

Illuminating Imagery

By Audrey Doyle



Image courtesy of Palindrome Lighting Design, Inc.

With Autodesk VIZ software, Palindrome creates lighting designs that are photorealistic as well as accurate.

A certified lighting designer, Michael Noon has structured his company, Palindrome Lighting Design of Gambrills, Maryland, around helping his clients explore the art, the science, and the business of great lighting.

“When I talk about the art of lighting, I’m talking about how lighting can make an average space look stunning when it’s used correctly, and how it can ruin a great-looking space when it’s used incorrectly,” Noon explains. “When I talk about the science of lighting, I’m talking about accurately predicting how invisible electromagnetic energy will interact with surfaces and colors and how that interaction will affect people, one of the most difficult things to achieve in design. And when I talk about the business of lighting, I mean the importance of the role that lighting plays in all construction projects, as well as the importance of having a photorealistic lighting design that you can show to clients and whose accuracy you can defend in order to see the design through to completion.”

Being able to combine the art, the science, and the business of great lighting is crucial if one is to succeed in the lighting design field, Noon says. That is why his company relies on Autodesk® VIZ software, and its combination of powerful 3D modeling, rendering, and photometric lighting capabilities, for all of its projects. “VIZ has the tools that enable us to portray lighting ideas for our clients’ projects quickly and accurately,” he says. “When we need photorealistic images that also are accurate, VIZ is the tool we turn to.”

Noon says that Palindrome has been using Autodesk VIZ software since he formed the company six years ago. “Initially we used it because it offered a powerful combination of 3D modeling tools and it interfaced with Lightscape, which is the software we were using at that time to light our models,” he says.

Since then Autodesk has purchased Lightscape and has successfully incorporated Lightscape’s most powerful lighting features into VIZ. “VIZ offers so many great features for lighting design,” Noon enthuses. “It has customizable light sources, so we can take any of the software’s

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source files and craft them into whatever we want. It lets us adjust factors like intensity, focus, and falloff on the various lights within a model. It provides IES files, which are photometric data files, provided by lighting manufacturers, which describe exactly what the light fixtures are going to do in a real-world installation. And it has day-lighting tools, so we can analyze the impact of skylight and daylight on a project.”

Noon adds that the software also enables Palindrome to add gobo effects, with filtering, for creating things like the effect of moonlight shining through the leaves of a tree. In addition, Palindrome can render lighting analysis studies in VIZ, using the software’s Pseudo Color Exposure tool, which will tell them the actual numerical intensity of the lighting they are putting into their models. The software quantifies how much light is falling on a surface, as well as how much is being reflected. “Being able to provide both illuminance and luminance analyses is critical,” says Noon, “because as lighting professionals, we need to validate to our clients that we aren’t just creating pretty pictures.

We are accurately reflecting in our imagery how the space will look when it is finished. This way, our clients don’t have to guess how their projects will look, and they can be sure that in a project’s early stages the architectural design and the lighting design will work well together.”

Today Palindrome relies on the capabilities in Autodesk VIZ 2006 to provide lighting design consultation services as well as to create complete, full-service design packages that include schematic design, 3D modeling and analysis, specification, documentation, and construction administration for commercial, residential, and historical projects.

One such design package that Palindrome completed recently was for St. John’s Church, located in Severna Park, Maryland. As Noon explains, the church, built in 1959, had an interior meant to resemble Christ’s tomb. As such, the entire ceiling of the cavernous, two-story-high church was painted black, and its walls were constructed of dark brown brick.

“It was supposed to be a very dark, introspective, quiet place, but the church is so big that it was intimidating,” Noon says. “No one wanted to get married in the church because it was so dour looking! Soon, the congregation started complaining about the inside of the church. I’d say it didn’t take more than a decade after the church was built before the congregation started wondering if they shouldn’t have approached the design from a different angle.”

After many years of debate and discussion, the church received approval from board members to move ahead with a complete remodel of the interior. Last year, the Archdiocese of Baltimore hired Kann & Associates Architects to develop a new architectural design for the interior, and Kann hired Palindrome to design the lighting for the remodeled space—in Noon’s words, “to bring the church from night into day.”

To build a 3D model of the church interior, Noon used as reference some rudimentary outlines and basic as-built drawings Kann & Associates provided in DWG format. These outlines and drawings reflected an earlier design that proposed a coffered ceiling that both Kann & Associates and Noon thought made the church look too much like a boardroom. So the architects invited Noon to manipulate the ceiling design into something that was more aesthetically pleasing, while also transforming the interior of the church from a dark and gloomy space to one that was bright and inviting.

