HOME ENTERTAINMENT
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Out of the Box Home Theater

October 16, 2009 By J.B. Howell

A traditional home theater pushes the envelope with its unorthodox floor plan, elaborate European woodwork and a mind-blowing sound system.

The ability to put aside one's own opinion out of respect for the other party's desires goes against the grain of human nature. It's an evolved trait. And for the top expert in his or her field to do such a thing—especially the founder of a particular industry—well, that behavior is more than rare. It's honorable. And brave. Theo Kalomirakis is just this kind of brave person.

Kalomirakis is the designer behind this plush private screening room. In addition, he's the owner of the eponymous home-theater design firm in Manhattan, Theo Kalomirakis Theaters. And he's known around the world as the "father of home-theater design."

From the beginning, Kalomirakis' client was very clear about wrapping his new home theater in rich woodworking that was finished with a shiny lacquer. Kalomirakis, however, disagreed with his client and recommended a different approach: He told the homeowner that the theater's elaborately carved millwork shouldn't be covered with a heavy lacquer.

"In my mind, it's a little too reflective," Kalomirakis says. "I was concerned it would be wrong for the theater." Nevertheless, the theater designer understood that the high-gloss sheen was very important to the homeowner. His client had to have that look. So Kalomirakis honored his client's wishes.

Seven years later, after the client's home theater was completed, Kalomirakis saw the room in all its high-gloss glory. And he was pleasantly surprised. "I was very nervous to see it because I was not on site when they installed the millwork," Kalomirakis says. "I was worried that the shine would ruin the effect. But the owner, a very sweet man, kept saying: 'Don't worry about it. It looks great. It's not distracting.'"

Sure enough, the homeowner was right.
Since Kalomirakis built his first home theater in 1985, he's orchestrated more than 400 stunning residential cinemas. Not surprisingly, he's mastered the fine art of hearing *and* honoring other people's opinions and needs. "In our world, it's always about compromise," he says. "If one part, like me, insists on the design aspect that he or she presents, other trades get screwed up. You have to be able to work out the differences with the contractor and the acoustic consultant."

In this project, one of those "differences" involved the theater's ceiling treatment. "This home has the most amazing craftsmanship," Kalomirakis says. "They hired people from all over the world and have a lot of decorative painting throughout the house."

As a result, the designer envisioned the theater as an extension of those breathtaking paintings and wanted to cover the ceiling with an enormous mural. But after consulting with acoustician Steve Haas, the owner of SH Acoustics in Milford, CT, about the ceiling mural, the design team concluded that it wouldn't work: The theater's numerous speakers had no place to go other than in the ceiling.

And if the speakers had to be tucked into the ceiling, Kalomirakis' mural would have to be orchestrated on a microperforated material to accommodate the sound. With time, the integrity of a mural canvas dotted with thousands of tiny pinholes would be compromised and would sag.

So Kalomirakis shifted gears. He wholeheartedly agreed with Haas that the ceiling would have to "lose a little bit of visual appeal" in order to achieve the best sound possible. That meant the massive ceiling mural was now a thing of the past. But Kalomirakis' new vision for the ceiling—two massive wheel-shaped coffers arranged in a figure-eight pattern, with acoustic fabric stretched between each spoke—won out.

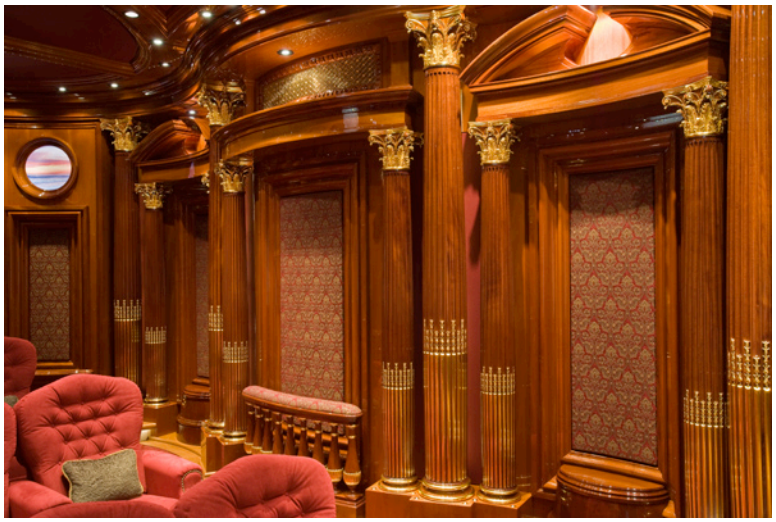
"The ceiling was a compromise for me, but it was a good compromise," Kalomirakis says. "First and foremost, the theater had to sound good. So I bit the bullet and agreed to use acoustic fabric [instead of a mural]. What Kalomirakis loves about this theater are the intricate architectural elements woven throughout. "It's a far cry from what you see being done right now—it's not your typical rectangle," he says of the room's footprint. "You have to understand the elements that you have to work with, respect them and use them as your creation."

