Gage/Clemenceau Architects

Customer Success Story

Autodesk® Maya®

We use Autodesk Maya to create unique architectural forms that are more robust—and less expected—than those created with software packages that are specifically built for architectural design.

—Mark Foster Gage
Founding Partner
Gage/Clemenceau Architects

Experimenting with innovation.

Gage/Clemenceau Architects use Autodesk® Maya® software to move beyond typical architectural design limits.

Project Summary

Gage/Clemenceau Architects is a New York City–based architecture and design firm with projects covering a broad spectrum of scales: from a large hotel/resort, to residential projects, even furniture and product design. Founded in 2002 by Mark Foster Gage and Marc Clemenceau Bailly, the firm employs designers and architects with a diverse range of backgrounds—from architecture and interior design to motion graphics, fabrication, and sculpture—resulting in projects that move beyond the limits of a typical architectural practice. The work of the firm is motivated by their preference for design innovation above simple styling, relying on novel alliances between progressive technologies, new materials, and a renewed interest in architecture as an exceedingly visual and aesthetically driven discipline.

One of the firm's core design tools is Autodesk Maya—a modeling, animation, and rendering solution that is widely used in movies, television, and game development, but is just now being discovered as a tool for architectural design and visualization. "We use Autodesk Maya software to create unique architectural forms that are more robust and less expected than those created with software packages specifically built for architectural design," remarks Mark Foster Gage, a founding partner of Gage/Clemenceau Architects. The fact that the development of Autodesk Maya software has been focused outside the building industry—primarily in the film industry where it is used for generating and animating characters—gives architects like Gage/Clemenceau Architects a totally different palette.

A Door to Innovation

In fact, it is a happy coincidence that the firm is using Autodesk Maya software at all. "When I was in graduate school at Yale University, I went through a wrong door and accidentally walked into a classroom where they were teaching a digital media class using Autodesk Maya software," relates Gage. "Before I discovered my mistake, I had already seen a demonstration of Autodesk Maya software and realized its potential for architectural design." He transferred into the class and has been using Autodesk Maya software ever since.

About half the firm's work is billable projects and the other half is architectural competitions and exhibitions. But regardless of the project type, they use Autodesk Maya software to imbue the design with inventive elements. "For our billable projects, we generally use AutoCAD to do perhaps 75 percent of the design. But we always try to pick one aspect of the job and use Autodesk Maya software to make it absolutely unique," states Gage. For instance, on a recent project for a residential loft owner in the SoHo neighborhood of New York City, the firm designed a stunning partition that resembles a translucent, frozen drapery. The design pattern of the wall was created in Autodesk Maya software using NURBS and fabricated with a CNC (computer numerical control) mill, using the pattern as the toolpath.

"For our architectural competitions, we rely on Autodesk Maya software exclusively for design and use AutoCAD to create plans and sections," says Gage. "In our competition designs, we avoid using any prescribed design style. Instead, we use some technique that we've discovered in Autodesk Maya software and apply that to an architectural project." As a result, their competition designs are always progressive—always based on new forms of aesthetics.

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Pushing the Envelope

Gage/Clemenceau Architects is constantly pushing the design envelope, adapting some of the generic modeling features for architectural design in Autodesk Maya software and using the software's modeling tools and techniques to facilitate experimentation with complex architectural forms.

In the past they used NURBS, especially animating NURBS, to produce designs based on a template that repeated but every repetition was varied. "Now we're taking advantage of Autodesk Maya software Subdivision Surfaces modeling, which has given us a whole new design vocabulary," reports Gage. For example, the firm recently used Subdivision Surfaces on a proposal for an addition to a library in Sweden. Instead of floor plates with volumes inserted, the project placed a series of elaborately contoured and hanging programmatic "leaves"—all interconnected by bridges, walkways, and escalators. Instead of a totally seamless surface appearance, their use of subdivisions gave the components the look of being assembled from multiple pieces—as would be the case for architectural components.

