKO fabricated and installed the decorative ceiling and ornate cornice moldings for this building. Click on No. 8300

Pacific Register offers a selection of historically styled laser-cut wood panels for ceilings and floors. Click on No. 2070

R. Alden Marshall & Assoc. restored the Texas Heroes monument in Galveston, TX. Click on No. 2099

Swiatek Studios conserved this mural at Corpus Christi Church in Buffalo, NY. Click on No. 2054

W.F. Norman Corp.’s expansive stock of sheet-metal ornament includes pressed-tin ceiling and cornice panels. Click on No. 520

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**Lighting & Electrical**

- Shown here from Arroyo Craftsman is an 18-in. Prairie Floor Lamp in a bronze finish with mica glass.
- Deep Landing Workshop’s model L-CLD0203B is shown here with the LB-20 bracket; the lantern is 32-in. tall by 13 3/4-in. wide. [Click on No. 809](#)
- This chandelier, model #18007 from Gaby’s Shoppe’s Louis XV collection, measures 56 in. wide x 37 in. tall. [Click on No. 2520](#)
- Grand Light has been restoring, replicating and manufacturing custom lighting fixtures since 1929. [Click on No. 2006](#)
- This chandelier is one of many custom-made fixtures from Authentic Designs. [Click on No. 60](#)
- The model #W136E14 brass electrified chandelier from Ball & Ball Lighting is a reproduction of an 18th-century candle-burning fixture.
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This pendant is one of many models offered by the St. Louis Antique Lighting.

Wiemann Metalcraft custom manufactured this lantern in bronze. Click on No. 1223

This ornate ceiling fan, the Peacock from Woolen Mill Fan Co., features solid-mahogany blades. Click on No. 316

This 12-in. outdoor iron lantern from Steven Handelman Studios is the Andalucia model; it is available in two sizes and a variety of finishes. Click on No. 483

When contacting companies you’ve seen in the issue, please tell them you saw them in Traditional Building.
Mantels, Fireplaces & Chimneys

Fireplace accessories available from Ball & Ball include andirons, fireplace tools, spitjacks, trammels and fire-tool stands and stones.

Fires of Tradition offers the Oak Barrington granite hearth with its arched Hamilton backpanel.

Haddonstone’s Classic chimney piece is the latest design to be launched in partnership with Robert A.M. Stern Architects and has been created specifically for the American market. Click on No. 4020

This custom fireplace surround and mantel from Phenix Marble features polished and pillowface finishes.

This fireplace mantel is one of many styles available from Decorators Supply.

Driwood provided the wood mantel for this old South Carolina vernacular farmhouse outside of Darlington, SC.

These forged steel fireplace tools and the stand are available from King Architectural Metal. Click on No. 418

Zepsa fabricated the custom interior woodwork for this mantel. Click on No. 1996

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Metalwork

Architectural Grille created these stair railing infill panels. Click on No. 2220

The Majestic perforated grille from Artistry in Architectural Grilles is available in aluminum, brass, bronze, steel and stainless steel. Call 516-488-0628 for more info.

This SL Nail Strip, from Bridger Steel, is a concealed fastener panel with a built-in nail flange for easy installation - no clips required. It is offered with 1-in. and 1 1/2-in. rib heights. Click on No. 2082

Coco Architectural Grilles & Metalcraft custom fabricated the perforated metal grille for this Art Deco interior.
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Hand-forged wrought-iron drapery hardware from Gaby's Shoppe is offered in many styles. Click on No. 2520

The Koenig Eisen line of hand-forged balusters, decorative panels and components is available from King Architectural Metals. Click on No. 418

Historical Arts & Casting custom fabricated this bronze staircase for a building in Sacramento, CA. Click on no. 1210

The replication of exterior ornamental copperwork is a specialty of NIKO Contracting Co. Click on No. 8300

In October of this year, Traditional Building turns 30!
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CLICK ON NO. 3240
This rustic copper kitchen hood was designed and fabricated by Historical Arts & Casting, Inc. Click on No. 1210

Pacific Register created the decorative metalwork for this staircase. Click on No. 2070