Kalomirakis admits that the room's unusual shape worked to his advantage design-wise. "I don't want to get the easy credit for creating this complex system," the designer says. "I just did it because the room was complex."

The theater's Paris-made woodworking is influenced by the classical architectural detailing found on the exteriors—not the interiors—of Europe's most grand buildings. In addition, the intricate hand-carved woodwork is designed and arranged to create a sense of movement—a feeling of musicality and direction.

"[That rhythm] is expressed with arches, exterior columns, pediments—things you usually associate with exterior architecture," Kalomirakis says of the highly complex arrangement of walnut and cherry columns, arches and balustrades. Many of the architectural elements, including the column capitals and decorative trim, are inlaid with bronze doré, a decorative metal fabrication used in French architecture.

The company that hand-carved the theater's complex woodworking also crafts the millwork for numerous high-end jewelry stores, including Cartier. "The woodwork in this theater is carved and bent in the most complex forms," Kalomirakis says. "It's a work of art—it's absolutely stunning."



To maintain the woodwork's centerstage prominence, Kalomirakis chose carpeting and traditional theater seating that's understated. The silhouettes of the velvet chairs echo the theater's curves ever so slightly; the leaf pattern of tone-on-tone silk damask carpeting climbs its way to the top of each column in the form of gold doré leafing. Kalomirakis custom designed the fabric that blankets the walls and ceiling with the help of Haas, who put the brocade-influenced, open-weave material through numerous sound tests to ensure that the sound would pass through without flaw.

Complementing the theater's stunning interior design is another "stunner"—an elaborate sound system. "You can turn on the Concertino system and it changes the acoustical properties of the room," Kalomirakis says. "If you want to have a string quartet up front, it changes the acoustics of the room to sound like Carnegie Hall."

Haas installed the acoustic enhancement system that allows the owners to turn their theater into one of the world's finest concert halls. "When they want live music, they press the Concertino button on the remote as if it were a DVD player, and their system will turn off, all of the microphones in the system will un-mute, and the system comes on," Haas says. "Whether they want Carnegie Hall, Notre Dame Cathedral or anything else, we have it programmed in [the system]. They touch one button and the system adjusts the sound accordingly."

The Concertino system, which essentially replicates the acoustical character of specific performance halls, includes eight extremely sensitive microphones tucked into the ceiling—all of which listen to what's going on in the room (including the room's own natural, at-rest sound). Next, the system's computer processor alters the captured signals to reproduce them as performed in their concert hall of choice. The reconfiguration is then selectively distributed through the system's 12 speakers, all in real time.

When asked about having such an elite sound system—one of four in the house—in his home theater, the owner is reduced to ear-to-ear grins.

"When you watch the opening five minutes of *Lord of the Rings*, you hear things that you can't hear in a regular theater," he says. "The ring bounces down the mountain as it escapes from Gollum, and on each landing there's a thud that shakes the room. The sound is unbelievable—it's phenomenal. It's beyond what I ever expected."

Tech Talk—Grand and Gorgeous

How many subwoofers does a home theater need? Not too long ago, even the largest of rooms boasted no more than two or three. These days, four has become performance standard.

If that seems like too many, you might want to strap in before reading any farther: This theater has a grand total of 20 CAT 12-inch subwoofers. 2-0. Veinte. That's in addition to the three CAT CMBX 10.9S44 loudspeakers in the front of the room and the six CMBX 8.7S44 speakers that serve as side and rear surround channels. All told, it takes four powerful CAT DSP 8X8 XLR Digital Signal Processors to handle the complex task of routing low frequencies and managing the time delays for

this massive custom-built loudspeaker array. And that's just the theater system. This number doesn't include all of the speakers and DSPs needed for the room's Concertino system.

When asked why any room needs so many subwoofers, the answer isn't a simple matter of volume—especially when using a model that boasts a $10,625 Theta Digital Casablanca III Music and Cinema Controller; a pair of Theta Digital Generation VIII Digital/Analog Converters ($13,500 each) for the front left and right speakers alone; and a $265,000 Runco Signature Cinema SC-1 DLP projector. The woofers aren't all cranked to 11 and the goal isn't to dislodge dental fillings.
"We have subwoofers located where the nulls would be to fill in the bass," says installer Anthony Pavia of Lights! Camera! Action! in Greenwich, Conn. "It's all about using the processing power we have available to us to distribute the bass evenly throughout the room to exactly where it's needed."

