

Impossible Rooms



Okay. I know what a theater is and I know I want a home theater and I have the room. Just plug in the speakers and arrange the furniture. Right? Wrong. There are lots of considerations that go into the final, satisfying end-product—a room that will do what I want it to and will deliver on the promises of home theater—great picture and great sound. And my room may present problems.

At Dolby Labs and other audio/video manufacturing/processing places they construct rooms specifically to test their equipment. They do everything precisely right. They even furnish the seats in special fabrics. To repel or to absorb the sound. And like a photographer's studio, they control the light.

When we go to the theater we go into a darkened room with only small lights of low wattage so we can barely find our seat or get out in an emergency. In the theater many of these lights are on the floor right along the edge of the rug. Hardly something I'd do in my own home. How weird that would be. Especially because I'd

use that room for other things—not just watching TV or videos. And the sound is carefully controlled, too. The speakers are spaced at pre-determined distances from each other—again, precisely placed for delivery of great sound in a specialized room. The theater room is large—huge by home standards—both in length and width, but also in height. All these factors contribute to the quality of the picture and sound I receive as I watch the movie. Okay, okay, we all know this.

So, now I'm home, sitting in my leather Eames chair, putting my feet up, with the light on nearby so I can read TV Guide, or the instruction book for my home theater system. And you know someone like me always needs the instruction book right at hand with a handy light to read the next step—like how to change channels or pause because the phone rings.

Anyway, back to my room. My ideal room. It's in the perfect place in the house. It even has a fireplace, and an old painted tin ceiling I recycled from a salvage yard. And it already exists. I don't have to add on. How delightful. Perfect.

Well, not quite. My perfect room may not be perfect to Ray Dolby or George Lucas. My brick floors may reflect in the wrong place, and so might the tin ceiling. The French doors, facing South and West are right next to my TV—and sometimes, I confess, I watch movies during daylight hours!

My TV is in the corner of the room because the fireplace is in the other corner. But, I like that. Another confession, I like to sit in the theater on the left side about half way or even two-thirds of the way down front. Why? Because I am visual and if I sit in the middle I constantly have to turn my head back and forth or let my eyes go wall-eyed getting the whole picture. The middle may be perfect for sound, but I

like catching the edges of the film. A lot goes on on the edges. So, at home, I don't want to sit "straight on" to the screen. How symmetrical. How boring. But that's where most experts want the viewer to sit. I refuse. I see more out the corner of my eye than when I am concentrating, face full front. So, what do I do?

What if I had a room with really high ceilings, like 20 feet (and ceilings of 14 to 20 feet are common here in the Southwest), a wall of glass, and all kinds of beautiful architectural angles? Or I want my media room to be combined with my mirrored entertainment room-mirrors on three sides, a jukebox and lots of neon, a pool table, and small dance floor as well as a wet bar? Is this an installer's nightmare, or what?

What if I built a log cabin in the mountains of Colorado? Where would the speakers go? In the walls? Ha ha! Well, they often are installed in the walls themselves, and with standard frame walls that's usually not a problem. But what about solid walls, logs, adobes, stone? What about the beamed ceilings that are so popular in the West-that use thick beams or vigas (peeled logs used as support beams for ceilings and roofs) and wood plank decking? What about fireplaces? We have kiva fireplaces, beehive ornamental fireplaces often built into the corners of rooms and spilling out onto the side walls. In other parts of the country fireplaces are dead center, right where the TV would be.

What if I want a drop-down screen in front of a large view window in a room that has French doors on the right and another window on the left, with tile floors throughout, and all in the same vicinity as the drop-down screen?

What do I, or you, do? You find a custom installer who is familiar with difficult rooms. Some of the rooms I've mentioned would be avoided at all costs by experts, leaders in the industry. And, often, standard equipment may not adequately handle these "opportunities." But Loren Bishop, of Sound Ideas in Albuquerque, New Mexico, has worked successfully with all these unusual, but not impossible, rooms.

What is really interesting about some of these rooms and their "issues," is that sometimes the "problems" turn out to provide really good solutions, too. Like the vigas and exposed beams in many of the ceilings here. They visually hide or minimize the technical aspects of the speakers and they hide some of the other equipment as well, such as drop-down screens.