This elephant motif railing was created by Robinson Iron using water-jet-cutting technology. Click on No. 3240

Pacific Register created the decorative metalwork for this staircase. Click on No. 2070

This decorated sheet-metal canopy was fabricated by W.F. Norman. Click on No. 520

Wiemann Metalcraft fabricated the metalwork for St. Therese’s in Collinsville, OK. Click on No. 1223

This Mediterranean-style iron grille was created by Steven Handelman Studios. Click on No. 483

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The Bar Harbor wall-mount clawfoot tub faucet with American levers is from House of Antique Hardware; it is also available in satin nickel and oil-rubbed bronze. Click on No. 1096

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Coming in the April 2018 issue:

“The Perils in Paris” is the topic of the Forum in our next issue. Mary Campbell Gallagher will show how contemporary high-rise buildings could destroy the historic skyline in the city of light.
Timber Framing & Barns

Architectural Timber and Millwork provided the antique white oak beams and distressed pillow-edge white oak flooring for this room.

This 45x34-ft. barn was constructed by Sylvan Brandt using four bents and eight major outside posts, most of which are hand-hewn hardwood. Click on No. 3950

The hand-hewn beams on this ceiling were supplied by Carlson’s Barnwood; the firm also supplied the antique stained glass window and the rusty antique corrugated tin in the dormers.

This 18x20-ft. post-and-beam barn was built with a kit from Country Carpenters using stamped and graded timbers and premium-grade, kiln-dried siding.

This house was designed using a home building system by Early New England Homes by Country Carpenters.

Hochstetler offers a selection of timbers that can be used in a variety of applications.

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This stair was manufactured by Goodwin Company in river-recovered select heart pine.

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Click on No. 1300

This stair was manufactured by Goodwin Company in river-recovered select heart pine.

This stair was manufactured by Goodwin Company in river-recovered select heart pine.

Historic Doors offers circular crown moldings in a variety of styles and woods. Click on No. 3570

Jim Illingworth Millwork created this wood custom milled red oak casing door trim molding. Click on No. 1696

Dimitrios Kilissas hand carved this historically styled piece.

Robinson Iron designed and fabricated this stair railing with a leaf motif and swirling newel posts. Click on No. 3240

These base moldings, 1x7½ in. (left) and ¾x7¼ in. (right), are fabricated by Superior Molding in red oak and poplar. Click on No. 138

Zepsa Industries fabricated these custom cherry stairs. Click on No. 1996

Stairways, Inc., built this wood spiral staircase with decorative balusters.

This curved staircase was custom fabricated by Sterling Staircase to fit into a small space.

These Authentic Replication Roman Doric columns from Chadsworth Columns feature Ionic fluted shafts and measure 7 ft. 10 in. tall; they are made of finger-jointed wood. Click on No. 1580

This curved staircase was custom fabricated by Sterling Staircase to fit into a small space.
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When it comes to the practice of traditional building, curiosity is an essential trait for all practitioners. It is a trait that has served Ted Ingraham well in his nearly life-long pursuit of mastering hand-crafted woodworking.

After studying hotel management in college and giving it a try professionally, Ted returned to Vermont having decided his chosen field was not for him. He went to work for a builder and found success in remodeling. It was a good career and it paid well, but it didn’t seem to capture his imagination. From time to time, his boss was asked to work on older buildings and Ted increasingly found himself assigned to these jobs because he had “the patience” to work on older buildings.

At first, his work focused on the ample mid-19th-century housing stock of Rutland, VT. He found beautiful woodwork and began to wonder how such fine workmanship was done before the advent of electricity. He began to frequent libraries and buy books about tools and historic buildings. The buildings, he learned, were crafted mostly on machines that were developed during the early years of the Industrial Revolution and powered by hand, water or steam.

His studies, done mostly in isolation, pushed him further back in time. Inspired by Eric Sloane’s books, he began to delve into the world of hand tools and he frequented antique shops and flea markets in search of planes and more tools.