When Haas is asked about whether having that many drivers affected his acoustical design for the theater, his answer is somewhat surprising: It didn't. "Just because you can put enough transducers in a room to overcompensate for something, that doesn't mean you should just ignore designing a proper room," he says. "They may have 12, 16, 20 [subwoofers] in a room, but whatever they're doing for bass management has to work that much less when they're starting with a great [room] palette."

What did affect Haas' acoustical design significantly was the unusual shape of the room itself. Parallel surfaces tend to be an acoustician's worst nightmare because sound reflecting off the wall tends to overlap and lead to detrimental dips and peaks in volume. That wasn't the problem, however. Here, the room's shape has concave recesses in the front and rear, with convex protrusions in the middle.

Concave surfaces work to focus reflected sounds toward a point—certainly not an ideal listening situation, especially for a surround-sound field. "In the areas with concave surfaces that would cause the most problematic focusing, we ended up cutting into the millwork and inserting a diffusive type of treatment to spread the sound back out [to counteract] the effects of the shape of that area," Haas says.

The convex areas in the middle actually ended up working to Haas' benefit, especially since all of the drivers left him with little room for dedicated acoustical treatments: "[Those surfaces] help on a broader scale to spread the sound energy evenly throughout the main seating rows, especially the primary listening position of the owners."—*Dennis Burger*

RESOURCES

ACOUSTICIAN: SH Acoustics of Milford, Conn. (203.877.6340, shacoustics.com)
CUSTOM INSTALLER: Lights! Camera! Action! of Greenwich, Conn. (203.438.7000, lca-usa.com)
THEATER DESIGNER: Theo Kalomirakis Theaters of New York, NY (877.858.4328, tktheaters.com)

Photography by Michael Weschler

Home theater system

APC S20 S20 Power Conditioner with Battery Backup
Arcam DV139 DVD Player
Crestron Pro2 Processor with Ethernet
Furman ASD-120 ASD-120 AC Sequence Power Distribution system, 120 Amp
Kaleidescape KPLAYER-5000 Movie Players (2)
Kaleidescape KSERVER-5000 3U Server
Runco SC-1 Signature Cinema DLP projector
Stewart Filmscreen 120" 4-Way ElectriMask ScreenWall
Fortress Seating custom theater chairs (12)
Crestron TPMC-8X Isys i/O 8.4" WiFi Touchpanel and docking station
CAT C350.2FDXPR 350 Watt X 2 Channel Fully Differential Amplifiers (8)
CAT C600.2FDXPR 600 Watt X 2 Channel Fully Differential Amplifiers (10)
CAT DSP 8X8 XLR Digital Signal Processors (4)
CAT MBX custom loudspeaker system including:
  10.9S44 LCR speakers (3)
  8.7S4 side and rear speakers (6)
  3.0 subwoofers (20)
CAT MBX XLR balanced audio interconnects (50)
Theta Digital Casablanca III Music and Cinema Controller
Theta Digital Generation VIII DAC Pre-Amplifiers (2)

Concertino systems

Grand Foyer
Acoustic Enhancements CP816 Concertino Processing System
Acoustic Enhancements ASP-1-IW In-Wall Activated Sound Panels (12)
Acoustic Enhancements ASP-1-IC In-Ceiling Activated Sound Panels (10)
DPA 4060WM
Omnidirectional Miniature Microphones (12)
QSC CX168 8-Channel Pro
Audio Amplifiers (2)
RBH TS-12 Passive
Subwoofers (2)
True Systems Precision
8 Microphone Pre-Amplifier

Living Room
Acoustic Enhancements CP816 Concertino Processing System
Acoustic Enhancements ASP-1-IC In-Ceiling Activated Sound Panels (18)
DPA 4060WM
Omnidirectional Miniature Microphones (8)
QSC CX168 8-Channel Pro
Audio Amplifiers (2)
True Systems Precision
8 Microphone Pre-Amplifier

Ping Pong Room
Acoustic Enhancements CP816 Concertino Processing System
Acoustic Enhancements ASP-1-IC In-Ceiling Activated Sound Panels (22)
DPA 4060WM
Omnidirectional Miniature Microphones (8)
QSC CX168 8-Channel Pro
Audio Amplifiers (2)
True Systems Precision
8 Microphone Pre-Amplifier

Home Theater

Acoustic Enhancements CP816 Concertino Processing System
CAT 3.0 Catalina
In-wall Speakers (12)
CAT S12 In-ceiling
Subwoofers (4)
DPA 4060WM
Omnidirectional Miniature Microphones (8)
True Systems Precision
8 Microphone Pre-Amplifier

Common Rack Items

Acoustic Enhancements CMS32x8 4-Room Custom Microphone Switcher
Acoustic Enhancements CSS64x16 4-Room Custom Speaker Switcher