Green Cabinet of Curiosities

Exhibits at the new California Academy of Sciences give the time-honored specimen box a contemporary—and sustainable—spin. BY LESLIE WOLKE

Imagine receiving the following creative brief:

"Collaborate with a Pritzker Prize winning architect, evolutionary biologists and ecologists, and the staff of a 157-year-old acclaimed research institution to create a new generation of sustainable exhibition design for a space bathed in natural light and without walls, in the middle of Golden Gate Park, San Francisco."

Opposite: Natural light suffuses the museum's interior volumes. Monitors were positioned away from direct sunlight and, when necessary, viewing hoods were added to dampen ambient light and noise. Low-energy LEDs in light boxes and specimen cabinets save energy while providing added visibility.

Natural history exhibits on the museum's main floor live inside Renzo Piano's open, light-filled volumes near the indoor rain forest (right), with Golden Gate Park visible outside the glass curtain wall.

This was the challenge that brought together Jonathan Katz, founder and CEO of Cinnabar, a Los Angeles-based production and fabrication company, and Adam Brodsley, principal and co-founder of Volume Inc., a multi-disciplinary design studio in San Francisco. Katz, Brodsley, and a bevy of designers and exhibit specialists produced two main attractions for the new home of the California Academy of Sciences, the 412,000-sq.-ft. LEED Platinum museum that is transforming the definition of that word by its very being.

Outside the black box

Designed by Renzo Piano, the museum is the largest public Platinum-rated building in the world. Housing a planetarium, a four-story rain forest, and an aquarium, along with natural history exhibits, the Academy gives visitors a holistic portrait of our world and its diverse inhabitants, past and present.

A major focus of the Cinnabar/Volume collaboration was exhibits for the Kimball Natural History Museum's West and East Halls. While they are "halls" in the sense that they are large spaces at 10,000 sq. ft. each, they are not defined by walls, entrances, and exits. On the far sides, they are open to a glass curtain wall that defines the building's perimeter and offers spectacular views into Golden Gate Park.

The exhibits are freestanding and multifaceted—not enclosed in the "black box" of a traditional gallery. Visitors wander through the light-filled space and engage with the displays as they choose, weaving together their own narratives of the subject matter. Without a traffic path defined by the architecture, the exhibits had to be "discoverable, following the non-linear experience of life," explains Rhonda Rubinstein, the Academy's creative director.

Each of the exhibits has a profound and enlightening story to tell. In the West Hall, "Altered State: Climate Change in California" uses

Direct-to-substrate printing eliminated the need for additional mounting substrates and reduced the use of solvents and adhesives. The team chose a combination of FSC-certified plywood and low-VOC toner to render clean, crisp graphics.

CALIFORNIA ACADEMY OF SCIENCES NATURAL HISTORY EXHIBITS

Client: California Academy of Sciences
Location: San Francisco
Building: Renzo Piano Building Workshop (design architect), Stantec Architecture (architect of record), Arup (engineering and sustainability consultants), SWA Group (landscape architecture)
Exhibit Design: Cinnabar Inc. (executive producer, design and production), Volume Inc. (graphic information hierarchy and design), Hodgetts + Fung (modular exhibit system development), Tim Martin Design (Altered State schematic design)
Exhibit Team: Cinnabar Inc. (executive producer, design, content, production) Jonathan Katz (executive producer), Jeannie Lomma (senior project manager), Juan Corral (production manager), Brian Whittier (technical director), Andrea Whittier (production manager), Pixie Cearbhaill Hearn (specimen and content integration), Dante Thomas (mechanical interactive developer); Volume Inc. (graphic information hierarchy and design), Adam Brodsley, Eric Heiman (principals in charge), Hodgetts + Fung (modular exhibit system development), Craig Hodgetts (principal in charge), Tim Martin Design (Altered States schematics)
Consultants: Mindi Lipschultz (media director), Vicki Mautner (project scheduler), Tom Mullaly (AV manager), First Circle Design LLC (exhibit lighting), BBI (AV systems), Thornton Tomasetti (structural engineering)
Fabrication: Cinnabar Inc. (primary fabricator), LA Propoint (exhibit chassis and custom railing); Snibbe Interactive (multimedia interactives), Edwards Technologies (Galapagos AV), Gizmo Art Production (mechanical interactives); Keshot (interactive video software), Crush Creative, Digital Pre-Press International (graphics production)
Photos: Joe Fletcher (except as noted)

Cinnabar designed a flexible kit-of-parts that can change as the museum content evolves. The freestanding exhibits are built around a steel post anchored with one central earthquake-proof mounting bolt on the node of the 8-ft.-sq. floor grid. Railings for platforms, lighting, and exhibit cases are attached and can be reconfigured easily.

concrete examples of the impact of global warming in the Academy's home state to define the problem, its causes, and remedies. "Islands of Evolution" in the East Hall traces the Academy's long history of expeditions and research in the Galapagos Islands and Madagascar in support of our understanding of evolution.

Reviving the specimen box

With such weighty and potentially daunting subject matter, Brodsley and his team at Volume began by devising an information framework that would afford "the 2 second, 2 minute, or 2 hour visit, rather than assuming that visitors do not read."