When it came time to build a home for his family, he crafted more than 30 double-hung windows by hand and the next step in his career was launched. He acknowledges that he works in all aspects of construction to be successful at his trade. The jobs to fabricate work entirely by hand are few and far between, but he credits the research and opportunities to build by hand to cultivating an appreciation for hand-crafted woodworking that improves all his projects.

Appreciation of the conditions under which our forbears worked is another quality that has served Ted well. When asked just what it is about 18th and early 19th century sash—he is most interested in the period of 1750-1820—that inspired him most, he replied without hesitation that “windows are the most vulnerable element” in the building envelope, yet the windows performed admirably despite rapid cycles of heat, cooling, light, darkness, rain, snow and wind. We asked a lot of them. Walls are thicker and comprise a frame, sheathing, clapboards on the exterior and usually plaster and lath on the interior; there is more depth of material to thwart the elements. Windows of the 18th-19th century transitional period vary in thickness from 7/8-in. to at most 1¼-in. Each window has numerous joints depending on the numbers of panes in each sash. Double-hung windows are made up of two operable sashes. The panes or lights of glass are held by muntins—hand-crafted crosspieces exhibiting their profiles to the inhabitants of the interiors of the homes they illuminated. A small amount of wood and glass combine to offer protection and light.

When asked why many of them performed as well as they did, he credits the use of slow-growth hardwoods and northeastern white pine to their longevity, in addition to the craftsmen who fabricated the windows. Nevertheless, extant 18th-century sash has become harder and harder to find. Deterioration, rapid advances in glass technology of the 19th and early 20th century made larger panes of glass possible and humans gravitated toward the resulting increase in light afforded by the larger lights of glass.

When asked if he had a favorite window, Ted said, “any Palladian or Venetian window.” The combination of shape and molding profiles of these surviving windows inspire him with respect and appreciation for earlier craftsmen. Readers of Traditional Building are smiling and nodding their heads in agreement while reading this, no doubt.

He no longer studies this passion in isolation. Due to a rising interest in hand-craftsmanship that began in the last quarter of the 20th century, Ted has many like-minded souls to share his knowledge and skills with in public settings. He usually demonstrates at an annual event at Historic Deerfield in October.

He also became the director of a seasonally operated museum in South Hero, VT, that houses 3,000 tools, The Arnold Zlotoff Museum. It houses the collection of Arnold Zlotoff who taught industrial arts in the New York City public school system after a stint in the army in the 1940s. Zlotoff started collecting historic tools while in college and assembled a collection that his family now stewards and shares with the public.

The museum is housed in a restored 19th-century barn on the grounds of Apple Island Resort and admission is free. There is a video on the museum’s website that illustrates the way in which a joiner, a craftman who works primarily on a bench, fabricates a traditional window sash. It shows Ted Ingraham at the bench at work.

To learn more about Ted’s work, contact him at joyner@together.net. He is particularly keen to continue examining extant mid-18th century window sash. He is most interested in the earliest Georgian era double-hung windows that succeeded earlier casement windows from the First Period in American architectural history.

For additional links to resources mentioned in this article, visit this story online at: www.traditionalbuilding.com.

This article launches a new column that will appear in each issue of Traditional Building as well as at www.traditionalbuilding.com. Judy Hayward, executive director of Historic Windsor and its Preservation Education Institute and education director for the Traditional Building Conference Series and Online Education Center will author the column. With 33 years of experience in historic preservation education, she will profile many of the people she has worked with and share the details of craft process and building materials that enrich the lives of those who live, work or steward historic and new traditionally-inspired buildings. Contact her at jhayward@ainmedia.com.
BOOK REVIEW

Reviewed by Patrick Webb

Traditional Masonry Technology

Introduction to Early American Masonry: Stone, Brick, Mortar and Plaster
by Harley J. McKee, FAIA; new forward by John G. Waite, FAIA, John G. Waite Associates, Architects
Second Edition published by The Association for Preservation Technology International (APTI), 2017; $34.50; Originally published by the National Trust for Historic Preservation and Columbia University, 1973
Paperback; 94 pages; Numerous photos and illustrations
ISBN 978-0-9986347-0-8

Let me begin by saying that this publication is an absolute treasure that should be on the shelf of and accessible to all professionals working in contemporary traditional architecture, design and building, those working in historic preservation and especially being of particular and inestimable value to those traditional craftsmen working in masonry or what is otherwise called the “trowel trades.”