Textures are another important component of the designs of Gage/Clemenceau Architects, and they use Autodesk Maya software to study how different textures affect a design. Reports Gage, "On a recent project we used shape-deforming lattices and fluid dynamics to generate surface textures with NURBS and then 'drew' textures on the surfaces by splitting polygons into 3D patterns. Finally, we converted the model to subdivision surfaces for a smoother, almost sticky, aesthetic."

Education and Fabrication

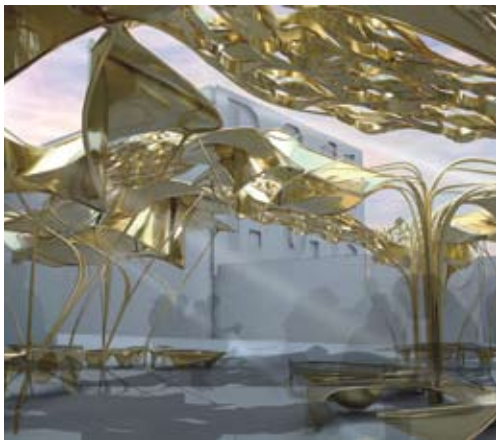
Although Autodesk Maya software is not built specifically for architecture, it is being used at many of the top architecture schools around the country, including Yale, Columbia, and the Southern California Institute for Architecture. In addition to his work at Gage/Clemenceau Architects, Mark Foster Gage is also an assistant professor at Yale's School of Architecture, where he teaches graduate-level advanced design studios and seminars—and thus has a keen awareness of the role Autodesk Maya software is playing in educating the next generation of architects. "Autodesk Maya software is driving all of the formal experimentation at these schools," reports Gage. "As we become more experienced with digital fabrication techniques and demonstrate that these designs can actually be built, this sort of formal design exploration will gain even more prominence within the profession."

Model Project

One of the firm's recent projects using Autodesk Maya software was the interior redesign of a modeling agency's headquarters building in NYC. The company represents people from the fashion industry—who understand well the influence of design—so impressions created by their headquarters office were particularly crucial. One exceptionally striking part of the design was an intricate wall surface with a unique wave pattern in the lobby area. The wall was designed in Autodesk Maya software and fabricated using a CNC Milling machine. The building contractor was using the mill in his fabrication shop to do cabinetry work, and when Gage/Clemenceau Architects approached him to fabricate this wall surface, he didn't think his machine had the capability. "We showed him how it could be done by using 3-axis machining to create discrete panels that were combined to create the wall. He was amazed his mill could produce a building component that large and complex," remarks Gage.

Competitive Designs

Some of the firm's most original work is done for architectural design competitions. For these projects, Autodesk Maya software brings originality to their designs—originality not particularly conducive to CAD systems with prepackaged architectural forms and architectural intentions. For example, Gage/Clemenceau Architects were finalists in a competition sponsored by NYC's Museum of Modern Art (MoMA) to build an installation in the courtyard of the PS1



Contemporary Art Center. Echoing the sway of underwater sea kelp, the design consisted of 16 modular structures of carbon steel tubing that would curve overhead, covered with a metal mesh that would allow filtered sunlight into the courtyard area. Autodesk Maya software was used to model the metal "kelp," and to study how the design was affected by light—natural daylight, artificial multi-colored light projected from the floor up through the "kelp", and small LEDs arranged throughout the gold-painted canopy.

Purpose-Built for Innovation

Autodesk Maya software may not have been created as an architectural design tool, but it is getting the job done for Gage/Clemenceau Architects—precisely because it is not focused on architecture. "Autodesk Maya software has worked for us because we're using it for unintended purposes—fueling our innovative thinking and helping us overcome creative obstacles," concludes Gage. "Autodesk Maya software is fulfilling our aesthetic ambitions in a way that no other conceptual modeling tool can."

To learn more about Autodesk Maya, visit www.autodesk.com/maya.

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