Inspired by the specimen cases of early scientific collection, they developed a modular, tiered system of organization in which to display a wide variety of media, from photographs and video to specimens and illustrations. The specimen-box approach—which Brodsley describes as "a little nod to history done in a contemporary way"—was welcomed by Piano and the Academy staff. Its cohesive and friendly visual language frames the subject matter at macro and micro scales: in supersized banners that can be seen from across the museum's large expanses, and in more intimate illustrations meant for close inspection.

Volume chose the exhibit font, Whitney, in coordination with Pentagram's identity guidelines for the museum. Volume's suggestion to use all capital letters for headlines inspired "heated discussions," says Brodsley. "The Pentagram guidelines did not allow for this. But we thought it was necessary to create hierarchy and enough variation in the panels."

Green mission

While Volume's focus was the graphic information hierarchy and visual design, Jonathan Katz, as executive producer of the effort, was responsible for the overall program. Its goal was a flexible and modular exhibit system that, in support of the Academy's mission to define the 21st century museum, would be built on the same principles that define Renzo Piano's building. "The total message of the building is a green message," states Academy Executive Director Dr. Gregory C. Farrington. "It's about life, how we got here, the marvelous diversity of life, its preciousness, and the choices we face in learning how to stay."

For the Academy, Katz explains, "Those choices go beyond the three R's of 'reduce, reuse, recycle.'" Every element is conceived as part of the Academy's ecology and assessed by its current impact and its long-term benefit. This directive meant that the exhibit system itself should be able to evolve and grow with the changing needs of the facility.

The design team responded with a flexible, modular kit-of-parts approach based on the building's 8-ft. grid. Without walls to anchor to, the freestanding exhibit skeleton begins with a powder-coated steel post anchored with one central earthquake-proof mounting bolt on the node of the 8-ft.-square floor grid. From that post, railings for platforms, lighting, and exhibit cases are attached and can be reconfigured easily as the display needs change. Displays range from 8- to 24-ft. long and as high as 15 ft. The exhibits are self-sufficient in the sense that the steel post is used as the channel for electrical, lighting, AV, and climate control. As Katz explains, the modular nature of the system "allows for incremental changes without disrupting design continuity."

A spare palette—largely steel and plywood—was inspired by the architecture. "When you look at the building, it's all there," says Katz. "Integrity runs right through it. You can see how it's made and what it's made of." The Cinnabar team and their consultants took the mission to heart and focused on economical materials and methods for exhibit construction. That meant a lot of experimentation and the development of a few new techniques.

The team investigated direct-to-substrate printing, which would reduce the materials used to sandwich prints to rigid panels. Katz worked with several printing companies that had 6-ft.-wide flatbed inkjet printers and performed tests on glass, wood, and plastics, until they found the right combination of FSC-certified plywood and low-VOC toner to render clean, crisp graphics for the exhibits. Printing directly on plywood had the added effect of imbuing the graphics with a sense of immediacy—what Katz calls "an anti-mustiness" that is sympathetic to the building.

Bypassing standard printing methods such as photographic processes and substrates also meant decreased use of adhesives or solvents, another "green" advantage.

At a full project cost of $475 per square foot, the Kimball exhibits were about half the cost of a typical exhibit installation, says Katz, contesting the notion that "green" materials and methods cost more than their traditional counterparts.

The low-tech "Share Your Ideas" space invites visitors to record their comments about global warming on cards of paper. Even this small detail was designed with sustainability in mind: the cards are pre-cycled "make-readies" used to test ink coverage in offset printing.

High-tech, low-tech, and sustainable

Ambient light was a major issue to overcome in locating the roughly 50 video screens embedded in the exhibits. Interactive games and video from the Academy's collections and research studies animate the exhibits and draw visitors in for a closer look. But how to select and position monitors that met the project's low hardware and power requirements and, at the same time, would be bright enough to be seen in full daylight?

Tom Mulally, principal of Numagic Consulting (Los Angeles) consulted with Cinnabar to make the most of the challenging conditions. The inherent flexibility of the kit-of-parts allowed the team to position monitors away from direct sunlight and, when necessary, accommodated the addition of viewing hoods to dampen both ambient light and noise. As Energy Star digital displays and equipment were chosen, Cinnabar designed the armatures and cabinets to provide optimum placement and heat dissipation for passive cooling of the appliances. Low-energy LEDs are used in the light boxes and specimen cabinets, saving energy while providing added visibility in the generous ambient light.

You might guess that the interactive games and exotic video journals would top the list of visitors' favorites, but a surprisingly low-tech form of interactivity has astounded Academy staff and the exhibit designers alike with its popularity. "Share Your Ideas" is a space where visitors can post their comments about global warming and the Altered States exhibit on paper tags. With more than 10,000 entries, it's been a smash hit.

With its popularity arose concern about sourcing those paper tags. What would be the most sustainable and practical solution? The Academy's in-house design studio collaborated with their printer, Paragraphics, and now the tags are made from "make-readies," paper used to test ink coverage on off-set printing presses. Cut to size, these tags reveal a bit of the mystery about their origin on the back sides, which show the layered swatches of test prints.

Make-readies are typically recycled after several trips through the press. But the "pre-cycling" approach exemplifies the strong convictions shared by the Cinnabar/Volume team and the Academy's own designers: thoughtful and frugal choices rendered practically, tuned to their environment, and beautifully amplifying their scientific mission. X

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