But before we get into the specifics of these challenging rooms, let's briefly review an ideal home theater room. The room would be rectangular and the six sides (four walls, ceiling and floor) would have absolutely no "give." The TV set would be positioned at the center of one of the short walls and there would be no windows. All light and sound would be controlled by the listener/viewer. The ceiling would be between 10 feet and 12 feet high. The viewing seats would be situated "straight-on" in front of the TV set or screen, and the walls, the floor, and the ceiling in front of the viewing area would be carpeted or finished in appropriate absorbent material. There would be no reflective surfaces near the TV or in front of the viewing area to interfere with the contrast on the screen. The color scheme would be dark gray or black so light would be absorbed and not reflect back to interfere with the light from the movie screen. All equipment with lights would be hidden away from sight or be placed in the back of the room. The front speakers would be placed at +/- 80 inches (just under 7 feet). They would be no lower than 5-6' and no higher than 10 and 12 feet. Rear speakers would be placed in the ceiling. Behind the viewing area would be reflective surfaces that would adequately diffuse the sound. In this part of the room you want sound to act like water sprayed into the juncture of the two walls and ceiling-it would bounce out from the walls and ceiling in all directions as mist.

To get this ideal room, we would need to build it from scratch. And if you are going to build, think about installing much of your home theater system during construction. Standard framing is too hard and reflective "as is" for the ideal room, so Bishop would attach particle board to the studs, add sound stop board, and then use sheet rock for finishing the room. Particle board provides extra stiffness, which is

important because we don't want vibrations in the wall distorting the sound. Sound stop board absorbs sound and balances the reflective qualities of the rest of the wall. The sheet rock provides a good surface for finishing (paint will adhere to it) and it provides the stiffness needed for good bass response. Adobe is an almost perfect material for home theater room walls. It is hard when finished but it also absorbs low frequency sounds.

If you have issues with sound traveling through the walls into another room, you can stagger the studs and use sound stop board to minimize the traveling of the sound.

Most manufacturers and installers, particularly those in the Midwest and East, are used to rooms with carpet, but out here we have tile or brick floors (sometimes even mud). These surfaces are reflective. Okay, so you live in the Midwest or the East and you don't have adobe walls or high ceilings or tile floors or lots of glass. If these materials are not widespread now they are becoming more so as "Santa Fe" style seeps into other parts of the country. And I've seen high, beamed ceilings and rooms of glass on the East Coast. Not to mention stone floors of marble or slate.

Okay, now for the difficult rooms themselves.

THE MIRRORED ROOM

This was a long narrow room, not the ideal rectangle. The room had angled mirrors behind and to the sides of the freestanding TV. And the mirrors had neon signs on them. A Lucite dance floor was between the TV and the couches, and so was a glass coffee table. Unbelievable amounts of reflective surfaces exactly where they should not be in an ideal room. And the ceilings were low, 8 to 9 feet. The client wanted a 55-inch TV with surround sound. What to do? The good news was they were not audiophiles, they just wanted "good" sound. And they were obviously willing to put up with the distractions the neon and mirrors would cause when they watched movies. They wanted the system to fit into the aesthetics of the room, and they wanted a user-friendly system.



Because the room was narrow, the rear speakers were built right into the corners of the room. The front speakers had to be built with components that would allow for refinement of the dispersion pattern. In an ideal room, the speaker dispersion (i.e. the angle of sound emitted from the speaker) on the horizontal plane can be wider than was desired in this room. Here, focus was important to minimize sound bouncing off the reflective surfaces. The dispersion patterns were narrowed both vertically and horizontally to aim the sound patterns directly where the listeners would be. In addition to this, there was no good place for the center speaker as the TV was out in the room. So two speakers placed on the angled walls work as one center speaker.

ROOM WITH LOTS OF WINDOWS.

This was an adobe house with large windows and French doors. The ceilings were vigas and planks and

the floor was tile. They wanted the drop-down screen for their front projection system to fall in front of the large window at the end of the room. The walls were bright white. Almost the same issues as the previous house. Lots of reflective surfaces in the front of the room and lots of potential for distracting light. And two piece systems, like the front projection one, are more sensitive to ambient light than the rear projection systems. But, current technology says rear projection systems can have screens up to about 60", and if larger screens are desired, then you must go to front projection. And these clients wanted the larger, 100-inch screen. Try to stick with high quality rear projection systems if you have light issues like this, and look for high contrast sets.