This is a book about traditional architectural technology. You will find virtually no commentary about aesthetics or formal design. Neither will you encounter much reference to historical context or social influences. Introduction to Early American Masonry maintains a laser beam focus on pre-Civil War, circa 1860 traditional American craftsmen working in masonry from production of raw materials to methods of application.

The author, Professor Harley J. McKee, well known for his field documentation methodology and supervision of the Historic American Buildings Survey (HABS), was a highly respected architect having studied in the U.S. and abroad at the University of Paris as well as having been classically trained at the Beaux Arts Institute of Design in New York. He was renowned for his practical know-how and exhaustive knowledge of methods of traditional craftsmanship, particularly in the fields of slate roofing and masonry.

The Association for Preservation Technology International, of which the author was a co-founder and president, has after more than 40 years taken the initiative to republish Introduction to Early American Masonry, which had been long out of print and largely forgotten. Let’s take a few moments to consider the circumstances of its original publication and why this book remains so relevant today.

Mid-Century Historic Preservation

While the architectural avant garde was going gaga over the possibilities of mass produced concrete, glass and steel, the mid-century also had its fair share of practitioners and academics who were justly concerned with what was being deliberately discarded, literally bulldozed in the industrial stampede of all things Modernist. These concerns found resonance with the public leading to political support culminating in the National Historic Preservation Act of 1967.

One of the first orders of business was to commission a report on the state of both professional and public education in historic preservation with a notable emphasis on “Restoration” that is to say, traditional building craft skills.

The Whittehill Report on Professional and Public Education for Historic Preservation acknowledged that as of 1967 there were no known “centers for the traditional building crafts within the United States.” Below is one of the findings under the heading “Conservation of the Traditional Building Crafts”:

“Written and illustrated publications describing early craft methods and techniques. A few publications of this kind are available, though scarce. However, a vast body of essential knowledge is available in the minds and notes of specialists. A systematic program should be developed to get this information written down and duplicated for general use.”

The report continues, “Publications on various levels are essential to both professional and public education. On the professional level they are necessary both for the training of architects and craftsmen.”

The following year, 1968, the Graduate Program in Restoration and Preservation of Historic Architecture at Columbia University initiated a new course in early American building where Professor McKee developed a lecture series covering early American masonry. By 1973, Columbia University and The National Trust for Historic Preservation jointly published the subject of this review, Professor McKee’s Introduction to Early American Masonry, as the first (and unfortunately only) in a planned series on the technology of early American building.

A Peek Inside the Treasure Chest

One of the first things that struck me was the precision in terminology exercised by the author. He makes a point of immediately establishing a vocabulary, highlighting American uses of important terms for materials and methods, noting occasional differences in usage or vocabulary between America and England.

Approximately two thirds of the book is devoted to traditional craft methods, the remaining third to materials. Stone is given slightly more attention than brick masonry and plaster. This is understandable as the quarrying and carving of stone is considered, in addition to the masonry. Having personal experience in plaster, stone and brick masonry, I can testify that the information presented is quite accurate and well presented, enriched by the many hand drawn illustrations by the author himself.

Quite unique is the identification of numerous historic American quarries for sandstone, limestone, granite and marble. In addition to hand drawings, the book is replete with photos highlighting exceptional examples of craftsmanship from around the country. The book concludes with an Appendix that points to a number of valuable 19th- to early 20th-century sources for further study.

Superbly researched yet presented in a manner easily accessible to students and laymen alike, I would recommend Introduction to Early American Masonry as a mature work built on a lifetime of teaching, documentation and the practical hands on experience of historic preservation.

To order a copy of Introduction to Early American Masonry: Stone, Brick, Mortar and Plaster, go to: www.apti.org.