First, using the Extrude tool in VIZ, Noon extruded the various curved dimensions of the coffers to form a T-shaped series of coves, with the crux of the T positioned over the main altar. Next, he gave the ceiling a variety of different treatments from which the church board could choose. These treatments included dramatic sky effects, which he accomplished by using the software’s UVW Mapping tool to map drawings he created of the heavens onto the 3D model of the ceiling. In one treatment, the color gradates gradually from amber to blue, and in another it is soft and monochromatic.

Once the 3D model was finished, Noon began lighting the space. “We illuminated the whole church using the photometric lighting capability in VIZ,” he recalls. “We used indirect lights to light the church interior, plus accent spotlights to highlight things like the organ pipes and the altar. We also used uplights in the coves, and we hung a few custom-built pendant lights from the ceiling, with the idea that if the church board approved the pendants, we could have them manufactured specially for the project.”

Once they were done lighting the space, they rendered the images using VIZ Render. According to Noon, Autodesk VIZ enabled Palindrome to show the church board exactly what the remodeled interior would look like when lit with the new lighting design. As a result, the church board enthusiastically approved the project, along with the soft, monochromatic sky effect and custom fixtures, and construction is now pending, awaiting a green light from the new parish priest.

Palindrome achieved similar positive results for another church project in Baltimore, this one for Lovely Lane Church. This church, designed by noted architect Stanford White and built around 1870, originally was illuminated with gaslights, which made the interior quite dim by today’s standards. For this project, Kann & Associates hired Palindrome to relight the church to meet modern lighting codes. “Our goal was to relight the interior, while maintaining the historical vibe so that it didn’t look like we had infused a lot of electrical light into the space,” Noon says.

Palindrome used VIZ to re-create Kann & Associates’ architectural drawings in 3D, relying in particular on the software’s Cross-Section Modifier to build the church’s elliptical domed ceiling. To light the space, they once again used the photometric lighting capability in VIZ, placing accent lights on the organ pipes and on the baptismal and pulpit areas, and indirect lights



on the dome. In addition, they infused the sanctuary with soft light so that congregants would be able to see what they were reading, and they placed various historical pendants, which they modeled in Autodesk VIZ, under the balcony.

They also used the software's UVW Mapping capability for a key aspect of the project. "The church has a gorgeous star field painted onto its domed ceiling," Noon explains. "Decades ago, the Naval Observatory created a painting of the star field. We took a photo of that painting and used UVW Mapping to map the photo onto the 3D model of the dome. Once the space was lit, everything looked so realistic that people viewing the images thought they were looking at photos of the finished work." According to Noon, the Lovely Lane Church images won a 2004 Award of Merit from the Illumination Engineering Society of North America (IESNA) and a Historic Preservation Award from Baltimore Heritage. "The renovation is complete and looks spectacular," he adds.

Not all of Palindrome's projects involve churches. Another recent project the company completed was for Towson University. This project, which was handled by Gensler, a leading global architecture, design, planning, and strategic consulting firm, concerned renovation of an administration/classroom building on the school's Baltimore campus. For the project, Palindrome created images that showed the interior four-story glass atrium of the building illuminated at night, as well as the exterior of the building, also illuminated at night.

Palindrome created the model of the building in VIZ, using as reference CAD drawings that it received from Gensler. To light the building, the company placed indirect lights shining onto the atrium ceiling and direct lights lighting the atrium interior. "Outside, we used uplights on the building and accent lights shining into the surrounding courtyard," Noon explains. "The building also features an illuminated bridge on the third story that spans across the courtyard to a parking garage. It was a complex model, with a lot of connecting structural elements, and both interior and exterior lighting that we had to render in the same scene. But thanks to VIZ, we were able to pull it off."

Like it did for the St. John's Church project, Palindrome rendered the images for the Lovely Lane Church and the Towson University projects using VIZ Render. Although Noon says that each project was challenging in its own right, all of them were achievable, thanks to Autodesk VIZ software. "The key VIZ elements for us are its photometric lighting capability and its Pseudo Color analysis," Noon says. "When I need a crème de la crème image that is also highly accurate, I know that VIZ will deliver.

"VIZ has allowed Palindrome to stand out from the crowd in terms of photorealistic lighting design and rendering," he concludes. "We plan to continue using VIZ for all of our lighting design needs."