The first thing to be done was to try and cover up the light sources, the windows and door, with blackout curtains. The clients wouldn't allow true black out curtains, but Bishop was able to work with the decorator to get adequate shades and extra heavy drapes that could be pulled to mask the edges of the shades. Also, importantly, the customers said they did not watch much during daylight hours. At night little light comes in the windows-no city lights or porch lights. Bishop also recommended using area rugs, or throw rugs, in the front of the room to help provide absorbent surfaces and reduce the reflective ones. They did this. The center speaker here is actually four speakers, two up near the vigas in the ceiling and two below the window in the adobe wall.

These clients use a smaller rear projection TV when watching during daylight hours. And at the push of a button, or two, they can switch over to front projection when darkness falls. There was quite a bit of work involved in cutting out the adobes to hold the speakers and cutting into the ceiling roof system through the plank decking, but once done, it became a clean, neat system to use. In this room, one of the disadvantages, the beamed ceiling, actually had a positive effect in disguising the technical aspects of the screen while not in use. The screen conveniently hides behind a viga.

ROOM WITH CENTER FIREPLACE.

This room had a main visual attraction in the center fireplace, toward which the seating was arranged. It also had a window crowding the corner where the home theater equipment would have to go. And an elaborate cabinet was to be built to house all the equipment.

Bishop's solution was to expand and angle the corner of the cabinet that houses the TV, so the set faces the couches set up in front of the fireplace. It makes for comfortable and adequate viewing. He also angled the speakers within the spaces cut out for them in the walls, for the same reason—to angle the sound directly at the viewers.



Given the asymmetry of the system now installed, the back speakers were re-balanced to compensate for unequal distances to the listening area. Movie sound and rear speakers are more forgiving of these kinds of compromises than is audio sound. And of course, the window now has shades.

RETRO-FIT INTO EXISTING CABINET.

This room is about changing our minds. Originally, this room was a music room. That was its main emphasis. Then speakers were placed in preparation for having a front projection system with a drop-down screen.

Which means they were offset from the TV. Then the customer had a cabinet built next to the fireplace. And then decided he could place a big screen rear projection TV on top of it. As a matter of fact, he was smart and allowed adequate space for that. So, what's the problem? He allowed adequate space for the TV to sit on top of the cabinet as though it were a table. Unfortunately, as we've mentioned earlier, rear projection TV's have limited vertical dispersion angles, which means that outside this 10 to 15° angle the picture is not very good. And the cabinet was at least 48-inch high. Which means if



I was sitting on the couch, I am outside the acceptable viewing angle and the picture would look flat and pale. So Bishop had to tilt the TV, which means he had to cut into the ceiling to provide the space needed to tilt it (another 8 to 10 feet), and to provide adequate ventilation. Resourceful. So, go ahead, change your mind.



And then there's the log house in Colorado. This was a "spec" house, so the requirements here were not specific client needs, but rather a system that could provide future options and versatility, for the ultimate owner. Importantly, as with all the above homes, perfection was not required. Compromise and multi-use was more important. And, again, cosmetics were critical.

A word about cosmetics. In all these homes, Bishop attempted to install systems that would not intrude visually into the space. He would trim the speaker grilles and or paint them with matching colors and grains. So the rooms, when done, would look "normal."

In the log house they didn't want a large center speaker above the TV because it was a place where the future owner could hang a picture and with the log walls would be intrusive- looking. So they used the TV's own speakers, which were adequate. And they put the sub-woofer under the floor and the speaker for it in the slot (see following photo) under the TV itself. The speaker grilles were contoured to match the logs. Access to the equipment, as well as ventilation, came from a utility room on the other side of the wall.

Clever. All the design work was done in Albuquerque using video tapes of the house in Colorado. Then the builder carved spaces where needed, for example the speakers, by using a chain saw. The process is similar to what is done with adobes-they just carve out the space they need, and usually there is little need to provide extra support because both the logs and the adobes are solid and stable.

So, what does all this mean to me? Or you? If you are willing to compromise, and most of us do it without even recognizing that we do, you can have a wonderful home theater in an existing room. And if you choose carefully, local experts can design and install an adequate, satisfying system that meets all your needs at a reasonable price. So, don't let the lack of perfection, or the lack of money to build perfection, stop you. Use what you have and get what you want. Don't be afraid to change your mind. And have fun. Finis.

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