Patrick Webb is a traditional and ornamental plasterer, former Professor of Plaster Working at the American College of the Building Arts in Charleston, SC. He is currently working with the Director of The Academy of Classical Design, Jeffrey Mims, to develop a School of Ornament and Mural Guild as well as serving as a trustee for The Classical Design Foundation.
BOOK REVIEW

Reviewed by Clem Labine

Insights from a Traditionalist Superhero

Classic Columns: 40 Years of Writing on Architecture
By Robert Adam; Edited by Clive Aslet with a foreword by Sir Roger Scruton
264 pp; Hardcover; 356 Color images; $85

Traditional architecture doesn’t have many “superheroes”—but architect Robert Adam is about as close as they come. That’s why his latest book, Classic Columns, deserves serious study by every professional who believes respect for tradition has relevance for creating a beautiful, livable, sustainable built environment.

Adam is not all that well known in North America—although his winning of the 2017 Driehaus Prize for classical architecture has certainly raised his profile. Robert Adam is the founder of ADAM Architecture, an architecture and urban design practice in Britain with offices in Winchester and London. With a staff of around 70, the firm is the largest in Europe specializing in classical and traditional architecture, along with urban planning and design.

Unlike many classically oriented design practices, ADAM Architecture is not limited to designing costly manor houses for wealthy clients. Adam’s firm has also created numerous public and commercial buildings, and is also deeply involved with urban housing and civic planning. Thus, he has developed the rhetorical skills needed for dealing with zoning officials, design review boards, and Modernist tastemakers who insist that historically inspired design is “ersatz architecture.”

In addition, Adam has not been confined by his role as co-director of a major architectural practice. Besides being an award-winning designer, Adam is also a scholar, theorist, author, philosopher, teacher, lecturer, architectural activist—and an excellent writer. He is a tireless missionary for traditionalism in a digital world that’s spellbound by Modernism and its endless quest for “the shock of the new.”

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Adam is a member of Royal Institute of British Architects (RIBA), the citadel of English Modernism. Despite being vastly outnumbered within RIBA, he has been an ardent and consistent advocate for the “modernity of tradition.” Even though the majority of his RIBA colleagues strongly disagree with him, through his collegial good nature Adam is regarded well enough within RIBA to have been twice elected to its Council, and from 2001 to 2003 became Honorary Secretary.

It was during this period he founded the RIBA-linked society, the Traditional Architecture Group (TAG). TAG is “committed to developing the values established by traditional and classical architecture, and developing them as a language relevant to the modern world.” (Can you imagine an AIA-affiliated group dedicated to such a mission?) Adam is also a founder of the influential International Network for Traditional Building, Architecture and Urbanism (INTBAU) and several other architecture-related organizations.

As if running a successful practice coupled with teaching and architec-
R
cently many architects have begun to take note of remark-
able new findings emerging from the field of neuroscience,
the study of the brain and nervous system and how those
react to stimuli. We are learning that this complex system
has powerful perceptual capabilities, enabling us to be able to better protect
and enhance our own well-being.

The implications for those of us who work in the built environment are
far-reaching. The new research is helping us to better understand how the
structure of buildings affects human experience and well-being—how we
can treat the human environment as a whole system, coupling the environ-
ment and the human.

Other disciplines, including anthropology, sociology and environmen-
tal psychology, have also recently revealed a great deal about the effects
of the environment on human beings, including aesthetic impacts. The
emerging topic of “biophilia” demonstrates the importance of character-
istics like plant and animal forms, water, fractal patterns, coherence and
legibility, and mathematical complexity [1, 2].

These characteristics are abundant in both natural and traditional
built environments. Revealingly, however, they are largely absent from
contemporary buildings based on minimalist industrial geometries. These
designs often rely more on dramatically “pure” shapes, simple repeated
abstractions, and sometimes shocking contrasts. We previously referred to
this doctrinaire use of “purified” minimalist forms as “geometrical funda-
mentalism” [3].

This is not without an impact on human well-being—as neuroscience is
demonstrating. Through eye-tracking devices, we learn that most people
look at the same features of a building or street scene, often in the same
sequence. In a remarkable verification of traditional insights, we apparently
goze only at regions with contrast, curves, detail and ornament, and other
specific “biophilic” features.

The new sciences also cast a new light on the age-old topic of beauty.
It now seems that what we experience as beautiful is a sharable perception
of beneficial conditions in our environment. We see beauty in a healthy
meadow or fresh fruit, for example, whereas rotten fruit or a fire-swept
meadow will likely be experienced as ugly. Beauty is not simply “in the
eye of the beholder,” as was once held; it is the result of a complex struc-
tural interaction between the viewer and the environment, with signifi-
cant impacts on our health and well-being.

Research also shows us that it is architects who are often in the minority
about what constitutes good (or beautiful) design from a user’s perspec-
tive [4, 5]. Eye-tracking experiments reveal that built structures that
follow the contemporary esthetic of “geometrical fundamentalism” are
often ignored as if they weren’t there [6]. Other evidence shows that such
structures can be stress-inducing, and consequently degrade the quality of
life of people who live around them.

Of course, it’s also possible to use “geometrical fundamentalism” to
create structures that are attention-getting, exciting, even entertaining. It’s
possible to play an “inside game” of abstract ideas translated into artistic
objects. But that isn’t the same thing as creating places that improve the
quality of human life—a crucial point that the new findings illustrate.

Sociology and anthropology also show us that as a group, architects and
architectural academics exert considerable authority and power, imposing
their own professional narrative (and their own unique and sometimes
arrogant artistic preferences) as to what is supposed to be good design [7].

There is no small irony in this, since it’s maintained (often by the same
professionals) that architecture is a “subjective” art form whose aesthetic
quality is only in “the eye of the beholder.” When new fashionable projects
are criticized by citizens as ugly, out of character, or even anxiety-induc-
ing, such criticism is often dismissed as “mere opinion.”

On the other hand, architectural authorities often summarily reject
new projects of traditional character, as not expressing the “spirit of the
age”—a dubious criterion that nonetheless sidesteps the question of taste.
Our time, it is unquestioningly assumed, demands a unique style (i.e.
“geometrical fundamentalism”), like it or not. And if you don’t like it, that
too is merely your subjective opinion.

In this dogmatic intellectual environment, the new findings from neu-
roscience and other fields are game-changing. They establish independent
and shareable evidence by which we may evaluate built environments,
new or old, and their effects on people, quite apart from anyone’s dogma
cant. We also learn that traditional environments are much more rich
and sophisticated than we thought, offering us highly evolved repositories
of beautiful, well-adapted, and successful design patterns.

A word of caution is warranted however: like the results of any science,
such findings can be used for good or ill. Advertisers, for example, test
which colors and patterns arouse viewers’ brains. That information can be
used to better position products so that consumers who will benefit can
become better aware of them—or it can be used to manipulate and distort,
resulting in forms of consumption (like, say, junk food in brightly colored
packaging) that degrade our health and well-being.

The question is, then, whether we are applying such knowledge
merely to excite, entertain, and drive commodification and consump-
tion. Ultimately these manipulative practices reinforce the trivialization
and degradation of community life, resulting in what the anthropologist
Edward Sapir termed “spurious culture.”

In the same way, neuroscience can be used for good or ill in structuring
the built environment. Instead of promoting human well-being, design
could merely enhance “excitement” as a shallow gimmick, a more extreme
kind of environmental “novelty act” by self-rationalizing artists. Indeed,
some recent applications of neuroscience to “high fashion” architecture
appear to be little more than elaborate marketing devices to provide more
exciting costumes for the same inadequate buildings—more manipulative
packaging to help sell them to gullible clients.

If neuroscience is co-opted as merely another “bag of tricks” to spice up
and keep promoting the same old architectural pathologies, then we will
continue to degrade and fragment an increasingly unsustainable, unhealthy
human environment. But as a part of a more professionally responsible
approach, neuroscience can be a powerful tool to help achieve needed
progress toward a world of healthier, more coherent, more enduring—and
more beautiful—human environments.

Links to research citations can be found at:

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